Environmental Accounting and Performance of Listed Manufacturing Sector in Nigeria

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ABSTRACT

Manufacturing firms in Nigeria succeed based on their level of awareness and consciousness to its environments. This research work dueled on impact of environmental accounting reporting and performance of selected manufacturing firms in Nigeria. An exp-post facto design survey was used to draw a secondary data from the annual financial report of selected listed manufacturing firms in Nigeria. The sub-variables used for Environmental Accounting Reporting (EVARP) are: waste management cost (WMC), Community Development Cost, and Employee Health and Safety Cost. The sub-variable used for performance of selected manufacturing firms are: Return on Assets (ROA), Return on Equity (ROE) and Profit Margin. Canonical Correlations were used to analyze the data in SPSS version 26. The findings obtained shows that Environmental Accounting Reporting vis-à-vis performance of selected manufacturing firms in Nigeria has significant relationship with the organizational growth and development. Recommendations; the government at all levels should make environmental accounting mandatory in yearly reports, since the majority of companies do not report on their environmental actions, government agencies should provide tax credits to businesses that adhere to the country's environmental rules, therefore encouraging environmental reporting, organizations should guarantee that they adhere to national environmental rules, since this will significantly improve their performance, further studies should be encouraged to widen the scope further where the research stopped.

Keywords: *Environmental Accounting Reporting, Performance, Manufacturing Firms, Waste Management Cost, Return on Equity and Growth & Development*

Introduction

The manufacturing sector of a nation is critical to its economic prosperity. Global economic capitals, from New York to London, Hong Kong to Tokyo, are defined by the strength of their manufacturing sectors. Manufacturing sector provides the enabling environment for economic development, hence, almost all other sectors of the economy in one way or another depend on the products and services of the manufacturing sector in order to carry out their operations. Despite the significance of the manufacturing sector, in Nigeria, for example, this sector of the economy has sparked widespread public outrage over environmental concerns. Fasua and Osifo (2020) opined that many companies are created with the objective of maximizing owners' wealth without considering its economic footprints on the other stakeholders as well as the community at large. They further stated that the activities of many companies such as oil and gas companies and manufacturing companies do generate negative impacts which are called social failure and threats. These include deforestation, elimination of marine life, increased atmospheric carbon dioxide, increased climatic disruption, persistent deposit of toxic chemicals, constant melting of mountain, increased health hazard caused by the sound and smoke emission from generators and factory plants (Jepkogei, Chumba & Bongoko, 2015; Eze, Nweze & Enekwe, 2016). The Nigerian government is strongly reliant on the oil and gas industry, yet their operations often pose major health concerns and environmental degradation, sparking chronic societal tensions and disrupting the economic operations of several global firms in recent years (Uwaoma & Ordu, 2016). Environmental pollution issues like air and water contamination from weighty modern hardware, a lack of spotless, new water, and a shortage of marine fish as an outcome of an oil slick have raised the worries of partners and the host local area. As a result, most countries and responsible corporate management teams throughout the globe are concerned and focused on the need for sustainable environmental cost management in the manufacturing sector.

In today's world, organizations must show that they are aware of and addressing the environmental and social impacts of their activities (Uwuigbe & Jimoh, 2012). In a bid to foster the activities that will protect the environment, the international communities established Global Reporting Initiative to promote the course of environmental reporting. There is need for continuous studies to improve on environmental accounting measures and to identify its impacts that affect other stakeholders; as well to find out how it will affect corporate performance of firms listed in the manufacturing sector.

Consequently, this study is pointed toward inspecting the connection between ecological bookkeeping and the authoritative execution of recorded firms in the modern area in Nigeria.

Objectives of the Study

The major objective of the study is to investigate the relationship between environmental accounting reporting and performance of selected manufacturing firms in Nigeria, while the specific objectives are:

i. To determine the relationship between waste management costs and return on assets of listed manufacturing sector in Nigeria.
ii. To explore the relationship between community development cost and return on equity of listed manufacturing sector in Nigeria.
iii. To ascertain the relationship between employee health and safety costs and earnings per share of listed manufacturing sector in Nigeria.

Hypotheses

The following hypotheses were formulated and tested at 0.05 level of significance:

H_{01}: There is no significant relationship between waste management costs and Return on assets of listed manufacturing sector in Nigeria.

