RESEARCH ARTICLE

ENVIRONMENTAL INVESTMENT DISCLOSURES AND FINANCIAL PERFORMANCE OF LISTED INDUSTRIAL GOODS FIRMS IN NIGERIA

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Abstract: The negative effects of globalization and rapid growth of industries on environment have changed the business paradigm from profit issues to profit, people and planet. This study examined the effect of environmental investment disclosure on financial performance of listed industrial goods firms in Nigeria. The specific objectives includes; to examine the effect of air protection disclosures on return of assets of listed manufacturing firms in Nigeria; to ascertain the effect of water protection disclosures on return of assets of listed manufacturing firms in Nigeria and to determine the effect of land protection disclosures on return of assets of listed manufacturing firms in Nigeria. The study used ex-post facto research design with 6 sample size from 2018-2022. Findings revealed that; there is a negative and significant relationship between air protection disclosures and the performance of industrial goods companies in Nigeria; there is a positive impact of water protection disclosures on the performance of industrial goods companies in Nigeria and the result of the analysis showed a beta coefficient of 0.072 for land protection disclosure. This implies that 7.2% of the variation in financial performance in the industrial goods companies is accounted for by land protection disclosures. Based on the findings of the study, it was concluded that the effect of environmental investment disclosure on financial performance of the industrial goods companies in Nigeria is significant. Based on the findings of the study, the following recommendations were made; the management of the industrial goods companies should disclose their water protection activities in their financial statement. This will boast the confidence of all stakeholders in the industrial goods sector; the amount of disclosures on the land protection activities of the firms should be increased as this will increase the financial performance of the selected industrial goods firms and the companies should put in place adequate cost control mechanism to ensure air protection cost does not significantly deplete the financial performance of the industrial goods firms in Nigeria.

Keywords: *Environmental investment, Financial performance.*

INTRODUCTION

Environmental investment of listed industrial goods firms in Nigeria is seen as interesting issues in accounting areas since there is a shift in the business paradigm from single P (Profit) to Triple P (Profit, People and Planet). A number of companies listed in Nigeria Stock Exchange market have implemented Environmental investment to attract potential shareholders. Green investment can be defined as company's efforts in managing environmental issues by reducing the negative impact of business activities on environment.

Environmental investment is a form of social responsible investment (SRI) where investors focus on choosing investments in companies that support or provide environmentally friendly products and/or services. Environmental investment is the process of investing exclusively in companies or funds that have a positive environmental impact. The definition of environmental investments as investments that solve environmental problems is based on the problem and solution approach. One of the greatest environmental problems is global warming,

which can be solved by renewable energy production or utilization of low carbon fuels (Okpo, Umoren, and Simeon, 2024).

Investments that solve environmental problems is based on the "problem-and-solution approach. One of the greatest environmental problems is global warming, which can be solved by renewable energy production or utilization of low carbon fuels.

The destruction of native forests can be solved by plantation timber production, waste and landfill growth with recycling, habitat damage with ecotourism development or environmental engineering, declining wild fish stocks with aquaculture, chemicals in food/ecosystem with the production of organic agriculture, vehicle pollution by improving technology, enabling free public transport, production of electric vehicles or by using bicycles. (Bivell, 2008).

An environmental investor will, therefore, evaluate investment opportunities by reference to their effect on the world's environmental issues. This frame of reference plays a key role in informing their investment strategies (Okpo and Emenyi, 2023). However, an environmental investor will still be interested in businesses which promises strong financial returns in addition to helping the environment.

The decision-making process for environmental investors usually involves 'positive screening' in that they will be looking for businesses that are actively seeking to make a positive and lasting impact on the world's environment. This different from the 'negative screening' used by social investors who simply want to avoid investments that affect the world in a negative way.

When analysing a potential investment, numerous factors should be considered to ensure the investment is environmentally positive. Investment screening is a process often used to help identify sustainable investment opportunities. Screening uses predetermined criteria to filter potential investments and highlight suitable opportunities. Negative screening is the most typical form of screening, ruling out companies such as those with high emissions, or within industries like manufacturing firms.

This is a practise that is used by many investors to remove industries such as tobacco, alcohol and gambling from their portfolios. Positive screening, however, is a more commonly used form of screening when looking at ethically based investments such as environmental investment. Unlike negative screening, positive screening selects companies that meet positive metrics such as low-emissions or use of renewable energy.

