# EFFECT OF ENVIRONMENTAL INFORMATION DISCLOSURE ON FINANCIAL PERFORMANCE OF LISTED CONSTRUCTION COMPANIES IN NIGERIA

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***Abstract***

*Despite the rising interest in environmental issues, there have been diverse views regarding the nature of the relationship between environmental information disclosure and financial performance of organizations Worldwide. The challenge of lack of adequate or non-environmental disclosures among pollution exposed companies in Nigeria in their annual financial reports over the years is a thing of concern to various stakeholders. This study examined the effect of environmental information disclosure on financial performance of listed construction companies in Nigeria. The focus variables of this study were environmental information disclosure as independent variable and financial performance for dependent variable. The independent variable is proxied by waste management cost and employee health and safety cost. The dependent variable is proxy by returns on assets (ROA). The secondary data obtained from the annual reports of seven construction firms listed on the Nigeria Exchange Group for 10 years ranging from year 2012 to 2021. This study employed panel research design, with specific focus on the longitudinal panel series design. The study reveals that waste management costs have positive and significant effect on return on assets while employee health and safety costs have negative and insignificant effect on return on assets. The study concluded that waste management costs is veritable tools of environmental information disclosure that enhanced construction firm's performance in the study are. The study recommended that firms should have positive disposition towards social and environmental waste management practices and disclose more of these information in their annual reports as the level of these information disclosures have exerted significant influence on firms' performance over the years.*

***Keywords:*** *Waste Management Cost, Employee Health, Return on Assets, Safety Cost and Financial Performance.*

## INTRODUCTION

Environmental information disclosures in the companies' annual financial report are of utmost importance to business organizations, host

communities, shareholders, employees, pressure groups, society, and the entire nation (Emmanuel & Ifeanyichukwu, 2021). Environmental accounting disclosure issues have captured the business community's interest and the public in recent times. As concerns towards environmentally friendly practices increase, corporate organizations are faced with the challenge of disseminating information about environmental issues in their annual reports (Etale & Otuya, 2018). Environmental accounting disclosures are occasioned by the fact that organizations do not operate in isolation, thus, seen as corporate entities that live within the people and carry out their business operations in society. Therefore, organisations in the course of carrying out their regular business activities exhibit one form of externalities or the other which, most often are negative to the environment and the society where they operate.

According to Adediran and Alade (2013) the consequence of the activities of business organisations on the environment has brought about the depletion of ecosystems as a result of over-exploitation of the resources. The growing concern about resource depletion, environmental degradation, resource scarcity, water, air and noise pollutions, oil spillages, health hazards and the search for sustainable economic activity led to the development of environmental information disclosures and reporting guidelines. This is an area of significant interest to organisations operating in Nigeria and beyond to increase the awareness of the interaction between firms and the environment and its resultant effect on the environment of operation to ensure accountability and sustainability for the use of future generation.

Increased global environmental awareness and the campaign for sustainable economic development are redirecting firms' attention towards environmental sensitivity (Ngwakwe, 2009). Environmental information disclosures is concerned with the responsibility of awareness that actions taken in the present affects the options available to firms in the future, hence if environmental resources are utilized leads to massive depletion of same in the present and are no longer available for use in the future, it then poses a grave danger to the upcoming generation, particularly if the resources are finite in quantity (Etale & Otuya, 2018). The construction sector is one of the largest exploiters of resources, with half of them being non-renewable. According to the World Watch Institute, the industry consumes 40% of the world's usage in raw stones, gravel and sand and 25% of its virgin wood per year. We can pretend that the problem does not exist, but sooner or later it may turn out that we will run out of many crucial natural resources.

Consequently, environmental problems associated with construction firms in Nigeria could be better managed if managers in the construction firms provide adequate information on the effect of their economic operations, disclose friendly environmental policies adopted by these organisations and implementing same to their host communities and other stakeholders for taking future decision instead of the total neglect and impoverishment of the host community and society. Organisations' positive responses to environmental and societal issues by way of accounting and disclosure leave the investors, host communities and other stakeholders with the confidence that the organisations they are dealing with are transparent and socially

responsible to the needs of the people (Ekemezie & Okafor, 2020).

Financial performance is commonly used as an indicator of a firm's financial health over a given period of time. The financial performance of a firm can be defined or measured in various ways including profitability, gauge return, market share growth, return on investment, return on equity and liquidity. Revenue generation growth can be seen as a growth indicator of a firm and also as a competitive strategy for consecutive firms. A firm can, by being environmentally sustainable, differentiate its products and thus increase its revenue.
The challenges of environmental abuses and degradation has led various sectors, governments and non-governmental organizations (NGOs) to engage in environmental sustainability debates and initiate strategies for responding to the challenges of sustainable development (Magara et al, 2015). The environment has a long history of being regarded unrelated to the economic system (Amahalu et al, 2018) and as such, businesses for many decades have ignored the impact of their activities on the natural and social environment in which they operated, unless it had direct repercussions on the statement of financial position. However, the neglect by business of the negative externalities arising from the pursuit of economic objectives along with various environmental abuses by companies such as the case of; environmental challenge facing Saudi Arabia's oil and gas industry like C02 emission in (2019) have created less than positive attitudes amongst shareholders towards business (Oshiole et al, 2020).

In terms of methodology gap most studies conducted in this area used time series data and as such employed the Ordinary Least Square method of data analysis and SPSS statistical tools (Peter & Mbu-ogar 2018; and Okere *et al*, 2021). Time series data suffered from some limitations among them are, it does not address the individualistic effect of the sampled companies in view of their respective uniqueness, and it does not explain wide range of and complex problems. A more robust analysis could be conducted using panel data that enrich empirical analysis in ways that may not be possible if used only cross-section or time series data.

These outcomes were definitely due to the usage of diverse research methodologies, the different periods covered, nature of variables considered, availability and nature of data used, diverse jurisdiction and sector of study, different sample composition and diverse measures of environmental accounting disclosures employed. The varied and conflicting views by prior scholars Amahalu, et al, 2017; Russo & Fouts, 2017; Judge & Douglas, 2018) informed this study. Against this backdrop, the study seeks to examine the effect of environmental information disclosures (using Global reporting initiative index 300 as a standard measure of environmental disclosure) on the financial performance of selected construction firms listed on the Nigerian Exchange group to validate existing studies.

Against this backdrop, the study seeks to examine the effect of environmental information disclosures (using Global reporting initiative index 300 as a standard measure of environmental disclosure) on the financial performance of selected construction firms listed on the Nigerian Exchange Group to validate existing studies. This is the knowledge gap that drives this study.

The major hypothesis underling this study is stated thus:

$Ho_1$: Waste management disclosure cost has no significant effect on return on assets of listed construction companies in Nigeria

$Ho_2$: Employee health and safety cost has no significant effect on return on assets of listed construction companies in Nigeria.

## LITERATURE REVIEW

Environmental Information Disclosure

Environmental information disclosures or reporting is the process of communicating the social and environmental effects of an organization's economic actions to particular interest groups and the society at large through the annual report (Etale & Otuya, 2018). Environmental information disclosures are public relations channels that influence people's perception of the company's corporate image and reputation. It is an essential ingredient of corporate social responsibility reporting that communicate environmental strategy to stakeholders, thus, a tool to spur corporate policies, strategies and management systems that is geared towards minimising adverse environmental impact (Setyorini & Ishak, 2012). Environmental information describes accounting standard setters, professional organisations, and governmental agencies to get corporations to participate proactively in cleaning and sustaining the environment and describing fully, their environmental activities in either their annual reports or stand-alone environmental disclosure (Ezeagba et al., 2017). According to Ekemezie and Okafor (2020), environmental information disclosure is in phases and it ranges from ad-hoc comments in the annual report to stand-alone environment reports. Environmental information is seen by corporate managers and environmental advocates alike as a necessary complement to improve environmental decision-making in organisations (Ezeagba *et al.*, 2017). Organisations no longer see environmental costs as an added cost but, rather classified as corporate social responsibility costs invested to address environmental issues arising from business operations. According to Levin and Fransen (2017), environmental reports are essential tools through which management communicates to the stakeholders on how their environmental concerns are being addressed.

Levin and Fransen (2017), classified environmental information disclosures into two parts: mandatory and voluntary disclosures. While mandatory environmental accounting disclosures are where companies' sustainability information is disclosed based on the country's legal rules and regulations, voluntary environmental information disclosures are the disclosure of companies' environmental information voluntarily without any legal obligation. Companies' recognising that it is their corporate responsibility to achieve sustainable development by meeting the present needs without compromising the ability of future generations to meet their needs, informed their choice of environmental information disclosures practices to the stakeholders in the environment where they conduct their business activity.

