Environmental Costs, Social Costs and Financial Performance of Quoted Manufacturing Companies in Nigeria

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Abstract

The study examined the impact of environmental and social costs on the financial performance of quoted manufacturing companies in Nigeria. The study adopted ex-post facto research designs. Secondary data sourced from the published annual reports of three (3) firms, purposively selected for a period of 11 years (2013 to 2023). Financial performance is proxies by Return on capital employed (ROCE) and serves as dependent variable, while environmental cost disclosure and social cost disclosure is the independent variables. Hypotheses were tested using the Panel Least Square model with E-View statistical software. Multiple regression analysis was use. The study reveals that environmental cost has a significant positive effect on ROCE of manufacturing companies, social cost also has a significant positive effect on ROCE of the companies. The joint test result (R-square of 0.741120 and F –Statistics of 4.070911) reveals that environment and social cost shows a significant positive effect on financial performance of the manufacturing companies. The study concludes that environmental and social costs affect financial performance of quoted manufacturing companies in Nigeria. The study therefore recommends that the management of quoted manufacturing companies in Nigeria should spend more on social costs and environmental cost activities to boost profitability and improve their business performance in the long run.

Keywords: Environmental Cost, Social Cost, Financial Performance, Return on Capital Employed, Manufacturing Companies.

Introduction.

Business operation in both developed and developing economies affect the environment in which they operate. Pollution and environmental issues resulted from the firm's activity affects global sustainable development. This has become a matter of great public concern all over the world of environmental pollution of industrial sector, particularly manufacturing companies in Nigeria. The manufacturing sector is a vital component of Nigeria economy, contributing significantly to the Nation GDP and employment. However, the sector's operations have severed environmental and social implications, posing a significant threat to sustainable development. Environmental costs and responsibilities are extensively growing as the world is becoming more environmentally cognizant. Corporate firms are being held more liable and answerable to environmental degradations of the society. Companies are therefore gradually becoming more aware of the societal and environmental liabilities and externalities relating to their operations and products (Environmental Protection Agency (EPA), 2000.

According to Adegbei and Nwobodo (2020) business activities could, in uncontrolled circumstances, produce unfortunate negative Environmental and Social (E&S) impacts including air and water pollution; destruction of biodiversity and ecosystems; threats to human health and safety; violations of labour rights; displacement of livelihoods. It does make sense to give back to the society for this disturbance, necessitating sustainable development. The environmental cost of manufacturing companies, include pollution, climate change, and resource depletion, have far-reaching consequences for the ecosystem and human health. Similarly, social cost, such as labor exploitation, community displacement, and human rights

violation, have devastating effects on local communities. Non-disclosure of social and environmental cost in the firm's corporate reporting system has necessitated the intense pressure from stakeholders. They have demanded that firms should integrate non-financial information disclosure in their financial reporting. This would enable them (stakeholder) to know how the firm is benefiting and taking care of human and environment. The aim is to account for non-financial activities and disclose the information to the stakeholders in the area of environmental and social cost. This would make the firm accountable and responsible for their activities in the human development and environment in which they operate. Adeusi and Alade (2021) assert that the disclosures of these nonfinancial information provoke eternality effect of human existence. The human existence is predicated on the good ecological conditions, but negative externality of corporate businesses activities have one way or other affected humanity in divergent areas. The company's stakeholders include the regulatory bodies, employees, customers, investors, non-government organization and finance providers.

According to Epstein (2008), corporations have become more sensitive to social issues and stakeholder concerns, and are striving to become better corporate citizens. Whether the motivation is concern for society and environment, government regulation, stakeholder pressures or economic profit, the result is that managers must make significant changes to manage their social, economic and environmental impact more effectively. Studies have shown that organization that discloses financial and non-financial information in their financial report is likely to have a sustainable growth and development, because consumers will patronize their product believing that their welfare is taken care of and the environment safe. The growing recognition of the need for businesses to adopt sustainable practices that minimize their environmental and social footprint has brought about the concept of triple bottom line (TLB) accounting. The concept of triple bottom line (TBL) accounting, which considers the economic, environmental, and social impacts of business operations, has gained traction. However, the integration of environmental and social costs into corporate financial performance remains a challenge. The increasing concern about environmental degradation and resources depletion has a global concern, particularly in Nigeria. Many manufacturing companies in Nigeria are usually faced with youth restiveness as a result of unemployment, and non-availability of social amenities.

