

IMPACT OF ENVIRONMENTAL DISCLOSURE ON THE PERFORMANCE OF LISTED BREWERY COMPANIES IN NIGERIA

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Abstract: This study assessed the impact of environmental disclosure on the performance of brewery companies in Nigeria, using employee health and safety disclosure, waste management disclosure and environmental protection disclosure as the independent variables and cash value added as the dependent variable. Ex Post Facto research design was employed for the study. A sample of 4 Breweries companies in Nigeria was used and data were extracted from annual reports and accounts of the listed Breweries companies in Nigeria from 2013 to 2022. Descriptive statistics was used to analyze the data and E-view 9.0 was employed to test the hypotheses. Specifically, the result shows that employee health and safety disclosure has a significant effect on cash value added while waste management disclosure and environmental protection disclosure were not statistically significant on performance of the brewing companies. However, the overall result indicated that Prob(F-statistic) is 0.04, showing that the measure of environmental disclosure has significant effect on financial performance (cash value added) of Breweries companies in Nigeria. Based on the findings of this study, the researcher recommended among others that management of the brewery companies should develop a well-articulated employee health and safety cost system to guarantee a conflict-free corporate atmosphere needed by managers and workers for maximum productivity.

Keywords: Environmental Protection, Health and Safety Disclosure, waste management, Cash value added, Brewery Companies

Introduction

Global warming arising out of industrial waste mismanagement became quite alarming around the globe for the past few decades. China became the top carbon emitter among the five largest emitters including the United State,

India, Russia, and Japan, right after the world trade participation with a rapid increase in manufacturing accompanying a simultaneous swift spike of carbon emissions and thus, the sustainable development objective of the organization is hampered (Yamano & Guilhoto, 2020; Wu *et al.*, 2018). To cope with these contemporary challenges present for corporations, pretty much equally in emerging and developed economies needed to shift their focus toward induction of sustainable practices.

Business activities have significant impacts on the environment, leading to pressing issues such as climate change, global warming, and water pollution. These environmental concerns have raised public awareness, especially in host communities, prompting companies to demonstrate their commitment to environmental policies and disclose related information in their annual and sustainability reports. This disclosure is of particular importance in developing countries like Nigeria. Environmental problems have become a global concern affecting countries and businesses alike. Often, these problems arise from firms' productive activities, resulting in adverse consequences for the natural environment and society at large. Profit maximization, insatiable demands, rapid technological advancements, and indiscriminate consumption of natural resources contribute to the environmental problems caused by companies today (Hasan, 2012). Corporate governance has historically prioritized profit maximization with little regard for environmental costs and impact (Salvioni & Bosetti 2014).

Many government enactments, laws and regulations on environmental protection have been made in several nations of the world. Chairina and Bambang (2023) reported that the United States of America, Canada, Norway, the United Kingdom and the Netherlands have led in the pursuit of degradation and pollution prevention, control and the need for environmental safety. Besides, some of the developing countries like Nigeria, Zimbabwe, Namibia, Philippines and Indonesia have led in championing policies to address need for accounting and accountability for environmental costs management. Various laws and regulations are awakening to strengthen environmental protection such as the environmental impact assessment act, 1992 and the department of petroleum resources (DPR), environmental guidelines and standards for the petroleum industry in Nigeria. Environmental disclosure has been expanded to account for product design for sustainability, recycling and disassembly; process design to reduce environmental impact of operations; worker training; research and development. It provides a common framework for organizations to identify and account for their past, present and future environmental cost to support management decision making, control and public disclosure (Moodaley & Telukdarie, 2023). Therefore, host communities, government authority, investors, and other stakeholders should give an utmost importance to the social and environmental management provided by firms. Bhaskaran (2023) describe environmental disclosure as the reporting of the actions undertaken by the economic entity and by third parties on behalf of an economic entity with the purpose of preventing, reducing or repairing the environmental damages resulted from operational activities.

Notably, the environmental hazards from oil exploration in some regions of Nigeria have even threatened life expectancy. The Niger Delta, for instance, has lower life expectancy for both men and women compared to other parts of the country (CIA World fact book 2011). To thrive in the current business landscape, corporations must

embrace a broader sense of responsibility, acknowledging the interconnectedness of economic, social, and environmental goals (Eze, Nweze & Enekwe, 2016). Consequently, companies need to disclose social and environmental information alongside financial data to cater to the diverse needs of stakeholders. Environmental disclosures serve both internal purposes, aiding management decisions on overhead, capital budgeting, and pricing, as well as external purposes, providing information of interest to the government, public, and financial community (Kellen, 2003). The comprehensive measurement and reporting of such information can enhance an organization's ability to forecast future performance, leading to increased profitability and sustainability (Huang & Kung, 2003).

Some of the disclosure reporting include: environmental maintenance disclosure, environmental treatment disclosure, environmental pollution compensation disclosure, environmental development disclosure, waste storage and disposal, soil protection, underground and surface water protection, clean air and climate protection, noise reduction, biodiversity and landscape protection. Financial performance is a general measure of how a firm uses its resources to generate profits and can be measured using accounting measures of profitability and liquidity. In a broader sense, financial performance refers to a degree to which financial objectives are met; it is process of measuring the result of a firm's policies and operations in financial terms (Kenton, 2022).

Considering the growing environmental challenges and the evolving economic, social, and technological landscape, the relevance of environmental disclosures has become more prominent. In light of these developments, this study aims to examine the impact of environmental disclosure on the performance of brewery companies in Nigeria. Specifically, the study sought to:

1. Ascertain the effect of employee health and safety disclosure on cash value added of listed brewery companies in Nigeria.
2. Determine the effect of waste management disclosure on cash value added of listed brewery companies in Nigeria.
3. Investigate the effect of environmental protection disclosure on cash value added of listed brewery companies in Nigeria.