H_{02}: There is no significant relationship between community development cost and return on equity of listed manufacturing sector in Nigeria.

H_{03}: There is no significant relationship between employee health and safety costs and earnings per share of listed manufacturing sector in Nigeria.

LITERATURE REVIEW

Concept of Environmental cost

It has proven difficult to define the phrase environmental cost. The problem is compounded by the fact that it must take into account both intangible and tangible costs, as well as the difficulty in estimating the burden and impact of the policy's effects outside a certain geographic area. Costs that are difficult to measure and aren't immediately apparent are referred to as "intangible." It is difficult to determine the value of intangibles since they are difficult to detect from the outset, and the evaluations are loaded with both complexity and subjectivity. The burden and incidence of an environmental cost make it difficult to quantify. Degradation of the environment, on the other hand, is borne by all of society's current and future generations, not just the companies that are directly responsible for it. Externality and the difficulty of estimating environmental costs add to the difficulty of defining environmental costs (Bartolacci, Paolini, Soverchia, & Zigiotti, 2016).

An environmental cost is defined by the way information is used in a company (Betianu, 2005), and it can be conventional (natural substances and energy expenses with ecological significance) or potentially unavailable (costs caught by bookkeeping frameworks, however at that point lose their personality in overheads) or contingent (costs that will be paid in the future – contingent liabilities) or image/rebranding costs (Betianu, 2005). As a result, environmental costs might be described as the repercussions of human and manufacturing activity on the environment, both implicit and apparent. Non-financial repercussions of corporations' actions or inactions, as well as costs that cannot be simply determined in connection to environmental degradation, have made it important to incorporate explicit and implicit environmental implications in the definitions of environmental costs.

The Need for Environmental Accounting Practices for Oil and Gas Companies in Nigeria

Environmental degradation is a severe problem for Nigeria because of the country's enormous natural resources (oil and gas). Gas flaring, pollution, oil spills, deforestation, global warming, and other health-related concerns have all been a result of oil exploration efforts. Crude oil and its byproducts generate a sizable quantity of money every day, and one would expect that the resulting wealth would play an important role in both oil- and non-oil-producing regions of the country's economic development. In spite of the enormous quantity of the nation's resources coming from their neighborhood, most oil-producing villages continue to live in abysmal poverty, according to the Researcher. Multi-national businesses that extract crude oil and its byproducts from these communities frequently fail to address the social and environmental needs of the host communities and become ecologically responsible with them. When oil spills or leaks occur, the hydrocarbons that are released into the atmosphere are not only harmful to humans but also to other living organisms (aquatic animals, plants and land animals). As a result of corporate pollution, many oil-producing towns have difficulty coping with their natural surroundings. Leukemia and birth deformities may result from persistent exposure to the pollutants, as well as dizziness, delayed reflexes and even death. Xylene may cause harm to a growing fetus, the liver, the kidneys, the skin, the eyes and bone marrow of the fetus.

It is impossible to overstate the effect of environmental contamination on the people who live in the affected areas. One might query as to whether multinational firms are doing all that they can to enhance the quality of life in the places in which they operate. Health care facilities, schools, electricity, and job possibilities for indigenous residents of the host community should all be made available to communities in need as an alternative to the contaminated water they now have. Reflecting environmental preservation, social and environmental accounting/reporting issues, intergenerational equality, the planet's resources, and sustainable development (Henderson & Pierson, 2010).

For oil-producing firms, environmental expenses account for a specific proportion of their entire production costs.

These expenses are identified and assessed in the process of environmental accounting. In light of ever-increasing fines and penalties for environmental infractions, ignoring environmental accounting might be harmful to the company's bottom line. In addition to helping regulate and manage environmental costs, the incorporation of environmental costs into the accounting system will gain the reporting entity a positive reputation as stakeholders become more aware of their process dangers.

Although it has only lately been apparent that environmental awareness is essential to a company's existence, more and more corporations are known to be active in environmental events.

Theoretical Review

An investigation of the financial impact of environmental disclosure on Nigerian oil and gas companies is the purpose of this study. There were two hypotheses examined. These theories include the institutional theory and the stakeholder theory. These concepts look at information and transparency between associations.