This has led to series of vandalization of Oil pipelines and other valuable companies' properties. The above problem could be averted if the manufacturing companies manage their social and environmental cost efficiently and effectively. It is in the light of the above that the researcher deemed it fit to carry out an empirical study on how the manufacturing companies can manage their environmental and social cost and at the same time break-even**.** This study is significant to the Organization's Management, the Regulatory Authorities, Shareholder/investor, the Local Communities and other Stakeholders, Consumers, Professional Accountancy Bodies and Future Academic Research**.** This study also contributes to the enrichment of the literature on sustainability reporting and provide more knowledge to students, scholars, and academics on the relationship between sustainability reporting and corporate performance of companies. The research would serve as a body of reserved knowledge for reference by researchers. The main objectives of the study are to examine the effect of environmental cost and social cost on corporate financial performance of manufacturing companies in Nigeria. The specific objectives are:

- to examine the relationship between environmental cost and ROCE of manufacturing companies in Nigeria
- investigate examine the relationship between social cost and ROCE of manufacturing companies in Nigeria
- Determine the combined effect of environmental and social cost on ROCE of manufacturing companies in Nigeria.

Research Questions

- What is the relationship between environmental cost and ROCE of manufacturing companies in Nigeria?
- What is the relationship between social cost and ROCE of manufacturing companies in Nigeria?
- What is the combined effect of environmental cost and social cost on ROCE of manufacturing companies in Nigeria?

Statement of Hypotheses

The following null hypotheses were formulated for the study:

- Ho_1: Environmental cost has no significant positive effect on ROCE of manufacturing companies in Nigeria
- Ho_2: Social cost has no significant positive effect on ROCE of manufacturing companies in Nigeria
- Ho_3: Environmental and social cost (ESC) has no combined significant positive effect on ROCE of manufacturing companies in Nigeria

Conceptual Framework

Environmental Cost and Social Cost Concept

Environmental and social cost accounting, social accounting otherwise known as (social accounting and auditing, social and environmental accounting, corporate social responsibility reporting, non-financial reporting or accounting) "is the process of communicating the social and environmental effects of organizations' economic actions to particular interest group within the society and to society at large" (Gray, Owen, & Manders, 1987). They further emphasized that the social accounting entails corporate accountability. In the words of Crowther (2000), social accounting is an "approach to reporting a firm's activities which stresses the need for the identification of socially relevant behavior, the determination of those to whom the company is accountable for its social performance and the development of appropriate measures and reporting techniques in the view of Iheduru and Chukwuma (2019), environmental and social cost covers all cost which include cost of environmental degradation and depletion of natural resources. It involves management of environment costs effectively presenting and disclosing environmental information in a suitable form. Hansen and Mowen (2000) defined environmental costs as costs associated with the creation, detection, remediation and prevention of environmental degradation. Social cost is a cost facet of sustainability accounting that incorporates the cost of a business incurs in connection with socially linked issues such as employee welfare packages, community involvement, and product/consumer related difficulties (Yaakoo, Ibanichuka & Ofurum 2021).

According to the US Environmental Protection Agency - EPA (1995), Green Accounting or Environmental Accounting is defined as identifying and measuring the costs of environmental materials and activities and using this information for environmental management decisions. The purpose is to recognize and seek to mitigate the negative environmental effects of activities and system (Okore, 2021). Environmental protection costs include costs for prevention, disposal, shifting actions, planning, control, and damage repair. Environmental damage costs are the costs of waste and emissions. Waste is a material that has been purchased but that has not been utilized in a product. In this context waste indicates production inefficiency. In addition to the costs of wasted materials, all other costs related to their processing are included in environmental damage costs - the costs of energy, transportation, labor, investment, etc. (Jasch, 2003).