### Waste Management Cost

Waste (or wastes) is unwanted or unusable materials. Waste equally can be observed as any substance which is discarded after primary use, or is worthless, defective and of no use. Examples includes municipal solid waste (household trash/refuse),

hazardous waste, wastewater (such as sewage, which contains bodily wastes (feces and urine) and surface runoff), radioactive waste, and others. Wastes are substance or objects, which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of national law (Emmanuel & Ifeanyichuwku, 2021). Waste collection and transport can generate up to 70% of the total costs of the system. Separated collection of recyclables implies additional costs for which the sale of recycled waste often does not compensate, but there is increased pressure to reach the long-term recycling objectives set by law. The proper estimation and monitoring of waste collection costs are essential to define the waste collection system (Dijkgraaf & Gradus, 2017).

**Employee Health and Safety cost**

Employee safety cost represents a company's expenditure on employee health and safety. Health and safety as a function focuses on securing and promoting safety and health of the persons working for the company including both physical and mental health (Nwambeke et al., 2019). Like most other management function this includes developing and implementing health and safety strategies, measuring and following up on performance issues and report these issues to internal and external stakeholders. In emerging economies, workplace safety and health has been overlooked in their industrial development policy and strategies. They are mostly focused on the production volume or profit undermining the latent effect of dissatisfactory working environment. Safe workplaces are profitable workplaces, whether measured in a company's bottom line, its market share, its broader consumer reputation, or its ability to attract and retain workers, managers, or investors. Healthy people are expected to contribute more to productivity and innovation. However, absenteeism from workplace site causes productivity loss.

A safe and healthy workplace is therefore one in which those hazards that pose a potential risk to the health and safety of employees (and others in the workplace) are eliminated or controlled/ managed effectively (Hopkins, 2005). Nigerian organizations have achieved considerable success in improving health and safety over recent decades. However, ongoing rates of work-related injury and illness provide evidence as to the ongoing challenge that health and safety poses for Nigerian workers, business and the broader economy. The failure to control occupational hazards contributes to work related injuries and illness, including more serious injury cases (National Occupational Health and Safety Commission, 2004).

Despite the fact that people are working and spend most of their working hours at the workplace, little attention and resources are accorded to health and safety at work (Amahalu et al 2018). In emerging economies, workplace safety and health has been overlooked in their industrial development policy and strategies. They are mostly focused on the production volume or profit undermining the latent effect of dissatisfactory working environment. Safe workplaces are profitable workplaces, whether measured in a company's bottom line, its market share, its broader consumer reputation, or its ability to attract and retain workers, managers, or investors. Healthy people are expected to contribute more to productivity and innovation. However, absenteeism from workplace causes productivity loss.

**Financial Performance**

There are various aspects of performance, each of which contributes to the overall performance in an organization. Falope, *et al* (2019), states that firm performance is very essential to management as it is an outcome which has been achieved by an individual or a group of individuals in an organization related to its authority and responsibility in achieving the goal legally, not against the law, and conforming to the moral and ethical standard. Performance is the function of the ability of an organization to gain and manage the resources in several different ways to develop competitive advantage. In addition, measuring performance is very important because it builds on the results, make different decisions in economic units. According to Nwambeke, *et al* (2019), performance measures are the life blood of economic units, since without them no decisions can be made. Financial performance measure is one of the important performance measures for economic units which financial performance measures are used as the indicators to evaluate the success of economic units in achieving stated strategies, objectives and critical success factors (Falope, *et al*, 2019). Firm performance encompasses three specific areas: financial performance (profits, ROA, ROI, EPS, ROCE); product market performance (sales, market share, etc.); and shareholder return (total shareholder return, economic value added) (Richard, *et al*, 2009). Financial performance refers to a firm's ability to achieve planned financial results as measured against its intended outputs (Mutende, et al, 2017).

Organizational performance is concerned with the 'health" of an organization which is generally measured in terms of financial and non-financial performance. The financial measurement could be in term of return on equities, return on assets, or return on investment etc. In addition, Tomal and Jones (2015) define organizational performance as the actual results or output of an organization as measured against that organization's intended outputs. The effectiveness of an organization consists in the efficiency of each of its individual employees, role of the external auditor and other factors. According to Lebans and Euske (2006), one significant advantage of accounting-based performance measures is that they are not requiring an exchange listing thus; also, private and small business may be examined. Furthermore, they are easy to interpret. Return on assets was employed for the purpose of this study.

**Return on Assets**

Return on Assets (ROA) represents the number of earnings a company achieves for each naira of the asset it controls and is a good indicator of a firm's profitability. ROA is a financial ratio that shows the percentage of profit a firm makes relative to its overall resources (investments). According to Emmanuel and Ifeanyichukwu (2021), ratios are aimed at bringing to light the profitability of a firm's operation, the management efficiency as measured by the returns on capital employed and the intensity of capital usage, that is, the rapidity with which invested capital is turned over. Falope, *et al*, (2019) opine that return on assets explicitly considers the assets used to support business activities and determines whether the company can generate an adequate return on these assets rather than just showing robust Return on Sales. Return on assets is measured as the proportion of net profit after tax to the total asset of the firm. One of the core objective of every business entity is to maximise profit and as much economic benefit is

key to an organisation's survival, it must not be pursued at the expense of society and the environment (people and planet). While organisations are directed to be more transparent on how they treat their economic, social and environmental activities as they affect their stakeholders, managers of firms should also be mindful of the fact that any firm that is not involved in environmental accounting disclosure could be seen as striving towards unsustainable development. Thus, it would be unclear to ascertain the level of impact environmental information disclosures had on organisation's strategies, practices and outcomes. It is on this premise that this study seeks to investigate the effect of environmental disclosures cost on the financial performance of selected construction firms in Nigeria.

*Return on Assets = Profit After Tax ÷ Total Assets*

**Firm Size**

In the present world's trend, (due to economies of scale) size of a firm plays very important role in competing with competitors through the cost reduction and, take and hold more opportunities. Further based on this concept the firm size is a factor in determining the firm's profitability and reveals a positive association between size and firm's profitability by several experts. Akinyomi and Olagunju (2013) in their own submission posited that firm size has been recognized as an essential variable in explaining organizational profitability and a number of studies have tried to explore the effect of firm size on profitability. Jasch (2013) also submitted big firms have the opportunity to have more profit since they have a bigger market share. So based on these situations, the big size firms work in more profitable with less competition. In corporate finance empirical researchers also consider firm size an important and fundamental firm characteristic, and, observe the size effect - firm size matters in determining the dependent variables in many situations. Flowing from the above firm size is adopted as control variable for this study.

**Empirical Review**

Emmanuel and Ifeanyichukwu, (2021) examined corporate environmental accounting disclosure and financial performance of selected manufacturing firms in Nigeria. The ex-post-facto research design was engaged in this study, using a sample of 40 manufacturing firms. The secondary source of data collection method was employed using the convenience sampling technique. Data were harvested from the content analysis disclosure index and corporate annual reports of the sampled manufacturing firms listed on the Nigerian Stock Exchange for the period 2010-2019 financial years. The descriptive statistics, correlation matrix and regression analysis were the statistical tools used in the study. Data were analysed with the aid of the panel data regression technique. Findings revealed that environmental accounting disclosures had a significant effect each on Share Price, Return on Asset and Return on equity of manufacturing firms in Nigeria. The study concludes that Environmental disclosure had a significant positive effect each on Share price, return on assets (ROA) and Return on equity (ROE) of manufacturing firms in Nigeria. The study recommends that companies should increase the extent to which they disclose the environmental impacts of their firms' activity in the annual report for stakeholders' assessment of their performance.

Giami (2021), examined effect of environmental cost reporting and performance of Nigerian oil and gas downstream companies quoted on the Nigerian stock exchange for the period 2011 to 2020. The study adopted historical data design and census sampling techniques was used in studying the entire population. Four hypotheses were tested using multiple regression analyses with the help of ordinary least square and the findings revealed that, amount spent on waste management /remediation has a negative and insignificant relationship with growth in sales volume as well as return on asset. Amount spent on compensation also has negative and insignificant relationship with both growths in sales volume and return on assets. It was however recommended that oil and Gas companies continue to manage their waste and include community development in their decision making in line with global best practices to keep them socially acceptable as these will ensure a symbiotic relationship among the various stakeholders.