Legitimacy Theory

Dowling and Pleffer (1975), as referenced in Lawan (2016), described organizational legitimacy as a theory that claims that organizations always strive to function within the boundaries and conventions of their particular societies. The operations of a corporation that adheres to a legitimacy theory viewpoint will be freely reported to the community in which it is operating. According to legitimacy theory, there is an agreement between the corporation and the society that they operate in. An outline of the social contract is given here. It's a metaphor for the expectations people have of how a company should operate. If society feels that an organization has broken its social compact, the organization's existence is challenged. Among the theories tried to explain environmental disclosure, the legitimacy hypothesis is the most popular. If a corporation is subjected to intense social and political criticism over its environmental performance, then it is likely to disclose this information, according to the legitimacy hypothesis. Companies that use the legitimacy theory approach provide environmental data to show that they are functioning in conformity with the society's expectations and values. Deegan (2016) argues that modern society's expectations of businesses go well beyond maximization of shareholder value; they also include consideration for the well-being of employees and the environment. A wide range of stakeholders, including employees, neighbors, and nature, expect companies to share voluntary environmental information.

Stakeholder Theory

Freeman (1984) was the first to propose the Stakeholder Theory, which defines a stakeholder as any group or person that has the ability to influence or be influenced. It is one of several theories that attempt to explain or justify the strategy of organizations. A firm's stakeholders play a major part here, and this is its primary focus. recognizing the dynamic and complex interactions between companies and their stakeholders and the duty and accountability that these ties entail (Gray, 1999). Identification of social interest groups to whom the company may be held responsible and, as a result, to whom an appropriate accounting of its operations is regarded required via stakeholder analysis (Woodward 2001). In the eyes of many, the interests of the company's stakeholders are vital to its long-term success. Friedman and Miles (2006) define the notion as a way of thinking about the organization. There should be a focus on managing stakeholders' interests, needs, and views in order for the company to succeed. Managers must safeguard the interests of stakeholders if the firm is to be successful. On the heels of Friedman and Miles' 2006 findings, Research shows that the long-term success of the company depends on this. It is a term that describes an organization's decision-making process that is not driven solely by the desire to maximize profits for its shareholders, but rather by the need to uphold a brand and values that reflect the unique relationships that have developed between the company and its various stakeholders (Friedman & Miles, 2006). This approach emphasizes the creation of common interests and the active management of the company's environment, relationships, and the establishment of corporate strategies. Managers should establish a framework to respond to the concerns of stakeholders impacted by unprecedented levels of environmental difficulties and change, according to this notion.

Empirical Review

Environmental management accounting for the first time was researched in Nigerian consumer goods enterprises by Okegbe and Ofurum (2019). Third, to assess how much environmental rehabilitation, pollution control, and environmental safety influence the profitability of publicly traded Nigerian retail companies, and to what extent environmental protection influences the returns on assets of publicly traded Nigerian consumer goods companies. Time-series data and ex post facto research approaches were used in this study. Regression analysis in SPSS Version 20 was used to put the stated assumptions to the test. According to the study, environmental restoration, pollution control, and environmental protection expenditures have an influence on the returns on assets of listed Nigerian consumer goods businesses. These findings led to recommendations such as doing environmental assessments on a regular basis to increase sales and revenue for companies while also ensuring that environmental conditions are satisfied, among other things.

Studying environmental responsibility and corporate success was the focus of Ngwakwe's research in 2008. Using solely ROTA as a proxy for financial success, the research disaggregated environmental responsibility into EHS, waste management, and community development and found that environmental responsibility had an impact on financial performance in Nigeria. Sustainable practices are positively linked to company performance, whereas penalties are negatively linked to the activities of' responsible' enterprises, according to this research. The research found that in Nigeria, sustainability has a direct impact on company success.

According to study done by Oti, Effiong and Tiesieh (2012) on environmental expenditures, revealed that environmental accounting has a positive influence on the return on investment of manufacturing businesses in Nigeria.

Investing in environmentally friendly projects has been linked to increased financial returns, as shown by Peter, Sunday, and Tapang (2012).

According to a study by Oba, Fodio and Soje (2012), eighteen (18) environmentally sensitive listed companies in Nigeria were used to examine the benefit of environmental responsibility information disclosure. Environmental disclosure quality and financial success were shown to be linked in a substantial way in research.