1.3 Research Questions

1. How does employee health and safety disclosure affect cash value added of listed brewery companies in Nigeria?
2. What is the relationship between waste management disclosure and cash value added of listed brewery companies in Nigeria?
3. What is the effect of environmental protection disclosure on cash value added of listed brewery companies in Nigeria?

1.4 Research Hypotheses

Ho₁: Employee health and safety disclosure has no significant effect on cash value added of listed brewery companies in Nigeria.

Ho₂: Waste management disclosure has no significant effects on cash value added of listed brewery companies in Nigeria.

Ho₃: Environmental protection disclosure has no significant effect on cash value added of listed brewery companies in Nigeria.

2. REVIEW OF RELATED LITERATURE

Conceptual Review

Environmental Disclosure

According to Crowther and Ortiz-Martinez (2016), the primary purpose of environmental disclosure is to examine and incorporate in the firm annual reports issues that bother on environmental hazard that are not taken cognizance of in traditional or conventional accounting function that stakeholders can use for decision making. Disclosure of corporate environmental activities stressed the necessity for a close monitoring of natural resources and the corporation's harmful effect on the society it operate. Environmental effects caused by activities of firms especially those in the manufacturing, oil and gas and banking include pollutions like noise, waste, hazardous emission, spillages, degradation (Parmigiani, Klassen & Russo 2015). In recent years, then, a belief has arisen in businesses and in society that reporting has a wider role than that expressed in the traditional 'stockholder/shareholder' perspective.

Importantly, one need not hold to the 'deep green' end of the argument to hold these views: there are strategic reasons why a wider view of accountability may be held and, accordingly, why initiatives such as environmental reporting may be supported; environmental consequences of an organization's inputs and outputs. Inputs include the measurement of key environmental resources such as energy, water, inventories (especially if any of these are scarce or threatened), land use, etc. Outputs include the efficiency of internal processes (possibly including a 'mass balance' or 'yield' calculation) and the impact of outputs. These might include the proportion of product recyclability, tonnes of carbon or other gases produced by company activities, any waste or pollution (Lint, 2009). Disclosure is the process of making facts or information known to the public. Proper disclosure by corporations is the act of making its customers, investors, and any people involved in doing business with the company aware of pertinent information (Potters, 2021). Disclosures are at the center of the public's crisis of confidence when it comes to the corporate world (Wayman, 2021). Environmental disclosure is a form of corporate responsibility to the society as a result of activities which emerging a negative impact on the environment. Meanwhile, environmental disclosure is as the accountability of fulfilling the information needs of the company for investors, shareholders, customers, and other parties (Solikhah & Ukhti, 2022). Mandatory Environmental Disclosure is disclosure about a company's environmental activities that is required by law while voluntary environmental reporting involves the disclosure of a company's environmental information on a voluntary basis.

Employee Health and Safety Disclosure

Employee health and safety is generally defined as a multidimensional construct concerned with the anticipation, recognition, evaluation and control of hazards arising in or from the workplace that could impair the health and

well-being of workers, taking also into account possible impacts on the surrounding communities and the environment (Jo & Kwon, 2021). It is a continuously evolving field shaped by socioeconomic, political and technological changes: competitive industry pressures, globalization and liberalization of world trade, demographic fluctuations and population movements, disruptive (technological) innovations, developments in transport and communication, regulatory changes, shifting employment patterns, transitions in the size as well as the structure and life cycle of enterprises (Bamahros, *et al* 2022). Reporting on employee health and safety issues reflects a critical point of corporate sustainability disclosure against a turbulent environment that generates new forms of employment hazards, exposures, risks and opportunities (Westman, McKenzie & Burch, 2020). Employee health and safety accounting and reporting pertains to the collection, processing and disclosure of related information with the aim of facilitating organizational leadership, managerial effectiveness and empowering stakeholder decision-making (Hu & Kee, 2022).

Waste Management Disclosure

Waste management is the collection, transport, treatment and disposal of waste, (b) control, monitoring and regulation of the production, collection, transport, treatment and disposal of waste, and. (c) prevention of waste production through in - process modifications, reuse and recycling (Hu & Kee, 2022). *Waste management* involves the processes of *waste collection*, transportation, processing, as well as waste recycling or disposal (Liu & Zhang, 2017).

Waste management or waste disposal includes the processes and actions required to manage waste from its inception to its final disposal. This includes the collection, transport, treatment and disposal of waste, together with monitoring and regulation of the waste management process and waste-related laws, technologies, economic mechanisms (Xie, Nozawa, Yagi, Fujii & Managi, 2019).

Waste management is intended to reduce adverse effects of waste on human health, the environment, planetary resources and aesthetics. The aim of waste management is to reduce the dangerous effects of such waste on the environment and human health. A big part of waste management deals with municipal solid waste, which is created by industrial, commercial, and household activity. Waste management is an important element of environmental protection. Its purpose is to provide hygienic, efficient and economic solid waste storage, collection, transportation and treatment or disposal of waste without polluting the atmosphere, soil or water system (Molla, *et al* 2021).