Chiamogu and Okoye (2020), ascertained effect environmental cost on financial performance of oil and gas companies in Nigeria. The specific objectives were to determine the effect of: community development cost and environmental remediation cost on Tobin's on oil and gas companies in Nigeria. Ex post facto research design was employed and data was obtained from annual reports and accounts for the periods 2011 to 2018. The hypotheses were tested using regression analysis with aid of e-view 9.0. The results of the empirical data analysis revealed that community development cost and environmental remediation cost has positive significant effect on Tobin's. The study therefore recommended among others that government should give tax credit to organizations that participate and contribute towards community development in order to encourage community development and which would go a long way in enhancing firm performance.

Omaliko et al (2020) investigated the effect of social and environmental disclosures on performance of non-financial firms in Nigeria. The study is vital as it portrays the extent to which social and environmental disclosures influence firms' performance. In order to determine the relationship between social and environmental disclosures and firms performance, some key proxy variables were used in the study, namely corporate social responsibility disclosure and environmental disclosure; firms' performance is however represented by NAPS. Two hypotheses were formulated to guide the investigation and the statistical test of parameter estimates was conducted using panel regression model. The research design used is Ex Post Facto design and data for the study were obtained from the NSE Factbook and published annual financial reports of the entire 112 non-financial firms quoted on NSE with data spanning from 2011-2018. The findings generally indicate that corporate social and environmental disclosures have significantly influenced firms' performance at 5% significant level. Based on this, the study concludes that social and environmental disclosures have positively improved firms performance over the years. The study however recommended that firms should have positive disposition towards social and environmental friendly practices and also disclose more of these information in their annual reports as the level of these information disclosures have exerted significant

influence on firms' performance over the years.

Ivonne and Shewangu (2021) studied effect of environmental accounting adoption and disclosure case study of Zimbabwe Stock Exchange. The main purpose of the study was to ascertain the level of adoption and disclosure of environmental information among companies listed on the Zimbabwe Stock Exchange. Twenty companies from the high and medium environmental impact sectors were sampled from the sixty-five companies listed on the Zimbabwe Stock Exchange using purposive sampling technique. Qualitative content analysis through QDA Miner software analytical tool was used to analyze the secondary data in the form of annual reports. The themes that were used to analyze environmental disclosure are environmental policy, environmental impact, environmental infrastructure, strategic goals and environmental policy implementation. The findings show that companies in medium impact sectors are disposed to disclose environmental information as much as the companies in the high impact sector although that is contradictory to the legitimacy theory. It was concluded that, the information content requirement by stakeholders helps in disclosing information about organizational financial performance and report on environmental accounting. Thus, the study recommends that companies listed on the Zimbabwe Stock exchange adopt and disclose environmental information in their annual reports.

Arumona, et al, (2020) examined the effect of environmental disclosure on financial performance of quoted oil and gas companies in Nigeria, using panel series data and regression analysis approach. The focus variables of this study are Environmental Disclosure for Independent Variable and Financial Performance for Dependent Variable. The Independent Variable is proxied by Research and Development Cost and Estimated Future Expenditure while Dependent Variable is proxied by Net Profit Margin and Return on Asset. The secondary data obtained from the annual reports of 12 oil and gas companies quoted on the floor of the Nigeria Stock Exchange (NSE) for 10 years ranging from year 2010- 2019 were used. The study adopted the E-view as a statistical tool for analysis with focus on Ordinary Least Square (OLS) regression method. The study found that Environmental Disclosure has positive and statistically significant effect on Financial Performance of quoted oil and gas companies in Nigeria during the period under review. The study concludes that Environmental Disclosures contribute immensely to Nigeria's Oil and Gas firms to increase financial performance and profitability, as well as provide a springboard that can enable the country at large to emerge as an environmental-friendly nation. It is recommended, amongst others that, since Nigerian economy is highly dependent on the oil and gas resources, the continued insistence on full compliance to every form of best practice in the oil and gas sector (including full environment disclosures), is of great and immerse benefit to the industry players, oil and gas firms, the economy at large and to the citizenry of the country.

Nosakhare et al (2016), examined effect of environmental disclosure on performance of Nigerian quoted companies. The research design adopted by this study is basically descriptive. The study utilised an unbalanced panel data structure of 142 sampled companies for a five year period (2009-

2013). The study followed a checklist to identify the sentences related to environmental information from the annual reports with the aid of content analysis. The study found that the length of disclosure of environmental information is approximately three sentences per company which is very low, especially in comparison with other developed and developing countries. It was also found that following the events that led to the revision of the code of corporate governance that occurred in 2011, there was a steady increase in the quantity disclosed over time. The reality of the enormity of environmental concerns, threatening the sustainability of the environment for the use of the present and future generations is a wakeup call for all stakeholders most especially management to consider such issues in carrying out the running of the organisation. The study recommended that firms should involve in environmental disclosure by providing a vivid description of the quantity of environmental information disclosed by companies in Nigeria, revealing the trend over a time period that witnessed a revision in the code of corporate governance for companies.

**Theoretical Framework**

**Stakeholder Theory**

Edward Freeman first developed stakeholder theory in (1984). Stakeholder theory has permeated academic discourse in management and a variety of disciplines, including health care, law, and public policy (Freeman, Harrison, Wicks, Parmar & De Colle, 2014). Much attention has been paid to some basic themes that are now familiar in the literature that firms have stakeholders and should proactively pay attention to them, that stakeholder theory exists in tension (at least) with shareholder theory, that stakeholder theory provides a vehicle for connecting ethics and strategy (Phillips, 2013), and that firms that diligently seek to serve the interests of a broad group of stakeholders will create more value over time (Freeman, Harrison and Wicks, 2009). Nevertheless, there are so many different interpretations of basic stakeholder ideas that theory development has been difficult (Scherer & Patzer, 2011).

The underlying assumption of most studies of this type is that economic measures capture the value created through good treatment of stakeholders, thus sidestepping the notion that much of the value stakeholders get from working with stakeholder-friendly firms may not be captured in economic measures. While economic returns are fundamental to a firm's core stakeholders, most stakeholders want other things as well (Bosse, Phillips & Harrison, 2015). Attention to these other factors may prove critical to understanding why firms succeed over time, why stakeholders are drawn to (and remain with) some firms, and which firms do the most for their stakeholders. A stakeholder-based perspective of value is important from a managerial perspective because managers tend to focus attention on things that lead to higher performance based on what actually gets measured (Kaplan & Norton, 2012); rather than focusing primarily on economic measures of performance, a stakeholder-based performance measure challenges managers to examine more broadly the value their firms are creating from the perspective of the

stakeholders who are involved in creating it.

**The Slack Resources Theory**

Waddock and Graves (1997) put forward slack resources theory. According to the slack resources theory, high-performing corporations have a huge pool of resources to invest in socially responsible programmes. This hypothesis assumes that the availability of slack resources for social programmes allocation is dependent on excellent financial performance; thus, there should be a positive link. Although Barnard (2011) had discussed the role of slack in his early work, the specific label of 'slack' had not been coined until March and Simon published their seminal book. Cyert and March (2013) defined slack as ''the difference between total resources and total necessary payments". This definition was followed by Bourgeois (2017) who added that "slack is that cushion of actual or potential resources which allows an organization to adapt successfully to internal pressures for adjustment or to external pressures for change in policy, as well as to initiate changes in strategy with respect to the external environment".

Sharfman (2008) underlined two aspects of slack resources based on Bourgeois' concept. The first is that slack resources must be visible to the management and potentially employable in the future; the second is that different forms of slack resources provide managers with varying degrees of freedom in attempting to safeguard their companies from internal and external pressures. In addition, Nohria and Gulati (2016) defined slack resources as "the pool of resources in an organization that is in excess of the minimum necessary to produce a given level of organizational output". Moreover, they noted that these resources vary in type, including excess inputs (e.g., surplus employees, idle capacity, and capital expenditures) and overlooked or unexploited opportunities to increase outputs (e.g., margins and revenues to be gained from customer). Most recently, George (2009) defined slack as ''potentially utilizable resources that can be diverted or redeployed for the achievement of organizational goals''

**Legitimacy Theory**

One of the popular theories of environmental accounting disclosure is the legitimacy theory propounded by Freeman (1984). The concept of legitimacy is important in analysing 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". Central constructs of legitimacy research are provided. For example, it distinguishes "authority" from "legitimating" 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 organisational 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). Preston (2005) point 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.