Using a sample of Bombay Stock Exchange-listed Indian companies, in 2013, Makori and Jagongo (2013) explored the relationship between environmental accounting and financial performance. The goal of this research is to examine whether environmental accounting correlates with the profitability of a subset of Indian publicly traded companies. This study examined yearly accounts from 14 randomized Bombay Stock Exchange companies. The study made use of several regression models. A negative link between ROCE and EPS and a positive correlation between Net Profit Margin and Dividend per Share is seen in environmental accounting. According to the results of the research, there is a strong case to be made for making environmental reporting mandatory in India, as well as for tax credits for companies that comply with environmental legislation, based on this information.

Studies have looked at how environmental costs affect company performance (Adediran & Alade, 2013). Environmental expenditures have a large negative influence on a firm's Return on Capital Employed and Earnings per Share, according to quantitative information obtained from the yearly reports of fourteen randomly picked firms.

It has been shown that environmental expenditures have a major impact on corporate performance. Through the use of multiple regression analysis, the relationship between company performance and the CDC, WMC, and employee health and safety costs of sustainable business practices was examined (EHSC). Since sustainability may be used as a means of settling corporate disputes, the research found that there was a reduction in fines, penalties, and compensations paid to oil company host communities. Managers and staff in Nigeria's Niger Delta need a conflict-free work environment if oil companies are to establish an effective environmental costing system and, as a result, improve overall corporate performance.

It was researched by Arong (2014) that environmental cost management and profitability in Nigeria's oil company. Managing environmental costs has a significant influence on the profitability of Nigerian oil businesses, according to a CBN study done between 2004 and 2013.

Osisioma *et al.,* (2015) discovered a substantial association between the cost of social responsibility and profitability when they examined the financial performance of selected Nigerian enterprises. The research recommended that Nigerian firms strengthen their commitment to social responsibility by donating a considerable amount of their earnings to social responsibility initiatives.

On a number of Nigerian Stock Exchange-listed companies, Omodero (2016) conducted research to see how environmental and socially responsible accounting affects financial performance. According to the analysis, the CSR spending of oil firms cannot be compared to the harmful effect their activities have had on their host communities over the previous five years.

Agbiogwu, Ihendinihu and Okafor (2016) investigated the performance of Nigerian manufacturing enterprises by looking at the influence of environmental and social costs. Environmental and social costs had a considerable effect on net profit margins, profits per share, and returns on capital invested in 2014 data from ten randomly chosen firms, according to the study's findings.

An investigation on the impact of environmental protection costs on Nigerian brewery product price was undertaken by Okoye and Adeniyi (2017). According to the research, the cost of environmental rules has a negative impact on the price of a certain product.

Research Gap

Academic and non-academic researchers alike have been interested in environmental accounting reporting since their start. Only a few empirical research have focused on developing nations like Nigeria, while most studies have focused on developed countries like the United States.

On the topic of environmental accounting reporting and company performance, there has been a mixed response from the research community. Negative correlations have been observed in certain research, although no canonical correlations and a ten-year timeframe were included in any of them. Environmental accounting reporting and corporate performance need to be studied in developing nations and utilizing a variety of indicators of business performance, particularly in Nigeria, to better understand the link. In order to close these gaps, this research is being conducted.

METHODOLOGY

The study adopted an ex post facto research design. The population of this research consists of selected manufacturing firms that are registered on the Nigerian Stock Exchange as at November 2023: these companies are shown below. Nestle Nigeria Plc, Cadbury Nigeria Plc, Wemco Nigeria Plc, PZ Nigeria Plc, Unilever Nigeria Plc, Emzor Pharmaceutical Plc, Nigeria Bottling Company Plc, Glaxosmithkline Nigeria Plc, Nigerian Breweries Plc, Consolidated Breweries Plc. We used a criterion-referenced sampling technique to identify organizations having comprehensive financial statements for the years 2010–2023. Thus, the research sampled ten businesses. The research analyzed secondary data derived from publicly available business financial filings. Canonical Correlation Analysis was used to evaluate the hypotheses (CCA). Adopting the CCA helps us to identify the cluster of environmental accounting metrics that most closely corresponds with performance indicators. The underlying assumption is that the proxy for performance is based on a constant set of many variables (Salmi, Virtanen & Yli-Olli, 1992).