Environmental Protection Disclosure

Environmental protection refers to any activity to maintain or restore the quality of environmental media through preventing the emission of pollutants or reducing the presence of polluting substances in environmental media (Yuan & Pan, 2022). Environmental protection is the practice of protecting the natural environment by individuals, organizations and governments. Its objectives are to conserve natural resources and the existing natural environment and, where possible, to repair damage and reverse trends. Environmental protection focuses on solving problems arising from the interaction between humans and environmental systems and includes issues

related to conservation, pollution, loss of biodiversity, land degradation or environmental policy (Hategan, Pitorac & Milu, 2021). The key aim of environmental protection is to prevent the degradation of the natural environment which is affected by increasing population, technology and overconsumption, all of which have created a negative impact on the environment and continue to put humans and animals at risk. Another element of environmental protection is resource management – the way humans interact with the natural world in order to protect and preserve natural ecosystems. This may involve considering ethical, economic and ecological variables in order to limit environmental degradation (Belenes, Bogdan & Popa, 2021).

Environmental Protection includes programs that are aimed at reducing risks to the environment from contaminants such as hazardous materials and wastes, fuels, and oils. These programs address pollution prevention measures and regulatory compliance by providing procedures for safely working with these materials, inspecting the storage vessels and locations, and designating preventative maintenance procedures. Also included are environmental emergency plans, which provide the appropriate actions to be taken in the event of a spill or release. Environmental conservation enables nature to get on with the job of keeping humans and the planet healthy (Tunio, Jamali & Mirani, 2021; Oncioiu, *et al*, 2020).

Financial Performance

Kenton (2018) defined financial performance as a subjective measure of how well a firm can use asset from its primary mode of business and generate revenue. This term is also used as a general measure of firm's financial health over a period of time and can be used for comparison across industries. Kennedy and Macmillan (2017) viewed financial performance as an evaluation of profitability and financial strength of any business concern. Financial performance is measuring the result of a firm policies and operation in monetary terms, these results are reflected in the firm's return on investment, asset among others (Okafor, 2018).

Financial performance refers to the evaluation of an organization's ability to generate revenue using its core assets and operations, providing insights into its overall health and true financial status (Ezechukwu, 2023). It represents the company's current level of performance and can be measured through asset utilization or overall profits and losses. Zeng *et al.* (2012) defines financial performance as the extent to which financial goals are achieved, assessing the company's financial health over a specific period. This evaluation is crucial in providing shareholders with information about management teams' stewardship. The measurement of financial performance includes analyzing organization profitability, market value, and growth prospects. Accounting-based measures analyze the relationship between social performance indicators (e.g., reputation, social and environmental disclosure) and the company's financial performance based on historical audited financial statements (Iliemena & Okolocha, 2019). In this study cash value added was used as a measure of financial performance.

Cash Value Added

Cash value added (CVA) is a measure of a company's ability to generate cash flow above and beyond the required return to its investors. A high CVA indicates a company's ability to produce liquid profits from one financial period to another (Bloomenthal, 2022). Cash value added is a measure of company performance that looks at how

much money a company generates through its operations. Generally, a high cash value added figure is beneficial for both companies and investors, as it demonstrates a company's ability to generate cash from one financial period to another, creating solid liquid profits (Kvilhaug, 2022). Cash Value Added (CVA) helps to measure the amount of cash a company generates through its operations. CVA gives investors an idea of the company's ability to generate cash from one financial period to another. A value of more than 1.0 indicates that a company is profitable, while a value below 1.0 suggests it is failing to return a profit (Chen, 2022).

$CVA = \text{Operational Cash Flow} - \text{Opportunity Cost of capital (Total assets} \times \text{WACC)}$.

Theoretical Framework

Legitimacy Theory

The concept of legitimacy is important in analyzing the relationships between companies and their environment. Parsons (2000) defines legitimacy as “the appraisal of action in terms of shared or common values in the context of the involvement of the action in the social society” This book contains a collection of ten essays. It provides a theory of formal organization. Central constructs of legitimacy research are provided. For example, it distinguishes “authority” from “legitimation” and “authorization. Maurer (2012) points out that legitimacy is the process whereby an organisation justifies to a peer or super ordinate system its right to exist; that is to continue, import, transform, and export energy material or information.

Legitimacy theory is derived from the concept of organizational legitimacy, which has been defined as “a condition or status, which exists when an entity's value system is congruent with the value system of the large social system of which the entity is a part.” When a disparity, actual or potential, exists between the two value systems, there is a threat to the entity's legitimacy” (Dowling & Pfeffer, 2015). It was pointed out that legitimacy is conceived as congruence between institutional actions and social values, and legitimization as actions that institutions take either to signal value congruency or to change social value.

In summary, Legitimacy Theory underpins this study because it argues that organizations seek to ensure that they operate within the bounds and norms of society, although the stakeholder theory, legitimacy theory, the slack resources theory and the theory of virtuous cycle theories have been reviewed. These theories explain the phenomenon of voluntary social and environmental disclosures in corporate communication. Consistent with the notion of legitimacy theory, companies seek to gain, maintain, or repair their legitimacy by using social and environmental reporting. Legitimacy theory provides useful insights for corporate social and environmental disclosures, (Gehan& Naser, 2015).

Empirical Review

Enekwe, Ugwudioha and Uyagu (2023) examined the effect of environmental costs on the financial performance of listed oil and gas companies in Nigeria. The ex-post facto research design was employed for the collection of financial statements of four listed oil and gas companies in Nigeria for a ten-year period from 2010 to 2019. The purposive sampling technique was used for the study. The Panel Ordinary Least Square of the multiple regression model was conducted using the E-views version 9.0 statistical software package. The findings revealed that staff

development costs have a negative but insignificant effect on listed Nigerian oil and gas companies' return on assets, while community development costs and employee health and safety costs have a positive but insignificant effect. This implies that the amounts of these costs incurred by the studied companies are too small to have an impact on their performance metrics. However, studies are based on the quantity of information provided by a small number of companies, and as a result, these studies may be influenced by the costs that these companies incur as well as the extent to which they report those costs. The study is limited to only the oil and gas sector and some specific environmental cost variables. The utilization of environmental cost variables and the use of financial performance.