Categories of Environmental Costs

Environmental costs can be categorized into costs that directly impact on a company's bottom-line, which are referred to as private costs and costs to individuals, society, and the environment for which a company is not accountable, which are called societal cost. Private costs can further be classified into; conventional costs, potentially hidden costs, contingent costs and image and relationship costs. This classification creates both a decision-oriented information base for the environmental management system and for the planning, control and supervision of material and energy flows (Lethmate & Doost; 2000 & Okore 2021).

Conventional Costs: The costs of using raw materials, utilities, capital goods, and supplies are usually addressed in cost accounting and capital budgeting. However, the environmental portion of these costs is not usually considered as environmental costs. It is important to factor these costs into business decisions, whether or not they are seen as environmental costs.

Potentially Hidden Costs: These are environmental costs that may be potentially hidden from managers because of their infrequent nature and/or because of their collection in company overhead accounts (EPA 742-R-95-003, 1995). Different types of environmental costs that may be potentially hidden from managers are; upfront environmental costs, regulatory and voluntary environmental costs and back-end environmental costs.

Contingent Costs: These are costs that may or may not be incurred at some point in the future. Examples include the costs of remedying and compensating for future accidental releases of contaminant into the environment (example, oil spills), fines and penalties for future regulatory infractions. Because these costs may not currently need to be recognized for other purposes, they may not receive adequate attention in internal management accounting systems and forward-looking decisions.

Image and Relationship Costs: These costs are incurred to affect subjective (though measurable) perceptions of management, customers, employees, communities and regulators. These costs have also been termed “corporate image” and “relationship” costs. This category can include the costs of annual environmental reports and community relations activities, costs incurred voluntarily for environmental activities (example, tree planting), and costs incurred for recognition programs. These costs themselves are not intangible, but the direct benefits that result from relationship or corporate image expenses that often incurred.

Societal Costs or External Costs: These are the costs a business impacts on the environment and society for which business is not legally accountable. They include environmental degradation and adverse impacts on human beings, their property and their welfare which cannot be compensated through the legal system.

Environmental and social cost disclosure.

The disclosure of environmental cost includes disclosure for the management approach which comprises environmental aspects (for example, materials, vitality, water, biodiversity, outflows, effluents and waste), items and administrations, consistence, transport, and in general, objectives applicable to environment viewpoints, strategy, hierarchical duty, checking and development and extra relevant data (GRI, Sustainability Reporting Guidelines). The social cost disclosure dimension of reasonability concerns the impacts on affiliation it has on the social systems within which it works. The disclosure of social cost would be categorized into four perspectives: Labour practices and tolerable work, human rights, society and product duty (Ayu, et al, 2020)

Global Reporting Initiative.

According to Emelie & Lilja (2012), the GRI was founded in 1997 by the Coalition for Environmentally Responsible Economies (CERES) and Tellus Institute (Sherman, 2009) and

is a network based non-profit organization come from global business, civil society, labour, academic and professional institutions (KPMG, 2011). The GRI was created with the aim of increasing the level of sustainability reporting to that of financial reporting strictness and comparability (Isaksson & Steimle, 2009). The GRI is probably the most successful attempt to date, at standardizing the reporting of social and environmental information globally (Adams and Frost, 2007).

Financial performance measures.

Financial performance is a general measure of a firm's overall financial health over a given period. A high performance signifies that all its factors of production has optimally utilized efficiently and effectively. financial performance indices are used to compare similar firms across the same industry or to compare industries or sections in aggregation (Verm, 2021) Rong et al 2019 cite in Ugo (2022) assert that a performing company is a company that creates value for its shareholders and this is realized when the return on equity is higher than the funding cost**.** Financial performance is a measure based on profitability and how well a firm utilizes its assets to generate revenue, and to assess the achievements of the company through Return on Assets ratio. Non-financial performance makes use of qualitative information to determine company's main branding (company reputation). Others are customers and supplier's satisfaction; community development, and complying with government regulations (Khudhair, Norwani & Ahmed, 2019; Strouhal, 2015; Harrison & Wicks, 2013). The performance of an organization is a derivative of both internal and external factors of the firms.