Legitimacy is achieved by demonstrating that companies' activities are concordant with social values. Bansal and Roth (2016) present examples of legitimacy as complying with legislation, establishing an environmental committee or the position of environmental manager to oversee a firm's ecological impact, developing networks or committees with local community representation, conducting environmental audits, establishing an emergency response system, and aligning the firm with environmental advocates. Legitimacy theory concentrates on the concept of a social contract, implying that a company's survival is dependent on the extent to which the company operates within the bounds and norms of society (Brown & Deegan, 2012). In summary the study assesses the effect of audit environmental disclosures on financial performance of oil and gas in Nigeria.

Legitimacy Theory underpins this study because it argues that organizations seek to ensure that they operate within the bounds and norms of society. 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).

**METHODOLOGY**

Longitudinal panel research design was adopted in this study as it provides the support needed for collection of information on the existing nature of the phenomenon under study so as to provide and describe the nature of the relationship between the study variables. The population of the study consists of all the eight (8) listed construction firms on the Nigeria Exchange Group as at 31 December 2021. The sample size of seven (7) was selected using the purposive sampling technique as the basis for selection. The only one firm not selected was listed in the year 2021 and therefore contain unbalanced data. The secondary data adopted in this study were gathered from financial statements published on the Exchange Group Plc and the individual company's financial statements. The data for this research consisted of annual dataset ranging from 2012 to 2021 a period of ten (10) years. Longitudinal panel research data estimation methodology is implemented as the data provides cross sectional data over a period. The secondary data which were collected for the dependent and independent variables was analyzed using panel regression using statistical package STATA version 13. The descriptive statistics will detect whether there are errors in the data set by determining mean, maximum and minimum values for each of the variable measures. Pearson correlation analysis will test the association among the variables, while panel regression will examine the effect of the independent variables on the dependent variable. Panel regression analysis for fixed effect model and random effect model will

also be conducted. Thereafter, the LM test and Hausman specification test to assess whether the pooled, fixed effect or random effect is most appropriate for the study. This research adopted approach of Oshiole et al (2020) to determine environmental information disclosure indicators.

**Model Specification**

The following research models were formulated and modified based on Oshiole et al (2020) approach in line with the research hypotheses in order to empirically determine the effect of environmental information disclosure on performance.

$ROA = \beta 0 + \beta_1 WMC + \beta_2 HSC + \beta_2 FSZ\ \mu$ ---------- (i)

Where;
ROA = Return on Assets
WMC = Waste Management Cost
HSC= Health and Safety Cost
FSZ = Firm size
$\mu$ = Component of unobserved error term
$\beta 0$= constant term
$\beta_1$ & $\beta_2$, = are slope to be estimated of firm.

Table 3: Measurement of Variables

| S/No. | Variables | Type | Measurement | Source |
|---|---|---|---|---|
| | Variable of Interest | | | |
| 1 | Return on Assets (ROA) | Dependent | Measured by dividing profit after tax over total assets | Arumona, et al (2020) |
| 2 | Waste Management Cost (WMC) | Independent | Disclose in financial statement is 1 other wise 0 | Oshiole et al (2020) |
| 3. | Health and Safety Cost (HSC) | Independent | Total Amount spent on employee wellbeing per annum | Oshiole et al (2020) |

*Source: Author's compilation (2022)*

## RESULT AND DISCUSSION

**Data presentation**

In order to establish an empirical relationship between effect of environmental information disclosure and financial performance of listed construction firms in Nigeria. The estimation technique and procedure capture the objectives of the research as stated earlier. The estimation was carried out using STATA-13 and the data used for these studies are attached as an appendix.

**Data Analysis and Results**

**Descriptive Statistics**

The descriptive statistics of the dataset from the sampled construction companies are presented in Table 4.1 where the mean, standard deviation, minimum and maximum values of the data for the variables used in the study are described. Normality test in this study test for the skewness and kurtosis of the data set. Skewness which measures the shape of the distribution and equally shows the measure of the symmetry of the data set. While Kurtosis value measures the peakness

and flatness of the distribution of the series.

Decision Rule: The null hypothesis for this test is that the data are normally distributed. The prob< W value listed in the output is the p-value. If the chosen alpha level is 0.05 and the p-value is less than 0.05, then the null hypothesis that the data are normally distributed is rejected. If the p-value is greater than 0.05, then the null hypothesis is not rejected.

**Table 4.1: Descriptive Statistics**

```
. summarize ROA WMC HSC FSZ
```

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|---|---|---|---|---|---|
| ROA | 70 | .0458276 | .1778874 | -.7821936 | .5352035 |
| WMC | 70 | .4285714 | .4984448 | 0 | 1 |
| HSC | 70 | 2167.129 | 1384.967 | 315 | 8003 |
| FSZ | 70 | 6.749116 | .8848302 | 4.735846 | 7.857034 |

```
. sktest ROA WMC HSC FSZ
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Skewness/Kurtosis tests for Normality

| | | | | joint | |
|---|---|---|---|---|---|
| Variable | Obs | Pr(Skewness) | Pr(Kurtosis) | adj chi2(2) | Prob>chi2 |
| ROA | 70 | 0.0000 | 0.0000 | 29.95 | 0.0000 |
| WMC | 70 | 0.0000 | 0.4225 | 15.47 | 0.0004 |
| HSC | 70 | 0.0000 | 0.0000 | 31.57 | 0.0000 |
| FSZ | 70 | 0.0006 | 0.4471 | 10.45 | 0.0054 |

**Source: Stata-13 Output, 2022**

Table 4.1 shows the detail account of the descriptive statistics for the explained and explanatory variables. Return on assets (ROA) which is the dependent variable of the study has a minimum value of -0.7821936 and a maximum value of 0.5352035. The average value of the return on assets is 0.0458276 with standard deviation of 0.1778874, signifying that the data deviate from the mean value by 0.17. This implies that there is no variation across the sample firms because the standard deviation is not close to the mean value. The value of 0.045 is an indication that listed construction firms performance is very poor (5%) during the period under study. The table indicated a mean value of 0.4285714 for waste management cost (WMC). This value shows that forty-two percent (42%) of the listed construction firms had engaged in environmental waste management cost. This further suggests that only fifty-eight (58%) of the sampled companies do not engage in environmental waste management or

do not disclose information on waste management. The minimum and maximum values for waste management cost during the study period were 0 and 1 respectively. This was as a result of the dummy nature of the dataset.

Also, the table shows that the employee health and safety cost (EHS) during the period has an average value of 2167.129 with standard deviation of 1384.967 and the minimum and maximum values of 315 and 8003 respectively. This implies a tremendous increase in the health and safety cost of employees during the study period.
Finally, the table shows that the firm size (FSZ) during the period has an average value of 6.749116 with standard deviation of 0.8848302 and the minimum and maximum values of 4.735846 and 7.857034 respectively. This implies a optimum increase occur in the firm size of companies during the period under study.

The results of the skewness/kurtosis test carried out by the study for the pre-estimate test on the data of the variables as depicted in table 4.2 indicate that the p-values for returns on assets, waste management cost, health and safety cost and firm size all are significant at 0.05 level respectively as depicted from its p-value. These therefore clearly imply that the data collected on the variables of the models are not normally distributed. Consequently, this could pose some challenges in the ordinary least square regression, hence the need for a more generalized regression model.

**Pairwise Correlation Analysis**
Pairwise correlation coefficient is the test statistics that measures the statistical relationship between two continues variables. It is known as the best method of measuring the association between variables of interest because it is based on the method of covariance. It gives information about the magnitude of the correlation as well as the direction of the relationship.

Decision Rule: pairwise correlation coefficient considers the significant level of 0.05 as pairwise comparison and the significant variables are identified with start.

**Table 4.2 Result of pairwise Correlation Coefficient**