Okoye and Erinugha (2023) ascertained the effect of environmental disclosure on the financial performance of listed Oil and Gas companies in Nigeria for a period of eleven (11) years spanning from 2011 to 2021. Specifically, this study determined the effect of employee health and safety disclosure, waste management disclosure, and environmental protection disclosure on cash value added. This study employed Panel data which were extracted from audited annual reports and accounts of eleven (11) listed Oil and Gas companies for the periods 2011-2021. *Ex-Post Facto* research design was employed. Descriptive statistics was used to analyze the data and inferential statistics was employed using Pearson correlation coefficient and Panel least square regression analysis to test the hypotheses of the study. The results showed that there is a significant and positive relationship between employee health and safety disclosure, waste management disclosure, environmental protection disclosure and cash value added.

Lawrence and Bernard (2023) carried out research on the moderated regression analysis approach to environmental costs and financial performance of Nigerian industrial goods firms for the period of eleven (11) years from 2011 to 2020, both years inclusive. Environmental costs are independent variables proxied by waste management costs (WMC) and community development costs (CDC) with the moderated variable of firm size (FS), while financial performance is a dependent variable proxied by net profit margin (NPM). The *ex-post facto* research design and panel data were used for the data collection. The panel estimates of generalized least squares and unit root tests were analyzed using e-views statistical software. The regression result indicates that waste management costs (WMC) and community development costs (CDC) have a significant positive effect on net profit margin (NPM), while the moderated variable of firm size on both waste management costs (WMC) and community development costs (CDC) has a significant negative effect on the net profit margin (NPM) of the selected industrial goods firms in Nigeria.

Ezechukwu (2023) investigated the effect of environmental disclosures and firm performance of selected consumer goods firms in Nigeria from (2011-2020). The study has two research questions and two hypotheses. *Ex-post facto* research design was employed in the study. Specifically, the study investigated the effect of local content disclosures on returns on assets of consumer goods manufacturing companies in Nigeria; the study also examined the impact of emissions disclosure on returns on assets of consumer goods manufacturing companies in Nigeria. The population of the study included all consumer goods manufacturing firms quoted on the Nigerian

Exchange Group (NXG) (NSE) as at 31st December 2021 with a sample size of Sixteen (16) consumer goods manufacturing companies selected from the population sector. The study relied on secondary sources of data which was obtained from Annual reports of sampled companies as provided by individual companies and Nigerian Exchange Group (NXG) website. The Fixed effect panel least square regression analysis was employed in validating the hypotheses. The investigation discovered a significant effect of local content disclosures on returns on assets of consumer goods manufacturing companies in Nigeria; the study also found that emission disclosure has no significant impact on returns on assets of consumer goods manufacturing companies in Nigeria. Fizzah, Fangjun, Jiyuan and Muhammad (2023) focused on the impact of environmental disclosure on financial performance. Moreover, the current study aims to explore the mediating impact of green innovation and provide novel evidence regarding this relationship using stakeholder and signalling theory. This study used a sample dataset comprising Chinese firms listed on Shanghai and Shenzhen stock exchange for the period of 2005–2016. In our measurement model, green innovation is the partial mediator between the positive relationship of environmental disclosure and firm performance. Empirical results show that environmental disclosure affects firm financial performance directly and positively influences it through green innovation in Chinese firms. The study suggests that Chinese firms have implications for improved performance by increasing environmental disclosure and green practices.

Oraka (2021) studied the environmental costs and financial performance of Nigerian oil and gas businesses. Environmental remediation expenses and compliance costs were used to measure the independent variable, environmental costs, while Tobin's Q was used to assess the dependent variable, financial performance. The financial statements of eleven (11) businesses were gathered for a period of twelve (12) years, from 2008 to 2019, both years included, using the ex-post facto research design. Statistical software called E-Views 9.0 was used to implement the regression analysis. The outcome demonstrates that environmental remediation costs and compliance costs have a considerable impact on the Tobin's Q of oil and gas businesses in Nigeria.

Nwanwu (2022) evaluated the environmental management expenses and financial performance of Nigerian oil and gas firms for the period of nine (9) years from 2011 to 2018, both years inclusive. The explanatory research design of secondary data was used for the study. The linear regression model and e-views statistical software were also adopted for the study. The environmental management cost is an independent variable proxied by pollution cost (PC), while financial performance is a dependent variable proxied by net profit (NEP). The regression result indicated that pollution costs have a positive and significant impact on the net profit of Nigerian oil and gas firms.

Ekpose and Enidiok (2021) researched the influence of environmental costs on the financial performance of quoted Nigerian oil and gas firms for the period of eleven (11) years from 2009 to 2019, both years inclusive. The ex post facto research design, panel data, purposive sampling technique, and linear regression model were adopted for the study. The environmental cost is an independent variable measured by health-related costs (HRC), infrastructural development costs (IDC), and education program costs (EPC), while financial performance is a

dependent variable measured by profit margin (PM). The SPSS version 20 statistical software was used for the analysis. The findings show that health-related costs (HRC) have a positive and significant influence on profit margin (PM), while infrastructural development costs (IDC) and education program costs (EPC) have a positive but insignificant influence on the profit margin (PM) of quoted Nigerian oil and gas firms.