Corporate Social Responsibility and Financial Performance.

There are a series of arguments in the literature about the existence of relationships between corporate social responsibility and financial performance. Fraoman (1997) opines that companies which discharge their CSR responsibly are guided by enlightened self-interest, which means that they are socially aware without giving up their own economic self-interest. Profit serves as a reward for a firm as it continues to provide true value to its customers, to help its employees to grow, and to behave responsibly as a corporate citizen. An emphasis on social responsibility can attract customers. A poll conducted by Opinion Research Corporation shows that 89% of purchases by an adult are influenced by a company's reputation. Social responsibility also benefits companies by enabling them to recruit a high-quality labour force.

The reputation of the firm and the goodwill associated with socially responsible actions attract talented prospective employees', that is, people seeking an employer for whom they would be proud to work. Fasanya and Onakeya (2013) found that proper and effective CSR goes a long way in improving the trend of firms' financial performance in Nigeria. Researchers have also found that there was a positive relationship between CSR and financial performance (Keffas & Olulu-Briggs, 2011; Abdulraham, 2013). However, a study conducted by Babalola (2013) on the impact of CSR on firm's profitability in Nigeria using data for ten randomly selected firms between 1999-2008 indicated a negative relationship between firm's performance and profit after tax. Similarly, Folajin, Ibitoye and Dunsin (2014), also studied CSR and organizational profitability using United Banks of Africa (UBA) as a case study and it was revealed that expenditure on CSR has a short-term negative effect on net profit but in the long run, it will provide better returns. In a similar study conducted by Abdulraham (2013); and Hilda, Hope & Nwoye (2015) in Nigeria banks, it was discovered that there is a significant negative relationship between CSR and profitability**.**

Return on Capital Employed.

Return on capital employed (ROCE) refers to the relationship between income produced by an activity and the monetary investment in that activity (Cram 1995). In his own

term cooper (1999:5) cited in Garratt and Toit (2002) describes this as the output which the consumer receives and for which he/she was willing to pay. Return on capital employed (ROCE) is a financial ratio that measures a company's profitability and the efficiency with which its capital is employed. Return on capital employed indicates firm's profitability and is calculated as: Earnings before Interest and tax divided by capital employed. "Capital Employed" as shown in the denominator is the sum of shareholder's equity and debt liabilities; it can be simplified as (Total Assets Less Current liabilities**;** it can be simplified as (Total Assets Less Current liabilities. Instead of using capital employed at an arbitrary point in time, analyst and investors often calculate ROCE based on "average capital employed" which takes the average opening and closing capital employed for the time period (Averkamp, 2020). A higher ROCE indicates a more efficient use of capital. ROCE should be higher than the company's capital cost, otherwise it indicates that the company does not employ its capital effectively and does not generate shareholder value.

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Theoretical Framework

This study is anchored on the Stakeholders Theory and legitimacy theory.

Stakeholders Theory

The stakeholder theory was propounded by Edward Freeman in 1983 (Freeman & Moutchnik, 2013). The stakeholder theory posits that organizations have a responsibility to all groups and individuals who have a stake in the organization's activities. Stakeholders include shareholders, employees, customers, suppliers and the wider community. The theory also suggests that organizations must balance the interest of all stakeholders to achieve long-term success. Freeman believes that this propels the firm forward and allows it to generate outstanding performance. There are many other parties that need to be recognized as having an interest in the company. Those interests must be considered along with the interests of the company shareholders. The stakeholder theory is important because it emphasized the satisfaction of all the legitimate interests of a firm's interdependent constituencies (like the employees, customers, suppliers, the local community, shareholders among other) which can lead to the long-term success of the firm