```
. pwcorr ROA WMC HSC FSZ, star (0.05) sig
```

| | ROA | WMC | HSC | FSZ |
|---|---|---|---|---|
| ROA | 1.0000 | | | |
| | | | | |
| WMC | 0.3969* | 1.0000 | | |
| | 0.0007 | | | |
| HSC | -0.3299* | -0.0403 | 1.0000 | |
| | 0.0053 | 0.7402 | | |
| FSZ | -0.2163 | -0.3317* | 0.1654 | 1.0000 |
| | 0.0721 | 0.0050 | 0.1713 | |

Source: Stata 13 Output, 2022

Table 4.2 presents the correlation results among return on assets, waste management cost, health and safety cost and firm size. The results indicate that there exists correlation between return on assets and waste management cost with correlation value of 0.3969 with p-value of 0.0007. This indicates that the relationship between return on assets and waste management cost is positive and significant at all level of confidence. The results from the table also show a correlation between return on assets and health and safety cost of -0.3299 with p-value of 0.0053. This indicates that return on assets has a negative relationship with employee health and safety cost of the listed construction firms in Nigeria which is significant at 5% level of coefficient. It suggests that the higher the returns on assets the lower the health and safety cost incur of the companies. Also, there exist correlation between waste management cost and firm size of -0.3317 with p-value of 0.0050. This indicates that waste management cost has a negative relationship with firm size of the listed construction firms in Nigeria which is significant at 5% level. It suggests that the higher the waste management cost the lower the firms size. Generally, it can be seen that all the correlation coefficients among or within the independent variables are below 0.80. This point to the absence of possible multi-collinearity.

**Multi-Collinearity Test**

Variance inflation factor (VIF) is employed to detect the presence or otherwise of collinearity among the explanatory variables. The existence of high correlation among the independent variables may be termed as multi-collinearity. The presence of multi-collinearity in a model has the potential of biasing the regression results.

**Table 4.3 Result of Variance Inflation Test**

```
. estat vif
```

| Variable | VIF | 1/VIF |
|---|---|---|
| FSZ | 1.15 | 0.866867 |
| WMC | 1.12 | 0.889791 |
| HSC | 1.03 | 0.972414 |
| Mean VIF | 1.10 | |

**Source: Stata 13 Output, 2022**

The VIFs and 1/VIF for waste management cost, health and safety cost, and control variable FSZ-Firm Size are 1.12, 1.03 and 1.15, and 0.889791, 0.972414 and 0.866867 respectively which are less than 10 and 1 respectively. As pointed out by Myers (1990), VIF of less than 10, and 1/VIF of less than 1is an indication of absence of multi-collinearity. This implied that there is no multi-collinearity in our model since the VIFs is less than 10 and 1/VIF is less than 1.

**Lanrangian Multiplier Test**

The Langranger Multiplier test is a test for model specification in panel data analysis, which is employed to choose between pooled effect model and the random effects model. The breusch-pagan langranger multiplier test was then conducted to choose the preferred model between the pooled effect and the random effect regression models and the decision rule for the breusch-pagan langranger multiplier test is stated thus; at 5% Level of significance:
$H_0$: Pooled effect is most appropriate for the Panel Regression analysis
$H_1$: Random effect is not appropriate for the Panel Regression analysis

As encapsulated above, if the p-value is greater than 0.05 the decision rule is to reject the null hypothesis which states that pooled effect is most appropriate for the Panel Regression analysis (meaning that the preferred model is random effects). Similarly, if the p-value is less than 0.05 the decision rule is to accept the null hypothesis which states that pooled effect is most appropriate for the Panel Regression analysis (meaning that the random effect model is to be rejected).

Table 4.4 Breusch-Pagan LM test

```
. xttest0

Breusch and Pagan Lagrangian multiplier test for random effects

        ROA[FIRMS,t] = Xb + u[FIRMS] + e[FIRMS,t]

        Estimated results:
                         |       Var      sd = sqrt(Var)
                 --------+------------------------------
                     ROA |    .0316439        .1778874
                       e |    .0160656        .1267501
                       u |    .0128339        .1132867

        Test:   Var(u) = 0
                                 chibar2(01) =    16.49
                              Prob > chibar2 =   0.0000
```

Source: STATA 13 Output (2022)

Table 4.4 showed the results of Breusch - Pagan Lanrangian multiplier test, for random effect was conducted to determine between the pooled OLS and random effect regression which is most appropriate. The null hypotheses of these tests are that there is no evidence of significant differences across the firms. The results in table 4.6 above showed a chi bars$^2$ of 16.49 with a corresponding prob>chibar of 0.0000 for the model, therefore, the study rejected the null hypothesis and concluded that random effects were the most appropriate model because there is evidence of significant differences across the firms for ROA. As a result, OLS is biased.

**Hausman Specification Test**

The Hausman test is a test for model specification in panel data analysis and this test is employed to choose between fixed effects model and the random effects model.

**Hypothesis**
Ho: Random effect is most appropriate
$H_1$: Fixed effect is most appropriate
Decision Rule: if the p-value is greater than 0.05 the decision rule is to reject the null hypothesis which states that random effect is most appropriate for the Panel Regression analysis (meaning that the preferred model is random effects). Similarly, if the p-value is less than 0.05 the decision rule is to accept the null hypothesis which states that random effect is most appropriate for the Panel Regression analysis (meaning that the random effect model is to be rejected).

**Table 4.5: Hausman Specification Test**

```
. hausman fe re
```

| | Coefficients | | | |
|---|---|---|---|---|
| | (b) fe | (B) re | (b-B) Difference | sqrt(diag(V_b-V_B)) S.E. |
| HSC | -.0000474 | -.0000463 | -1.13e-06 | . |
| FSZ | .1734083 | .0679142 | .1054942 | .0435777 |

```
                b = consistent under Ho and Ha; obtained from xtreg
     B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test:  Ho:  difference in coefficients not systematic

           chi2(2) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                   =         5.69
         Prob>chi2 =       0.0581
         (V_b-V_B is not positive definite)
```

**Source: Stata 13 Output, 2022**

Hausman specification test was conducted to choose the most appropriate model for the study; the test suggests that fixed effects regression model is the most appropriate model for the study as evidenced by the chi2 of 5.69 and p-value (0.0581) greater than 0.05 which is insignificant. Following the robustness of the results, the fixed effect regression estimator was used for the test of hypotheses formulated in this study.

**Heteroskedasticity Test**
In order to validate the robustness of the estimates, the Heteroskedasticity test was conducted as a diagnostic check.
The decision rule for the panel cross-section Heteroskedasticity test is stated thus; if the residuals are homoscedastic reject alternative hypothesis and null is not rejected
*Decision Rule: At 5% level of Significance
$H_0$: No conditional Heteroskedasticity (Residuals are homoskedastic)
$H_1$: There is conditional Heteroskedasticity

**Table 4.6 Heteroskedasticity Result**

```
. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of ROA

         chi2(1)      =    20.65
         Prob > chi2  =   0.0000
```

Source: Stata 13 Output Result

To test for the existence of heteroskedasticity, this study uses the Breusch- Pagan test for heteroskedascity of the data, the result reveals that chi2 is 20.65 and the prob>chi2 is 0.0000, this indicate the presence of the effects of heteroskedasticity, that is, there is no constant variance in the residuals. Following the robustness of the results, the fixed effect regression estimators fit in to the study but because of the presence of heteroskedasticity of the dataset as revealed in table 4.6 the study therefore employ panel corrected standard error test (PCSE) to correct the problem of heteroskedasticity

**Test of Research Hypotheses**

The regression results of environmental information disclosure variables on financial performance are presented and analyzed. In view of the nature of the data, both fixed effect and random effect models were tested. The Hausman specification test result shows that fixed effect regression was most appropriate.

**Table 4.8: Panel Corrected Standard Error Test (PCSE)**

```
. xtpcse ROA WMC HSC FSZ

Linear regression, correlated panels corrected standard errors (PCSEs)