Model Specification

The following Canonical correlational model examines the impact of the independent variable (Environmental Accounting Reporting, EVA) measured by Waste Management Cost (WMC), Community Development Cost (CDC) and Employee Health Safety Cost (EHSC) on the dependent variable (Performance of Manufacturing Firms, PMF) measured as Return on Equity(ROE), Return on Asset (ROA), Net Profit (NP)

ROE=f(WMC) 1

Table 1: Variable Description

S/N	Variables Name	Types	Labels	Measurement
1.	Return on Asset	Dependent Variable	ROA	Profit After Tax/Total Assets
2.	Return on Equity	Dependent Variable	ROE	Profit After Tax/Equity
3.	Net Profit Margin	Dependent Variable	NMP	Net Profit / Turn x ${}^{100}/_{1}$
4.	Waste Management Cost	Independent Variable	WMC	Cost of Managing Waste
5.	Community Development Cost	Independent Variable	CDC	Cost of carrying out project in host communities
6.	Employed Health and Safety Cost	Independent Variable	EHSC	Cost of sustaining health and Safety of workers

Source: Field Survey, 2023

ROA = f(CDC) 2
NPM = f(EHSC) 3
Representing the above in matrix form, Y = βX1

Table 2: Canonical Correlations Analysis

	Correlation	Eigenvalue	Wilks Statistic	F	Num D.F	Denom D.F	Sig.
1	.915	5.120	.158	1.555	9.000	12.319	.0000
2.	.170	.030	.965	.054	4.000	12.000	.0000
3.	.081	.007	.994	.046	1.000	7.000	.0000

Source: SPSS Output, 2023

The CCA was used to test the hypotheses, and the results are shown in Table 2. As demonstrated in the table, the results of the three (3) significance tests of the canonical correlations between the variables provide light on the interconnected nature of the environmental accounting notions and the chosen performance measures addressed in this work. As seen, the Fcal values for the different tests (Wilks'lambda) were around 1.555, 0.054, and 0.046 with probability values of 0.0000 for Wilks'lambda.

Discussion of Findings

The finding in respect of hypothesis one is in agreement with expectation, as Waste Management Cost (WMC), disclosure exhibited a significant positive relationship with return on equity. The result showed that the P-values (0.0000) with F-statistic (1.555) were lower than the 5% significant level. Hence, the result supported the rejection of the null hypothesis as against the alternate hypothesis. The implication is that an increase in Waste Management Cost (WMC), will result to an increase in the return on equity. The result is in conformity with the studies conducted by Peter, Sunday and Topang (2012); Makori and Janongo (2013); and Ngwakwe (2008) where the return on equity and environmental accounting disclosures has a considerable positive correlation.

Hypothesis two, the findings showed a significant negative relationship between return on asset and community development cost, (CDC) of listed firms in the manufacturing sector in Nigeria. The result revealed that the P-values (0.000) with F-statistic (0.054) were lower than the 5% significant level. Thus, the result supported the acceptance of the alternate hypothesis as against the null hypothesis. This indicates that a reduction in community development cost, (CDC) leads to an increase in return on asset of the listed firms in the manufacturing sector in Nigeria. The result is consistent with the work of Makori and Janongo (2013), Oba, Fodio and Soje (2012).

The findings from hypothesis three showed a significant positive relationship between net profit margin and Employee Health Safety Cost (EHSC) in listed manufacturing sector. The result showed that the P-values (0.0000) with T-statistic (0.046) were less than the 5% significant level. Thus, the result supported the acceptance of the alternate hypothesis as against the null hypothesis. This indicates that the higher net profit margin the higher Employee Health Safety Cost (EHSC). The result is in agreement with the work of Makori and Janongo (2013); Agbiogwu, Ihenclihu and Okafor (2016); Arong, Ezugwu and Egbere (2014).

CONCLUSION

This study has revealed that Environmental Accounting Reporting has a positive relationship with performance of manufacturing firms listed on NSE. Therefore, manufacturing firms should manage their impact on the environment and engage in public their impacts and activities on the environment.

The firms should therefore use environmental accounting practices as part of their strategy for corporate performance.

Recommendations

Based on the findings of this study the following recommendations are made:

i. The government should make environmental accounting mandatory in yearly reports, since the majority of companies do not report on their environmental actions.
ii. Government agencies should provide tax credits to businesses that adhere to the country's environmental rules, therefore encouraging environmental reporting.
iii. Organizations should guarantee that they adhere to national environmental rules, since this will significantly improve their performance.

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