Legitimacy Theory

This theory is derived from the concept of organizational legitimacy as defined by Dowling and pfeffer (1975), which states that legitimacy is a condition or status that exists when the company's value system is in line with the larger social system in which the company is part of the system. When real or potential differences arise between the two value systems, there will be threats to the legitimacy of the company. The theory seeks to maintain a legitimate

relationship with their stakeholders by conforming to societal norms, value and expectations. The theory suggests that organizations must demonstrate their legitimacy to ensure their survival and success. Legitimacy is achieved when organization actions are perceived as acceptable and justifiable by its stakeholders.

Empirical Review

Akubo, et al, (2018) examines the impact of corporate social responsibility on financial performance of selected deposit money banks in Nigeria, from 2013-2017. The variables comprise of corporate social responsibility health and sports expenditures as proxies for the independent variable while profit after tax (PAT) measures the dependent variable. Data analyzed were obtained from the financial statements of the various banks for the period under study. The statistical tools of analysis used were correlation matrix, descriptive statistics and panel least square regression. The results show that corporate social responsibility expenditure on health has an insignificant positive impact on profit after tax (PAT) of selected deposit money bank in Nigeria.

Also, corporate social responsibility expenditure on sport (CSRSE) has a significant positive impact on profit after tax in selected deposit money banks in Nigeria, for the period under review. The study recommends that the management of Nigerian deposit money banks should reduce and strictly monitor their corporate social responsibility health expenditure in order to enhance their performance. In a similar study**,** Okore (2021*)* examined the effect of environmental cost on the performance of some selected manufacturing firms in Nigeria using return on asset as a proxy for performance. Environmental training cost, donations and charitable cost, waste management cost and corporate social responsibility cost were used as proxy for environmental cost. Data were collected from the annual financial statement of the selected firms and the ex-post facto research design was adopted. The dependent and independent variables were observed over the period, 2011 to 2020. Stationarity of the data were tested using the Augmented Dickey-Fuller unit root test statistic and the data were analyzed using the Panel Least Square. Findings from their study showed that, environmental training cost, donations and charitable cost, waste management cost and corporate social responsibility cost had positive and significant impact on return on asset of manufacturing firms in Nigeria.

In another study, Agbiogwu et al (2016) investigate the impact of environmental and social costs on performance of Nigerian manufacturing companies. The study used secondary data, sourced from ten (10) randomly selected firms' annual report and financial summary 2014. The study made use of t- test of SPSS version 20 for the analysis of collected data. Finding from the analysis shows that the sample companies environmental and social cost significantly affect Net profit margin, Earnings per share and Return on capital employed of manufacturing companies**.** Also, Sanusi and Sanusi (2019) in their study assessed the popularity and the extent of environmental sustainability reporting practices among quoted manufacturing firms in Nigeria and its effects on their financial performances. The study employs survey research using panel data (data of different firms from 2010 to 2015). This study adopts content analysis, descriptive, and inferential statistics as methods of analysis. The evidence provided in this study, based on the empirical findings, shows a fair representation of the popularity of environmental sustainability reporting among manufacturing firms in Nigeria, though the majority of the manufacturing firms reported very low levels of environmental disclosures. Environmental sustainability reporting indices have positive effects on the measures of financial performance (earning per share, revenue growth, and return on assets). Onyali, okafor and okafor (2014) assessed the extent, nature and quality of environmental information disclosure practices of manufacturing firms in Nigeria. Content analysis was adopted in analyzing the annual report of the selected firms with regards to their environmental

disclosure practices. Furthermore, a survey was carried out in order to ascertain whether the environmental disclosure practices of firms in Nigeria has improved. This was done with the aid of questionnaire administered to 40 Chartered accountants. The study adopted one sample t - test in testing the formulated hypothesis. The findings of the study indicated that the environmental disclosure practices of firms in Nigeria is still ad hoc and contains little or no quantifiable data.