Group variable:    FIRMS                          Number of obs      =        70
Time variable:     YEAR                           Number of groups   =         7
Panels:            correlated (balanced)          Obs per group: min =        10
Autocorrelation:   no autocorrelation                                 avg =        10
                                                                      max =        10
Estimated covariances      =        28           R-squared          =    0.5414
Estimated autocorrelations =         0           Wald chi2(3)       =    315.49
Estimated coefficients     =         4           Prob > chi2        =    0.0000
```

| ROA | Panel-corrected Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| WMC | 8140105 | 1837559 | 4.43 | 0.000 | 4538556 | 1.17e+07 |
| HSC | -880.84 | 1697.474 | -0.52 | 0.604 | -4207.827 | 2446.147 |
| FSZ | 1.57e+07 | 1329857 | 11.78 | 0.000 | 1.31e+07 | 1.83e+07 |
| _cons | -9.38e+07 | 6278935 | -14.94 | 0.000 | -1.06e+08 | -8.15e+07 |

Source: Stata-13 Output (2022)

From the Table 4.8 above, for the panel corrected standard error test (PCSE) result, the coefficient of the intercept is negative. This indicates that at any given point in time where these explanatory variables are held constant, the return on assets (financial performance) of the construction firm's decreases by -9.38. This shows that independent variables employed in this model does not contribute to financial performance. However, this result is significant as the likelihood ratio of such happening as indicated by p-value of (0.0000) is acceptable. The result presented in the above table revealed that among the explanatory and control variables of the study all was found to have significant effect on return on assets except for HSC. The individual p-value revealed that waste management cost is positive and significant, while the p-value of health and safety cost indicated negative but not significant at 5% level and firm size has positive and significant effect on return on sales (financial performance). In specific terms however, and with respect to the first hypothesis, the estimated results revealed that individually, the coefficient value for WMC which is placed at 0.8140105 indicates positive correlation between WMC and ROA. Also, the p-value of 0.000 indicates that the relationship is statistically significant at 5% significance of level. Therefore, the study has every reason to reject the null and accept the alternative hypothesis which states that waste management cost has significant effect on return on asset of listed construction companies in Nigeria.

Finally, the estimated results of the second hypothesis shows that individually the coefficient value for HSC is placed at -0.088.84, is indicative a negative correlation between HSC and ROA. However, the p-value of 0.604 indicates that the relationship is not significant at 5% significance level. Therefore, the study has no reason to rejects the null hypothesis, this implies that health and safety cost has no significant effect on return on asset of listed construction company's firms in Nigeria.

**Discussion of Findings**

Preliminary analysis on the model as a first pass at the data in form of descriptive statistics showed the existence of optimum variations in the variables as depicted by the mean and standard deviation values during the 2012 to 2021 study period. Generally, the fluctuations in the data set may be attributed to key policy changes that characterized different administration in Nigeria construction firms over time. In addition, the multi-collinearity test shows that independent variables have accommodating collinearity as they interact together. This is indicated by the magnitude of the Variance Inflation Factor (VIF) and the tolerance values which respectively show consistent values below 10 and 1. Thus, the data set pass the multi-collinearity test.

The findings of this study contribute to a better understanding on the mix of environmental variable so as to improve the financial performance of listed construction firms in Nigeria. Return on Assets (ROA) and two other independent variables which represent waste management cost and health and safety cost with one control variables which include firm size. All these factors were put to test in order to identify the possible environmental information disclosure that can improve the financial performance of listed construction firms in Nigeria. The result presented in the above table 4.6 revealed that the

explanatory variables of the hypothesis one was found to be positive and significant. Thus, the null hypothesis one was rejected and the alternative hypothesis was accepted that is, waste management cost has significant effect on return on assets.

Also, the second hypothesis was also found to be insignificant. That is employee health and safety cost has no significant effect on financial performance. The present study is in contradict with the study of Chiamogu and Okoye (2020), who sought to investigated effect environmental cost on financial performance of oil and gas companies in Nigeria, likewise, as the studies of Omaliko et al, (2020), who also investigated the effect of social and environmental disclosures on performance of non-financial firms in Nigeria and found a significant effect of environmental cost disclosures on performance. On the other hand, the study corroborates the findings of Giami (2021), who examined effect of environmental cost reporting and performance of Nigerian oil and gas downstream companies quoted on the Nigerian stock exchange for the period 2011 to 2020, as well as the study of Steve (2020), who equally examined the effect of environmental costs on performances of quoted firms in Sub Saharan Africa who found an insignificant relationship among the variables of interest. The findings of this study also agree with the empirical analysis of Nosakhare et al, (2016) who examined effect of environmental disclosure on performance of Nigerian quoted companies and equally found a negative and insignificant effect between the study variables.

## CONCLUSION AND RECOMMENDATIONS

This study investigated the relationship between environmental information disclosure and financial performance of construction companies in Nigeria. This study was motivated by the rising interest on environmental issues, which have created divergent views regarding the nature of the relationship between environmental information disclosure and financial performance. The study concluded that waste management cost has positive and significant effect on financial performance while employee health and safety cost has negative and no significant effect on financial performance of listed construction firms in Nigeria. Thus, it is imperative to know that waste management reduces the effect of waste on the environment, health, and so on. It can also help reuse or recycle resources, such as paper, cans, glass and so on. Thus, waste management cost plays a significant role for financial performance of construction firms in Nigeria. The study recommends that;

i. The study recommended that firms should have positive disposition towards social and environmental waste management practices and also disclose more of these information in their annual reports as the level of these information disclosures have exerted significant influence on firms' performance over the years.
ii. Government should give tax credit to organizations that participate and contribute towards employee health and safety in order to encourage employee and which would go a long way

in enhancing firm performance in a positive way.

**REFERENCES**


Adediran, S. A., & Alade, S. O. (2013). Impact of environmental accounting on corporate performance in Nigeria: *Europe Journal of Business Management* 5(23), 1-46.