Chiamogu and Okoye (2020) adopted the ex-post facto research design for the impact of environmental costs on the financial performance of Nigerian oil and gas companies for an eleven (11) year period from 2008 to 2018, both years inclusive. The study used the purposive sampling technique for the selection of sample size and E-views version 9.0 statistic software for the running of the panel regression analysis. The environmental cost is an independent variable measured by community development cost (CDC) and environmental remediation cost (ERC), with two control variables as firm size (FSZ) and leverage (LEV), while financial performance is a dependent variable measured by Tobin's Q (TQ). The regression analysis results revealed that community development costs (CDC) and environmental remediation costs (ERC) have a positive and significant effect on Tobin's Q of listed oil and gas companies in Nigeria.

Nwaimo (2020) looked into how quoted enterprises' performance was impacted by environmental costs in Sub-Saharan Africa (2007–2016). As substitutes for environmental costs (an independent variable), the study included employee health and safety, waste management, and community development costs. Return on capital employed, earnings per share, and return on equity were used as substitutes for performance (dependent variables). Industrial enterprises on the stock exchanges in South Africa, Nigeria, Ghana, and Tanzania provided the data for this study. From 2007 through 2016, inclusive, the researcher used an ex-post facto study approach, random sampling, and quantitative secondary data. The Granger causality analysis for this study was conducted using panel data analysis and ordinary least squares (OLS) regression. The results indicate that employee health and safety, waste management, and community development expenses have no appreciable impact on a company's return on equity, earnings per share, or return on capital employed in Nigeria or South Africa, but they do in Tanzania. In Ghana, however, these costs have a sizable impact on these metrics.

Okezie, Ibe, and Kanu (2019) examined the financial performance and environmental costs of Nigerian listed companies. The study divided financial performance, the dependent variable, into independent variables such as environmental costs and dependent variables such as earnings per share, dividend per share, net profit margin, and return on capital used. Data collection took place over a period of four (4) years, inclusive of the years 2014 and 2017, using the ex-post facto study approach. For the analysis, the multiple regression model was used. The findings show that there is very little correlation between environmental costs and the financial success of listed companies in Nigeria.

Osazefua (2019) investigated the impact of operational efficiency on the financial sustainability of listed manufacturing companies in Nigeria. A secondary panel dataset ranging from 2009 to 2016 for 16 listed manufacturing companies was obtained from the Bloomberg portal and analyzed using Ordinary Least Square method. The finding revealed that in relation to ROA, operating expenses and asset turnover had negative and

positive significant relationship respectively. Employees' growth, account receivables, turnover, and inventory turnover was found to be insignificant. In relation to Tobin's Q, both inventory and asset turnover had a positive significant relationship. Operating expense had a negative significant relationship.

Nguyen and Tran (2019) assessed the relationship between disclosure levels of environmental accounting information and financial performance. Data were collected from the firms listed in Vietnam Stock Exchange from 2013 to 2017, including the firms disclosed and the ones did not disclose the environmental accounting information. The study used two regression models to investigate the relationship between environmental accounting information and return on assets. The results indicated that there was a close relationship between disclosure level of environmental accounting information and financial performance. In addition, there was a difference in terms of financial performance between the firms that had not disclosed environmental accounting information and the ones that disclosed the environmental accounting information. Conclusively, based on the quantitative and qualitative research methodology, the team assessed the impact of the level of disclosure of environmental accounting information on the financial performance of the business. The results indicate that the level of disclosure of environmental accounting information affects the financial performance of businesses both now and in the future. At the same time, the study also found the relative difference in financial performance between two groups of enterprises disclosing environmental accounting information and not disclosing environmental accounting information. However, it was recommended that the Environmental Regulatory of Vietnam needs to raise awareness of corporate environmental responsibility and the benefits of disclosing detailed environmental accounting information to the financial performance of the business.

Tafadzwa and Fortune (2019), examined the relationship between corporate sustainability disclosure and return on investment. The sample of the study consisted of ten Johannesburg Stock Exchange (JSE)-listed mining companies, and the data was extracted from sustainability reports for a period of five years from 2010 to 2014. In this regard, data collection was undertaken by the adoption of a content analysis approach. A multi-regression analysis was used to analyze the relationship between environmental disclosure and return on investment. The same statistical mechanism was employed to determine the association involving social disclosure and return on investment. Results showed that there is a negative relationship between environmental disclosure and return on investment. On the other hand, the research revealed that there is also a positive association between social disclosure and return on investment. In conclusion, this implied that an increase in corporate reporting of social issues results in heightened financial performance through an increase in return on investment. The study recommended the adoption of corporate social disclosure as it would encourage firms to be socially responsible, while also generating financial benefits.

Falope, Offor and Ofurum (2019) examined Environmental Cost Disclosure and Corporate Performance of Quoted Construction Firms in Nigeria *Ex-post facto* ROA Environmental pollution control cost Environmental protection cost Environmental cost resource recycling. The findings showed that environmental pollution

prevention cost, environmental protection cost and environmental recycling disclosure have effects on return on assets of quoted construction firms in Nigeria.

Ikpor, IEnuma, and Okezie, (2019) studied Environmental Accounting and Sustainable Financial Performance: Evidence from the Nigerian Petroleum Industry Ex-post facto Profitability EOPEX EOPEX EXAPEX The finding suggested that environmental operating costs and environmental prevention costs have significant and negative effect on the performance of petroleum firms in Nigeria. However, we found important differences in the correlates of firm's capital expenditure on sustainable financial performance. The findings of this study therefore have important implications for policy.

Akparhuere (2019) examined the effectiveness of environment reporting in annual reports using a comparative analysis of reporting practices of listed firms in Nigeria. A total of 84 respondents were drawn from the population. Both primary and secondary data were used in the study. Primary Data were collected using questionnaires drawn using the Likert's Scale with five points ranging from very great extent to no extent, while secondary data were sourced from already published materials. Hypotheses were formulated and data were analyzed using SPSS Software and other Descriptive statistical tools such as; percentages and tables. The result of the study showed that accounting practices had a significant relationship with performance of Oil and Gas Companies, particularly, the Return on Assets and Return on Capital Employed.