Isa (2014), being sector-specific, assessed sustainable reporting among food and beverage firms in Nigeria. Data were generated from the 2013 annual reports of six firms listed on the Nigerian Stock Exchange for cross-sectional analysis. The findings reveal that the firms exhibit some level of sustainability reporting, which is insignificant. The level of disclosure accounts for only 2% of the annual reports Bassey, Sunday & Okon (2013) on the other hand used Pearson's product moment correlation analysis of oil and gas companies in the Niger Delta region of Nigeria. They observed that environmental cost has satisfied relationship with firm's profitability. Adediran & Alade (2013) used multiple regression analysis of 14 randomly selected companies quoted on the Nigerian Stock Exchange 2010. Their findings show that environmental accounting has a positive relationship with net profit margin, dividend per share and a negative relationship with return on capital employed and earnings per share. Okoye and Ezejiofor (2013) evaluate the impact of sustainability environmental accounting on company performance and economic growth. The study used Pearson Product Movement Correlation Co-efficient to investigate and test two hypotheses, and discovered that sustainable environmental accounting has a considerable impact on company productivity in order to boost corporate growth.

Okoye, Oraka, and Ezejiofor (2013) investigated how social sustainability reporting affects internal and external perceptions of corporate organizations, as well as the amount to which external pressure has influenced Nigeria's requirement for social sustainability reporting. The survey research approach was used, and a questionnaire was given to a random sample of 80 employees, customers, and investors in manufacturing companies in Onitsha, Anambra state. The study discovered that social sustainability reporting has an effect on changes in internal and external perceptions of corporate organizations, and that pressures from external factors have contributed to social sustainability reporting of corporate organizations. The impact of sustainability cost accounting on the financial performance of Nigerian telecommunication companies was studied by Udeh and Ezejiofor (2018). Time series data and an ex-post fact study design were used. Hypotheses were tested using regression analysis with the aid of SPSS Version 20.0. Based on this, the study found that Sustainability cost accounting has significantly affected return on assets of Nigerian telecommunication firms. Asaolu et al. (2011) as cited in Uwalomwa, et al, (2018) examined sustainability reporting in the Nigerian Oil and Gas sector using six major Oil and Gas multinational companies operating in Nigeria.

Using content analysis form annual reports, he found that sustainability performance indicators were not present in any of the organizations sampled. Similarly, Kwaghfan (2015) in his study examined the impact of sustainability reporting on firm performance in Nigeria. He sampled 64 companies quoted on the Nigerian stock exchange for 2002-2012. He observed a positive relationship between sustainability reporting and ROA, ROE, EPS and net profit margin. Based on the above literature, it was observed that all the prior studies reviewed basically looked at financial statement-based indicators of performance like the ROA, ROE, EPS and profit margin. Obara, et al, (2017) examined the effect of accounting for waste management expenditure on the profitability of oil and gas companies in Nigeria. Three companies were used for the study namely; the Nigeria Agip Oil Company Ltd, Schlumberger Nig. Ltd and Total E&P Nig. Ltd. The study investigated four operational variables which were: Waste management, Return on Assets, Return on Equity and Operating Profit. The results of the study, tested at 0.05 level of significance, showed that Waste management has

high positive and significant influence on the Return on Assets, Return on Equity and Operating Profit Level of the oil and gas companies in Nigeria. It was recommended that companies should be socially responsible to their host communities while the government on their part should ensure compliance with relevant laws regulating waste management and environmental pollution in Nigeria.

In a related study, Ayu et al (2020) empirically investigated the effect of environmental cost disclosure and social cost disclosure on financial performance mediated by earning management. A quantitative research method was employed using primary data sources and collected from the employees of international energy corporations. The study results revealed that the environmental and social costs disclosure significantly affected financial performance. This was in agreement with theories of instrumental stakeholders, legitimacy and agency. This means that more cost on environmental and social information disclosure can generate greater opportunities for corporations.