Adegbie, F. F. Ogidan, A. A., Siyanbola, T. T. & Adebayo, A. S. (2020) Impact of environmental accounting on the share value of food and beverages companies quoted in Nigeria. *Journal of Critical Review,* 7(13), 1 - 9

Amahalu, N. N., Okoye, P. V., & Obi, J. C. (2018). Effect of sustainability reporting on economic value added of quoted brewery firms in Nigeria. *Journal of Accounting,* 7(1), 1-20.

Arumona, J. O., Lambe, I. & Ogunmakinde, I. (2020) Effect of environmental disclosure on financial performance of quoted oil and gas companies in Nigeria, *Bingham University Journal of Accounting and Business,* 1(2), 1-16.

Bansal, P. & Roth, K. (2016). Why companies go green: a model of ecological responsiveness. *Academy of Management Journal*, 43(4), 717-736.

Bosse, D. Philips R. & Harrison J. (2015); Managing for Stakeholders, Stakeholder Utility Functions and Competitive Advantage. *Strategic Management Journal.* 31(1), 58-74

Brown, N. & Deegan, C. 2012. The public disclosure of environmental performance information-a dual test of media agenda setting theory and legitimacy theory. Accounting and Business Research, 29(1), 21-41.

Chiamogu A. & Okoye J. N. (2020). Effect of environmental cost on financial performance of oil and gas companies in Nigeria. *International Journal of Advanced Academic Research*, 6(10), 1-24.

Cho, J. & Dansereau, F. (2010). Are Transformational Leaders Fair? A Multi-Level Study of Transformational Leadership, Justice Perceptions, and Organizational Citizenship Behaviors. *Environmental Development and Sustainability Review,* 2(1), 26-35.

Dijkgraaf, E., & Gradus, R. (2017). Collusion in the Dutch waste collection market. *Local Government Studies, 33*(4), 573–88.

Emmanuel, U. Ifeanyichukwu, A. P. (2021). Corporate environmental accounting disclosure and financial performance of selected manufacturing firms in Nigeria. *Journal of Economics and International Business Management*, 9(2), 71-81

Etale, L. M., & Otuya, S. (2018). Environmental responsibility reporting and financial performance of quoted oil and gas companies in Nigeria. *Europe Journal of Business Innovation and Resources*, 6(6), 23-34.

Ezeagba, C. E., John-Akamelu, C. R., & Umeoduagu, C. (2017). Environmental accounting disclosures and financial performance: A study of selected food and beverage companies in Nigeria (2006-2015). *International Journal of*

*Academic Resources, Business and Social Science*, 7(9), 162-174.

Falack, V., Adiga, M., Shaki, D. & Emmauel, B. (2020). Environmental cost and corporate performance with particular reference to listed oil and gas companies in Nigeria. *Journal of Economics and Finance,* 11(4), 1-4.

Falope, F. J., Offor, T. & Nkechi, G. (2019). Environmental Cost Disclosure and Corporate Performance of Quoted Construction Firms in Nigeria. *International Journal of Advanced Academic Research*, 5(8), 17-31

Freeman, E. (1984). Strategic Management: A stakeholder approach, Cambridge University Press, Third Ed., 323-329.

Gehan, A. M. & Naser, T. H. (2015); Legitimacy Theory and Environmental Practices: Short Notes. *International Journal of Business and Statistical Analysis.* 2(1), 42-51

Giami I. B. (2021). Effect of environmental cost reporting on performance of Nigerian oil and gas downstream. *African Journal of Accounting and Financial Research*, 4(2), 26-54

Ivonne, N. & Shewangu, D. (2021) Environmental accounting adoption and disclosure case study of Zimbabwe Stock Exchange. *Journal of Accounting and Management*, 11(1),1-12

Kaplan, R. S. & Norton, D. P. (2012). Transforming the balanced scorecard from performance measurement to strategic management: *Part I Accounting Horizons*. 15(1), 87-104.

King, A., & Lenox, M. (2010). Industry self-regulation without sanctions: The chemical industry's responsible care program, *Academy of Management Journal,* 43, 698–716.

Lebans, M. & Euske, K. (2006). A Conceptual and Operational Delineation of Performance. *Journal of Environmental and Social Sciences,* 24(2), 403 – 412

Levin, K. & Fransen, T. (2017). Understanding the "emissions gap" in 5 charts. *Working Paper*. World Resources Institute Indonesia

Magara, G., Amina, D. & Momanyi, T. (2015). Effect of environmental accounting on company financial performance in Kisii County. *British Journal of Economics, Management and Trade*, 10(1), 1-11.

Ngwakwe, C. C. (2009). Environmental responsibility and firm performance: Evidence from Nigeria. *International Journal of Humanities and Social Sciences*, 3(2), 97-104.

Nosakhare P.O., Ayoib C.A., & Noriah C. A (2016). Effect of environmental disclosure on performance of Nigerian quoted companies. *International Journal of Accounting and Finance*, 8(2), 19-33

Nwaiwu, N. J. & Oluka, N. O. (2018). Environmental cost disclosure and financial performance of oil and gas in Nigeria. *International Journal of Advanced Academic Research Financial Management* 4(2). 24-31

Nwambeke, G. C., Udama, D. U., & Oko, R. A. (2019). Impact of environmental accounting disclosure on financial performance in cement companies in Nigeria, *IDOSR*

*Journal of Arts and Humanities* 4(1), 63-76

Mutende, E. A., Mwangi, M., Njihia, J. M., & Ochieng, D. E. (2017). The moderating role of firm characteristics on the relationship between free cash flows and financial performance of firms listed at the Nairobi securities exchange. *Journal of Finance an Investment Analysis, 6* (4), 1-3.

Okere, W. (2017). Environmental Investment and financial performance of listed manufacturing companies in Nigeria. Published dissertation, Covenant University, 83-94.

Okere, W., Rufai, O., Okeke, O. C. & Oyinloye, J. B. (2021) relationship amid board characteristics and environmental information disclosure of listed Nigerian manufacturing firms. *Journal of Business and Entrepreneurship*, 9(2), 17-26.

Okoye, P.V.C. & Ezejiofor, R. A. (2013). An appraisal of sustainability environmental accounting in enhancing corporate productivity and economic performance. *International Journal of Advanced Research (2013),* 1(8), 685-693.

Oluwafemi, S., David, A., Yetunde, B., Olalayinka, E., Ajetunmobi, & Simon, I. (2018). The Nexus between Environmental Cost and Financial Performance: A Trend Analysis Approach. *International Journal of Management, Accounting and Economics,* 5(9), 715-737.

Omaliko E. L., Nweze A.U & Nwadialor E.O (2020). Effect of social and environmental disclosure on performance of non-financial firms in Nigeria. *Journal of Accounting and Financial Management,* 6(1), 40-58

Onipe, A. Y. (2018). Environmental Reporting Practices and Financial Performance of Listed Environmentally-Sensitive Firms in Nigeria. *Journal of Environmental and Social Sciences,* 24(2), 403 – 412

Oshiole, S., Elamah, A. F. & Ndubuisi, A. N. (2020). Effect of Environmental Cost Disclosure on Profitability of Listed Oil and Gas Firms in Nigeria. *International Journal of Academic Research in Accounting, Finance and Management Sciences,* 10 (2), 157-170

Oyedokun, G. E. Egberioyinemi, E. & Tonademukaila, A. (2019). Environmental Accounting Disclosure and Firm Value of Industrial Goods Companies in Nigeria. *IOSR Journal of Economics and Finance*, 10(1), 07-27

Paul, K. C. & Pal, B. (2012). Corporate environmental reporting in India. *Indian Accounting Review*, 27-45

Peter, A. O & Mbu-Ogar, G. B. (2018). Analysis of Environmental and Social Disclosure and Financial Performance of Selected Quoted Oil and Gas Companies in Nigeria; *Journal of Accounting and Financial Management* 4(2), 53-62

Peter, O., Sunday, E. & Tapang, V. (2012). Environmental costs and its implication on the returns on investment: An evaluation of selected manufacturing companies in Nigeria. *Global Journal of Management and Business Research*, 12(7), 1-2.

Richard, P. J., Devinney, T. M., Yip, G. S., & Johnson, G. (2009). Measuring organizational