Gap in Literature

Majority of the previous studies were mainly of Oil and Gas industries while few of other studies used some manufacturing firms in Nigeria and to the best of the researcher's knowledge, there is a limited study on Nigerian Brewery companies, besides, most of the studies employed financial performance proxies like; return on assets, return on equity, profit margin etc. except Okoye and Erinugha (2023) who employed cash value added as financial performance variable.

The study thus, fills the gap by developed links between environmental disclosure and financial performance (cash value added) of Brewery companies which prior studies were not included or employed in their studies.

Methodology

This study adopts the *ex-post facto* research design. The design is suitable because the researcher is interested in establishing the causal relationship among the dependent and independent variables. In *ex-post facto* studies investigation starts after the fact has occurred without interference from the researcher, i.e., events that have already taken place in the past (Salkind, 2010). The population of the study comprised of listed brewing companies in Nigeria. Given the above, the study population is made up of four brewery companies in Nigeria. This study adopted consensus sampling to use all the four Brewery Companies in Nigeria, namely; Champion Breweries, International Breweries Plc, Guinness Nig Plc, and Nigerian Brewery Plc. The data for this study obtained from secondary sources. Secondary data is information or data that has previously been collected and recorded for other purposes. The data were extracted from the annual reports and accounts of the brewing

companies in Nigeria. The statement of financial position and comprehensive incomes provided data used in computing the selected ratios.

Data were sourced during the period 2013-2022. The choice of this period is the year of mandatory adoption of IFRS in 2012, hence, the decision to select 2013 year which is based on the most recent year after the adoption as evidenced in Nigeria.

Model Specification

This study adapted the model of Ezechukwu (2023), the model equation can be written econometrically as presented in equations 2 as follows:

$$ROA_{it} = \eta_1 LCD_{it} + \eta_2 ED_{it} + \eta_3 FSIZE_{it} + \eta_4 FLEV_{it} + \Sigma t \dots \dots \dots 1$$

Where:

ROA = Returns on assets

LCD = Local content disclosure

ED = Emission disclosure

FSIZE = Firm size

FLEV = Firm leverage

t = Time dimension of the variables

η_1 -4 = Coefficients to be estimated or the Coefficients of slope parameters.

Where:

The general econometric model for the study was specified thus;

$$CVA_{it} = \alpha + \beta_1 EHS_{it} + \beta_2 WMG_{it} + \beta_3 WPR_{it} + \beta_4 LEV_{it} + \varepsilon_{it} \dots \dots \dots 2$$

Where;

CVA_{it} = Cash value added

EHS_{it} = Employee health and safety disclosure

WMG_{it} = Waste management disclosure

WPR_{it} = Environmental protection disclosure

LEV_{it} = Firm leverage.

α = constant.

β_1 to β_3 = the coefficient of the parameter estimate.

ε = the error term or residual.

i = ith firm for cross-section

t = time period

3.6 Operationalization of the Variables

Table 3.1: Operationalization of Variables

Variables	Notation	Measurements	Sources (used by)
<i>Dependent variable:</i>			
Cash value added	CV A	This measure of a company's ability to generate cash flow above and beyond the required return to its investors. CVA = Operational Cash Flow – opportunity cost of capital.	Okafor, (2018); Chen, (2022);
<i>Independent Variables</i>			
Employee health and safety disclosure	EHS	It involves multidimensional construct concerned with the anticipation, and control of hazards arising in or from the workplace that could impair the health and well-being of workers, ‘1’ if + and ‘0’ if otherwise.	Jo & Kwon, (2021); (Hu & Kee, 2022).
Waste management disclosure	WM D	The company’s reports on the collection, treatment and disposal of waste, and. (c) prevention of waste production through in - process modifications, reuse and recycling, ‘1’ if + and ‘0’ if otherwise.	Liu & Zhang, (2017); Xie, Nozawa, Yagi, Fujii & Managi, (2019).
Environmental protection disclosure	EPR	The company’s activity to maintain or restore the quality of environmental media through preventing the emission of pollutants or reducing the presence of polluting substances in environmental media were reported ‘1’ if and ‘0’ if otherwise.	Yuan & Pan, (2022); Belenes, Bogdan & Popa, (2021).
<i>Control Variable</i>			
Firm Leverage	LEV	The ratio of debt to equity as at the year-end (DEBT/EQUITY)	Li & Glenn, (2019); (Kuria & Suardi, 2015)

Source: Author’s Compilation, 2024.

Method of Data Analysis

The data analysed comparatively via both descriptive and inferential analyse. The descriptive statistics was first conducted in order to gain understanding of the sample characteristics as regards the selected variables. Inferential statistical analysis was carried out with the aid of E-Views 9.0 statistical software. These include the following:

Coefficient of Correlation: which is a good measure of relationship between two variables, tells us about the strength of relationship and the direction of relationship as well;

Panel Least Square (PLS) Multiple Regression Analysis: was used to predict the value of a variable based on the value of the other variables;

Decision Rule

The decision for the hypotheses is to accept the alternative hypotheses if the p-value of the test statistic is less or equal than the alpha and to reject the alternative hypotheses if the p-value of the test statistic is greater than alpha at 5% significance level.