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Methodology

Research Design

The research design of this study is an ex-post facto research design considering the fact that the study utilizes archival data from companies under study. The study utilizes a content analysis to examine the level of environmental and social cost of the manufacturing companies in Nigeria.

Population of the study

The population of this study consists of all the manufacturing companies quoted on the floor of Nigerian Stock Exchange as at 31st December 2022.

Sampling size and sampling Technique

The sample size of the study is three (3) manufacturing companies quoted on the floor of Nigerian Stock Exchange as at 31st December 2023. A judgmental sampling was used in this study. The firm must have been listed on the NSE and remained in operation throughout the period 2013-2023, and must have the basic data required for the study in its financial statements over the period to be included in the study. The selected Manufacturing Companies are: Cadbury Nigeria plc, Dangote Cement Plc and Dangote Sugar.

Sources and Method of Data Collection

The study used secondary data contained in the annual financial statements of the three (3) listed manufacturing companies for the period 2013- 2023. This study used data from secondary sources. Relevant information on the dependent and independent variables of the study were extracted from the financial statements. The variables comprise of return on capital employed as the dependent variable and corporate social responsibility disclosure and environmental sustainability disclosure as the independent variables. Sustainability reporting disclosure is measured from disclosures related to the environment, society and economy based on the indicators of the Global Reporting Initiative (GRI Standard 2018). Data on environmental sustainability disclosure, social sustainability disclosure were collected from annual reports of the selected firms in the period under review by employing sentence count based on the argument that a researcher was free to choose any of the methods. Specifically, the final measurements of the independent variables were achieved by employing a scoring index based on performance indicators selected from Global Reporting Initiative (2018) guidelines as applied in previous studies (Caritte, Acha, & Shah 2015). Environmental and social disclosure indexes were calculated based on the number of occurrences and the level of disclosure. If there is an occurrence of an indicator in the company's financial statement, the researcher will assign the value of '1' but if there is no occurrence of such indicator, the researcher will assign '0'. The index score is arrived at by dividing the sum of occurrences by the total number of possible scores. A sampled company could score sixty points highest and zero score at the lowest.

Technique for Data Analysis

The study employed descriptive statistics and panel linear models comprising of the fixed and random effects models. The descriptive statistics provided details on mean and standard deviation as well as the minimum and maximum values of the variables of interest. Multiple regressions were used for the panel data analysis in order to establish relationship between the variables. Multiple regression was considered appropriate in view of the fact that it helps in not only establishing "relationship" between variables, but cause and effect.

Model Specification and Variables Measurement

To empirically analyze the relationship between environmental cost and financial performance, which is**:**

Envd = f (roce)

Csrd =f(roce)

When presented in an econometric form, it becomes:

$Envd = \beta_o + + \beta_1 roce_{it} + U_{it}$ - - - - - 1

$Csrd = \beta_o + + \beta_1 roce_{it} + U_{it}$ - - - - - 2

For hypothesis one, which states that environmental cost disclosure has no significant positive effect on the return on capital employed was represented by the equation;

$ROCE_{it} = \beta_o + b_1 ENVD + \mu$ - - - - 3

For hypothesis two, which states that social cost disclosure has no significant positive effect on the capital employed was represented by the equation

$roce_{it} = \beta_o + \beta_1 crsd_{it} + \mu$ - - - - 4

For hypothesis three, which states that environment and social cost disclosure has no significant positive effect on the return on asset, was represented by the equation, $roce_{it} = \beta_o + \beta_1 enscrd + \mu$ - - - - 5

Where:

Envd = environmental cost disclosure

Roce = return on capital employed

Csrd = corporate social responsibility disclosure

B_o = constant

β_1 = coefficient

μ = stochastic error term

Result and Discussion of Findings

Table 1

Dependent Variable: ROCE

Method: Least Squares

Date: 08/08/24 Time: 16:23

Sample: 2013 2023

Included observations: 11

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.876138	12.32123	2.424789	0.0005
ENVD	0.583261	6.801245	3.423562	0.0014
CSRD	0.480957	5.846514	2.783537	0.0029