performance: towards methodological best practice. *Journal of Management,* 35(3), 718-804.

Rockness, J., Schlachter, P., & Rockness, H. O. (2016). *Hazardous waste disposal, corporate disclosure, and financial performance in the chemical industry.* In: Neimark, M. (Ed.), *Advances in Public Interest Accounting,* 1, JAI Press, Greenwich, 67–191.

Rodriguez, F. J., & Cruz, Y. M. (2017), Relationship between social-environmental responsibility and performance in hotel firms. *Hospitality Management,* 2(6), 824-839.

Russo, M. V., & Fouts, P. A. (2017). A resource-based perspective on corporate environmental performance and profitability. *Academy of Management Journal,* 40(3), 534–559.

Saheed, O. I., Nasiru, Y. & Aisha, M. H. (2021). Impact of board mechanism on environmental disclosure quality in Nigeria. *Gusau Journal of Accounting and Finance,* 2(2), 1-17

Salawu, M. A., Mamman, S., Dahiru, M. T., Ado, G. & Yenusa, N. (2021). Firm-specific attributes and Environmental Disclosure of Listed Oil and Gas Firms in Nigeria. *Global Journal of Accounting,* 7(1), 1-14

Scherer, A. & Patzer, M. (2011); Where is the Theory in Stakeholder Theory? A Meta-Analysis of the Pluralism in Stakeholder Theory. *Journal of Stakeholder Theory: Impact and Prospects. 140-162*

Setyorini CT, Ishak Z (2012). Corporate social and environmental disclosure: A positive accounting theory viewpoint. *International Journal of Business and Social Science*, 3(9),152-164.

Thornton, D., Kagan, R. A., & Gunningham, N. (2013). Sources of corporate environmental performance. *California Management Review,* 46 (1), 127–141.

Tomal, D. R. & Jones, K. J. (2015). A Comparison of Core Competencies of Women and Men Leaders in the Manufacturing Industries. *Journal of Environmental and Social Sciences,* 24(2), 403 – 412

## APPENDIX
## RAW DATA PRESENTATION

| FIRMS | YEAR | PAT | TA | ROA=(PAT/TA) | WMC | HSC | FSZ |
|---|---|---|---|---|---|---|---|
| ARBICO PLC | 2012 | -48,305 | 2,553,893 | -0.019 | 1 | 601 | 6.407 |
| ARBICO PLC | 2013 | 278,493 | 2,501,728 | 0.111 | 1 | 910 | 6.398 |
| ARBICO PLC | 2014 | -252,993 | 4,457,453 | -0.057 | 1 | 1,108 | 6.649 |
| ARBICO PLC | 2015 | 271,234 | 4,532,183 | 0.060 | 1 | 1,401 | 6.656 |
| ARBICO PLC | 2016 | -7,693 | 3,927,791 | -0.002 | 1 | 1,526 | 6.594 |
| ARBICO PLC | 2017 | 61,661 | 5,351,996 | 0.012 | 1 | 2,322 | 6.729 |
| ARBICO PLC | 2018 | -973,671 | 6,980,577 | -0.139 | 1 | 1,374 | 6.844 |
| ARBICO PLC | 2019 | 579,500 | 7,390,839 | 0.078 | 1 | 1,952 | 6.869 |
| ARBICO PLC | 2020 | 1,129,646 | 8,568,151 | 0.132 | 1 | 886 | 6.933 |
| ARBICO PLC | 2021 | -593,188 | 13,053,779 | -0.045 | 0 | 1,243 | 7.116 |
| JULIUS BERGER | 2012 | 7,772,055 | 14,521,681 | 0.535 | 1 | 2,153 | 7.162 |
| JULIUS BERGER | 2013 | 4,733,213 | 16,310,338 | 0.290 | 1 | 2,468 | 7.212 |
| JULIUS BERGER | 2014 | 6,495,814 | 19,566,152 | 0.332 | 1 | 2,097 | 7.292 |
| JULIUS BERGER | 2015 | 2,656,300 | 18,658,452 | 0.142 | 1 | 2,230 | 7.271 |
| JULIUS BERGER | 2016 | -3,533,365 | 13,145,087 | -0.269 | 1 | 2,137 | 7.119 |
| JULIUS BERGER | 2017 | 454,593 | 13,599,680 | 0.033 | 1 | 2,681 | 7.134 |
| JULIUS BERGER | 2018 | 4,788,211 | 16,710,922 | 0.287 | 1 | 3,599 | 7.223 |
| JULIUS BERGER | 2019 | 6,323,248 | 20,394,170 | 0.310 | 1 | 3,009 | 7.310 |
| JULIUS BERGER | 2020 | 5,010,198 | 22,764,368 | 0.220 | 1 | 1,328 | 7.357 |
| JULIUS BERGER | 2021 | 7,782,070 | 29,912,839 | 0.260 | 1 | 1,590 | 7.476 |
| Sky Shelter Fund | 2012 | 110,589 | 2,297,950 | 0.048 | 0 | 394 | 6.361 |
| Sky Shelter Fund | 2013 | 111,984 | 2,354,993 | 0.048 | 0 | 428 | 6.372 |
| Sky Shelter Fund | 2014 | 128,878 | 2,358,456 | 0.055 | 0 | 1,343 | 6.373 |
| Sky Shelter Fund | 2015 | 158,516 | 2,613,489 | 0.061 | 0 | 2,268 | 6.417 |
| Sky Shelter Fund | 2016 | 148,807 | 2,616,327 | 0.057 | 0 | 2,668 | 6.418 |
| Sky Shelter Fund | 2017 | 167,716 | 2,679,741 | 0.063 | 0 | 2,339 | 6.428 |
| Sky Shelter Fund | 2018 | 152,818 | 2,721,609 | 0.056 | 0 | 3,119 | 6.435 |
| Sky Shelter Fund | 2019 | 162,115 | 2,719,889 | 0.060 | 0 | 2,087 | 6.435 |
| Sky Shelter Fund | 2020 | 175,138 | 2,834,180 | 0.062 | 0 | 2,192 | 6.452 |
| Sky Shelter Fund | 2021 | 160,517 | 2,866,870 | 0.056 | 0 | 2,521 | 6.457 |
| SMART PRODT. PLC | 2012 | 11,660 | 54,431 | 0.214 | 1 | 315 | 4.736 |
| SMART PRODT. PLC | 2013 | 12,021 | 60,433 | 0.199 | 1 | 317 | 4.781 |
| SMART PRODT. PLC | 2014 | 12,644 | 65,048 | 0.194 | 1 | 938 | 4.813 |
| SMART PRODT. PLC | 2015 | 16,657 | 72,941 | 0.228 | 1 | 1,933 | 4.863 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| SMART PRODT. PLC | 2016 | 12,836 | 74,964 | 0.171 | 1 | 1,231 | 4.875 |
| SMART PRODT. PLC | 2017 | 8,703 | 92,383 | 0.094 | 1 | 1,900 | 4.966 |
| SMART PRODT. PLC | 2018 | 11,840 | 91,082 | 0.130 | 1 | 1,860 | 4.959 |
| SMART PRODT. PLC | 2019 | 5,431 | 89,763 | 0.061 | 1 | 4,598 | 4.953 |
| SMART PRODT. PLC | 2020 | 7,385 | 92,648 | 0.080 | 1 | 2,522 | 4.967 |
| SMART PRODT. PLC | 2021 | 7,435 | 95,583 | 0.078 | 1 | 3,940 | 4.980 |
| UNION TRUST PLC | 2012 | 670,507 | 14,106,505 | 0.048 | 1 | 1,238 | 7.149 |
| UNION TRUST PLC | 2013 | 593,215 | 14,615,281 | 0.041 | 1 | 3,022 | 7.165 |
| UNION TRUST PLC | 2014 | -1,290,172 | 12,645,983 | -0.102 | 1 | 3,791 | 7.102 |
| UNION TRUST PLC | 2015 | 523,683 | 12,557,287 | 0.042 | 1 | 1,439 | 7.099 |
| UNION TRUST PLC | 2016 | 371,058 | 12,989,081 | 0.029 | 1 | 1,475 | 7.114 |
| UNION TRUST PLC | 2017 | 294,706 | 13,307,293 | 0.022 | 1 | 2,101 | 7.124 |
| UNION TRUST PLC | 2018 | 363,650 | 10,968,704 | 0.033 | 1 | 2,794 | 7.040 |
| UNION TRUST PLC | 2019 | 350,578 | 11,036,914 | 0.032 | 1 | 1,399 | 7.043 |
| UNION TRUST PLC | 2020 | 377,158 | 10,997,033 | 0.034 | 1 | 1,021 | 7.041 |
| UNION TRUST PLC | 2021 | 397,712 | 11,362,208 | 0.035 | 1 | 1,966 | 7.055 |
| UPDC PLC | 2012 | 2,180,310 | 71,358,619 | 0.031 | 1 | 1,883 | 7.853 |
| UPDC PLC | 2013 | 3,155,419 | 66,551,713 | 0.047 | 1 | 1,566 | 7.823 |
| UPDC PLC | 2014 | 3,589,077 | 66,551,713 | 0.054 | 1 | 1,066 | 7.823 |
| UPDC PLC | 2015 | 380,778 | 71,950,567 | 0.005 | 1 | 1,022 | 7.857 |
| UPDC PLC | 2016 | -1,550,055 | 70,893,735 | -0.022 | 1 | 1,861 | 7.851 |
| UPDC PLC | 2017 | -2,067,555 | 63,820,708 | -0.032 | 1 | 1,192 | 7.805 |
| UPDC PLC | 2018 | -18,486,962 | 41,963,690 | -0.441 | 1 | 1,429 | 7.623 |
| UPDC PLC | 2019 | -12,435,654 | 27,858,032 | -0.446 | 1 | 4,273 | 7.445 |
| UPDC PLC | 2020 | -1,059,311 | 20,287,020 | -0.052 | 1 | 3,220 | 7.307 |
| UPDC PLC | 2021 | -8,577,911 | 10,966,480 | -0.782 | 1 | 7,364 | 7.040 |
| UPDC TRUST | 2012 | 0 | 0 | 0.000 | 1 | 1,313 | 6.015 |
| UPDC TRUST | 2013 | 0 | 0 | 0.000 | 1 | 1,335 | 6.325 |
| UPDC TRUST | 2014 | 4,843,835 | 30,927,087 | 0.157 | 1 | 1,698 | 7.490 |
| UPDC TRUST | 2015 | 2,989,526 | 32,974,170 | 0.091 | 1 | 2,433 | 7.518 |
| UPDC TRUST | 2016 | 1,587,465 | 31,990,626 | 0.050 | 1 | 4,975 | 7.505 |
| UPDC TRUST | 2017 | 2,208,347 | 31,447,871 | 0.070 | 1 | 2,017 | 7.498 |
| UPDC TRUST | 2018 | 2,644,763 | 33,406,944 | 0.079 | 1 | 8,003 | 7.524 |
| UPDC TRUST | 2019 | -449,293 | 31,234,169 | -0.014 | 0 | 2,622 | 7.495 |
| UPDC TRUST | 2020 | 1,932,292 | 32,019,272 | 0.060 | 0 | 2,707 | 7.505 |
| UPDC TRUST | 2021 | -4,480,408 | 25,821,242 | -0.174 | 0 | 3,946 | 7.412 |

Source: GRI 300 and Financial Report of Various Company

**LIST OF QUOTED CONSTRUCTION COMPANIES IN NIGERIA AS AT DECEMBER 31ST 2021**

| S/No. | Construction Companies | Date Listed |
|---|---|---|
| 1. | Arbico Plc | 8th June, 1983 |
| 2. | Julius Berger Nigeria Plc | 18th February, 1970 |
| 3. | Rouches global resources Plc | 1th December, 2021 |
| 4. | SFS real estate investment trust | 7th January, 1999 |
| 5. | Smart product Nigeria Plc | 26th July, 1992 |
| 6. | Union home real estate investment trust | 5th February, 2008 |
| 7. | UPDC Plc. | 3rd August 1998 |
| 8. | UPDC real estate investment trust. | 26th February, 2008 |

*Source: Nigeria Exchange Group (2021)*