4. DATA ANALYSIS AND PRESENTATION

4.1 Data Analysis

Table 4.1: Descriptive statistics

	CAV	EHS	WMD	EPD	LEV
Mean	821617.7	0.800000	0.800000	0.700000	0.409591
Median	689403.0	1.000000	1.000000	1.000000	0.302215
Maximum	2614756.	1.000000	1.000000	1.000000	1.504326
Minimum	-431601.0	0.000000	0.000000	0.000000	0.193620
Std. Dev.	1001171.	0.421637	0.421637	0.483046	0.388869
Skewness	0.793551	-1.500000	-1.500000	-0.872872	2.559673
Kurtosis	2.534386	3.250000	3.250000	1.761905	7.779815
Jarque-Bera	1.139870	3.776042	3.776042	1.908541	20.43931
Probability	0.565562	0.151371	0.151371	0.385093	0.000036
Sum	8216177.	8.000000	8.000000	7.000000	4.095911
Sum Sq. Dev.	9.02E+12	1.600000	1.600000	2.100000	1.360969
Observations	10	10	10	10	10

Interpretation of Descriptive Statistics

The descriptive statistics in table 4.1 revealed that the cash value added (CVA) of the sampled companies is 821617.7; the maximum of 2614756.0 with a minimum of -431601.0 with a standard deviation of 1001171.0. The average employee health and safety disclosure (EHS) from the sampled observations is 0.80; standard deviation of 0.42; a maximum observation of 1.00 with a minimum value of 0.00. The mean value of waste

management disclosure (WMD) stood at 0.80, a standard deviation of 0.42; maximum observation of 1.00 with a minimum value of 0.00. The mean of environmental protection disclosure (EPD) is at the average of 0.70; standard deviation of 0.48; a maximum observation of 1.00 with a minimum value of 0.00. The mean of firm leverage (LEV) is at the average of 0.41; standard deviation of 0.39; a maximum observation of 1.54 with a minimum value of 0.19.

Skewness is the measure of how much the probability distribution of a random variable deviates from the normal distribution. Table 4.1 delineates that the probability distribution for EHS (0.151); WMD (0.151); EPD (0.39) and LEV (0.00003) are positively skewed distribution.

Table 4.2: Pearson Correlation Matrix

	CAV	EHS	WMD	EPD	LEV
CAV	1				
EHS	-0.89709	1			
WMD	0.29540	-0.25	1		
EPD	0.27292	-0.32733	0.76376	1	
LEV	-0.08458	0.10537	-0.727240	-0.57619	1

Source: E-Views 9.0 Correlation Output, 2024

The Pearson Correlation Matrix in table 4.2 shows the existence of a positive relationship between EDP, WMD, and CVA at a coefficient value of 0.295 and 0.273. On the other hand, the coefficient factors of -0.897 and -0.085 are an indication that EHS and LEV negatively correlates with CVA.

4.3 Test of Hypotheses

In other to examine the impact relationships between the dependent variable cash value added (CVA) and the independent variables (EHS, WMD, and EPD and control variable (LEV). To test our formulated hypotheses, we used a pooled multiple regression analysis since the data had both time series (2013-2022) and cross sectional properties (Nigerian Breweries companies). The pooled interaction based multiple regression results are presented and discussed in Table 4.3 below.

Table 4.3 Panel Least Square Regression analysis testing the relationship between CVA, EHS, WMD, EPD and LEV

Dependent Variable: CAV

Method: Least Squares

Date: 02/12/24 Time: 18:15

Sample: 2013 2022

Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2079295.	940624.1	2.210548	0.0781

EHS	-2120728.	466548.5	-4.545568	0.0061
WMD	698359.8	809386.6	0.862826	0.4277
EPD	-357826.9	607467.7	-0.589047	0.5814
LEV	319088.8	697163.1	0.457696	0.6664
<hr/>				
R-squared	0.830497	Mean dependent var	821617.7	
Adjusted R-squared	0.694895	S.D. dependent var	1001171.	
S.E. of regression	553010.5	Akaike info criterion	29.59099	
Sum squared resid	1.53E+12	Schwarz criterion	29.74229	
Log likelihood	-142.9550	Hannan-Quinn criter.	29.42503	
F-statistic	6.124499	Durbin-Watson stat	1.227634	
Prob(F-statistic)	0.036389			

Source: E-Views 9.0 Correlation Output, 2024

Interpretation of Regression Result

In Table 4.3, R-squared and adjusted Squared values were (0.83) and (0.69) respectively. The indicates that all the independent variables jointly explain about 69% of the systematic variations in cash value added (CVA) of our samples companies over the twelve years periods (2013-2022). Table 4.3 revealed an adjusted R^2 value of 0.69. The adjusted R^2 , which represents the coefficient of multiple determinations imply that 69% of the total variation in the dependent variable (debt) of Nigerian Breweries companies is jointly explained by the explanatory variables (EHS, WMD, EPD and LEV). The adjusted R^2 of 69% did not constitute a problem to the study because the F- statistics value of 6.124499 with an associated $\text{Prob.}>F = 0.036$ indicates that the model is fit to explain the relationship expressed in the study model and further suggests that the explanatory variables are properly selected, combined and used. The value of adjusted R^2 of 94% also shows that 31% of the variation in the dependent variable is explained by other factors not captured in the study model.

Test of Autocorrelation: using Durbin-Waston (DW) statistics which we obtained from our regression result in table 4.3, it is observed that DW statistics is 1.227634 and an Akika Info Criterion and Schwarz Criterion which are 29.591 and 29.742 respectively also further confirms that our model is well specified. In addition to the above, the specific findings from each explanatory variable are provided as follows:

Hypothesis 1

H_{01} : Employee health and safety disclosure does not have significant effect on cash value added of listed Brewery companies in Nigeria.