R-squared	0.741120	Mean dependent var	30.82597
Adjusted R-squared	0.736400	S.D. dependent var	9.079783
S.E. of regression	8.240120	Akaike info criterion	7.282908
Sum squared resid	543.1966	Schwarz criterion	7.391425
Log likelihood	-37.05599	Hannan-Quinn criter.	7.214503
F-statistic	4.070911	Durbin-Watson stat	2.136419
Prob(F-statistic)	0.008462		

Source: Researchers computation with E-view

Data Analysis and Discussion of Findings

Test of Hypotheses

The hypotheses of the study as stated in chapter one is tested in this section:

Presentation of Model Equation (3); $ROCE_{it} = + b_{it}$ ENVD $+\mu$ - - - - 3. The result becomes

ROCE = 0.876138+0.583261envd + μ and the is given as t-value = 3.4235

Hypothesis one

1. $Ho_:$ Environmental cost has no significant positive effect on ROCE of manufacturing companies in Nigeria.

Table(one) revealed that envd has positive and significant effect on roce (coefficient of envd = (0.583261, t-value=3.423562) the probability value of 0.0014 is less than 0.05 which further indicates that, the result is significant. Therefore, we reject the null hypothesis and

conclude that environmental cost disclosure has positive and significant effect on return on capital employed of manufacturing companies in Nigeria

Model Equation (4) $roce_{it} = \beta_o + \beta_1 crsd_{it} + \mu$ - - - - 4; the result becomes:

roce= 0.876138+0.480957 + μ

t-value = 2.783537

Hypothesis two

Ho_1: social cost disclosure has no significant positive effect on ROA of manufacturing companies in Nigeria.

Table (one) revealed that csrd has positive and significant effect on roce (coefficient of csrd = (0.480957, t-value=2.783537) the probability value of 0.0029 is less than 0.05 which further indicates that, the result is significant. Therefore, we reject the Null hypothesis and conclude that social cost disclosure has no significant positive effect on ROA of manufacturing companies in Nigeria

Hypothesis three

The study analyzes the result by looking at the joint effect of the independent variable on the dependent variables

Ho_3: Environmental and social cost (ESC) has no combined significant positive effect on ROCE of manufacturing companies in Nigeria

Model Equation (5); $roceit = \beta_o + roce_{it} = \beta_0 + \beta_1 envd_{it} + \beta_2 csrd_{it} + \mu$ - - - - 5; the result becomes:

F-statistics =4.070911 and R-square = 0.741120 or 74.1%

From the result in table above, The R-squared of 0.741120 indicates that the 74% variations observed in the dependent variable (roce)were explained by variations in the independent variable(envd). The R-squared adjusted of 73.64% indicates a good fit for the whole model. F-statistics = 4.070911 is greater than the critical value. Therefore, we reject the null hypothesis and conclude that Environmental and social cost (ESC) has no combined significant positive effect on ROCE of manufacturing companies in Nigeria

Conclusion

The study examined the effect of environmental cost on the performance of manufacturing firms in Nigeria spanning from 2013 to 2023. Based on the discussion findings above, and from the analysis made in chapter four, the study concluded that environmental related cost and social cost has a significant positive financial performance of manufacturing companies in Nigeria.

Recommendations

The study recommends the following:

(1) that all manufacturing companies should invest in environmental cost activities like environmental, training, donations and charity, waste management and remain socially responsible to the host communities to ensure for peaceful and efficient operations.

(2) that the management of quoted manufacturing companies in Nigeria should spend more on social costs activities to boost profitability and improve their business performance.

(3) that Government agencies in Nigeria should develop a business-friendly framework that will encourage firms to comply with law and order.

(4) that corporate organizations on their part should ensure that they comply with the environmental laws of the nation as it will go a long way in enhancing their performance.

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