Table 4.3 indicates that employee health and safety has a negative significant effect on cash value added of Nigerian Breweries. This can be observed from the beta coefficient (β_1) of -2120728.0 with p value of 0.0061 which is highly statistically significant at 5% level of significance.

Since the P-value of the test was 0.0061 less than 0.05 (5%)., this study upholds that employee health and safety disclosure has significantly affect cash value added of listed Brewery companies in Nigeria. Thus, null hypothesis is Rejected and alternative hypothesis Accepted.

Hypothesis 2

Ho₂: Waste management disclosure does not significantly affect cash value added of listed Brewery companies in Nigeria.

Table 4.3 indicates that waste management disclosure has a positive significant effect on cash value added of Nigerian Breweries. This can be observed from the beta coefficient (β_1) of 698359.8 with p value of 0.4277 which is not statistically significant at 5% level of significance.

Since the P-value of the test was 0.4277 is higher than 0.05 (5%)., this study upholds that waste management disclosure has not significantly affect cash value added of listed Brewery companies in Nigeria. Thus, null hypothesis is Accepted and alternative hypothesis Rejected.

Hypothesis 3

Ho₃: Environmental protection disclosure does not have significant impact on cash value added of listed Brewery companies in Nigeria.

Table 4.3 indicates that environmental protection disclosure has a negative significant effect on cash value added of Nigerian Breweries. This can be observed from the beta coefficient (β_1) of -357826.9 with p value of 0.581 which is highly statistically significant at 5% level of significance.

Since the P-value of the test was 0.581 higher than 0.05 (5%)., this study upholds that environmental protection disclosure has not significantly affect cash value added of listed brewing companies in Nigeria. Thus, null hypothesis is Accepted and alternative hypothesis Rejected.

4.4 Discussion of Findings

From the hypotheses tested, hypothesis one indicates that employee health and safety has a negative significant effect on cash value added of Nigerian Breweries. This can be observed from the beta coefficient (β_1) of -2120728.0 with p value of 0.0061 which is highly statistically significant at 5% level of significance. This result is in line with Nwaimo (2020) indicate that employee health and safety, waste management, and community development expenses have no appreciable impact on a company's return on equity, earnings per share, or return on capital employed in Nigeria or South Africa. Also, the finding of Okoye and Erinugha (2023) which reported that there is a significant and positive relationship between employee health and safety disclosure, waste management disclosure, environmental protection disclosure and cash value added.

Hypothesis two indicates that waste management disclosure has a positive significant effect on cash value added of Nigerian Breweries. This can be observed from the beta coefficient (β_1) of 698359.8 with p value of 0.4277 which is not statistically significant at 5% level of significance. This result is in agreement with Okoye and Erinugha (2023) showed that there is a significant and positive relationship between employee health and safety disclosure, waste management disclosure, environmental protection disclosure and cash value added. Lawrence

and Bernard (2023) result indicates that waste management costs (WMC) and community development costs (CDC) have a significant positive effect on net profit margin (NPM) of the selected industrial goods firms in Nigeria.

Hypothesis three indicates that environmental protection disclosure has a negative significant effect on cash value added of Nigerian Breweries. This can be observed from the beta coefficient (β_1) of -357826.9 with p value of 0.581 which is highly statistically significant at 5% level of significance. The finding is in conformity with Okoye and Erinugha (2023) who showed that there is a significant and positive relationship between employee health and safety disclosure, waste management disclosure, environmental protection disclosure and cash value added. Also, Falope, Offor and Ofurum (2019) showed that environmental pollution prevention cost, environmental protection cost and environmental recycling disclosure have effects on return on assets of quoted construction firms in Nigeria.

Summary of Findings

Based on the analysis of the study, the following findings were summarized below;

1. The study found that employee health and safety disclosure has significantly affect cash value added of listed Brewery companies in Nigeria.
2. The waste management disclosure has not significantly affect cash value added of listed Brewery companies in Nigeria.
3. Environmental protection disclosure has not significantly affect cash value added of listed Brewery companies in Nigeria.

Conclusion

This study ascertained the impact of environmental disclosure on the performance of Brewery companies in Nigeria, using employee health and safety disclosure, waste management disclosure and environmental protection disclosure as the independents variables and cash value added as the dependent variable. Data were extracted form annual reports and accounts of the Brewery companies in Nigeria from 2013 to 2022. Descriptive statistics was used to analyze the data and E-view 9.0 was employed to test the hypotheses. Specifically, the result shows that employee health and safety disclosure has a significant effect on cash valued added while waste management disclosure and environmental protection disclosure were statistically insignificant on cash value added. However, the overall result indicated that Prob(F-statistic) is 0.04, showing that environmental disclosure has significant effect on financial performance (cash value added) of Brewery companies in Nigeria. This suggests that the amounts of these costs incurred by the studied companies are too negligible to have an impact on their performance metrics. However, studies are based on the quantity of information provided by a small number of companies, and as a result, these studies may be influenced by the other costs that these companies incur as well as the extent to which they report those expenses in their financial statements.

Recommendations

Based on the specific findings of this study, the researchers recommended the followings:

1. Management should develop a well-articulated employee health and safety cost system to guarantee a conflict-free corporate atmosphere needed by managers and workers for maximum productivity.
2. In an attempt to sustain the positive relationship between waste management disclosure and firm performance, firm should endeavour to identify wastes, evaluate waste and manage wastes in order to provide economic benefits for the community and the ability to lower production costs which can translate to bigger savings as well as profits in the long run.
3. Firms should imbibe the culture of environmental management which will help to identify the factors that may lead to environmental degradation and help in future predictions that might affect the present and future generations' lives, because environmental protection is one of the basic prerequisites for the overall development of a company.

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