This approach ensures only companies with a positive environmental impact are selected as part of a portfolio. Whilst negative screening is very clear-cut, positive screening can be a little more complex as the criteria used for selecting investments is based on multiple, complex factors. Personal opinions also come into play with positive screening, with so many factors contributing to a companies environmental output, each investor will have their own areas they feel are most important.

Things like a company's industry, emission levels, energy usage and waste are common metrics that can give a good insight into a company's impact on the environment. Many firms now publish environmental reports and policies online, these can provide a powerful insight into the businesses stance and commitments (Simeon and Essien, 2021).

There are also more detailed, underlying factors that can significantly affect a company's overall impact on the environment. Do they work with suppliers or customers that operate against the environment? Do their workplace practices include unnecessary travel or waste? There is a lot to research when selecting an environmentally conscious investment but ultimately it comes down to what environmental factors are most important to you. Examples of environmental investments are often in the 'CleanTech' and 'GreenTech' spaces focusing on generating clean energy and reducing pollution.

In addition to strong financial returns, environmental investment also has the potential to unlock incredible environmental advancements (Akpan and Simon, 2021). Investments made into more environmentally-conscious firms create a chain reaction of positive impacts. Firstly, environmentally focused companies receive

access to additional funds they can utilise to continue business growth, increase their environmental efforts, become bigger players in their respective markets and develop new innovations.

Investments into environmentally focused businesses also creates a larger demand for more responsible investment opportunities. As more people rule out less sustainable firms from their portfolios, these companies will be pressured into adopting a more environmentally friendly approach to their operations to remain appealing to both existing and potential future investors.

The negative effects of globalization and rapid growth of industries on environment have changed the business paradigm from profit issues to profit, people and planet (triple bottom line). Consequently, a number of companies have invested their money in environmental issues (called as green investment). Corporate environmental investments are intended to reduce carbon emissions results in significant shareholder gains to return on assets which are contrary to the traditional view that they are an unnecessary cost to the company.

The study shows that corporate environmental investments in carbon emissions reduction result in energy efficiency, waste reduction, reduced future liabilities which all ultimately increase return on assets. Other gains are derived from the differentiation of the company associated with environmental investment which opens up new market opportunities for the enterprise. Companies are also poised to benefit from reduced pollution fines and taxes such as the new carbon tax in South Africa.

This paper also establishes that environmental investments to reduce hazardous solid waste are not related to return on assets. The study concedes that investment in hazardous solid waste disposal is essential and necessary to maintain a sustainable operational environment and to preserve good stakeholder relations necessary for the survival and sustainable growth of companies and does not result in gains to return on assets. As such, investments to reduce hazardous solid waste should be to the level of regulatory

compliance as any investment beyond that will begin to erode shareholder value. The study examined the effect of environmental investment disclosures on the financial performance of listed Industrial goods firms in Nigeria. This was achieved through the following specific objectives:

- To examine the effect of air protection disclosures on return of assets of listed manufacturing firms in Nigeria

- To ascertain the effect of water protection disclosures on return of assets of listed manufacturing firms in Nigeria

- To determine the effect of land protection disclosures on return of assets of listed manufacturing firms in Nigeria.

Conceptual Framework

Environmental Investment Disclosure

Environmental investments are thematic investments. They include only those investments that may have a positive effect on the environment and may additionally increase the profit of investors, while the previous two terms cover a considerably wider range of issues, and the environment is just one of them. The definition of environmental investments as investments that solve environmental problems is based on the "problem-and-solution" approach.

One of the greatest environmental problems is global warming, which can be solved by renewable energy production or utilization of low carbon fuels. The destruction of native forests can be solved by plantation timber production, waste and landfill growth with recycling, habitat damage with eco-tourism development or environmental engineering, declining wild fish stocks with aquaculture or mariculture, chemicals in food/ecosystem with the production of organic agriculture, vehicle pollution by improving technology, enabling free public transport, production of electric vehicles or by using bicycles (Bivell 2008).

Lately, there has been a growing concern among publicly funded companies for environmental issues (Akpan and Simon, 2021). An increasing number of companies take into consideration in their own operations, not only social and governance factors but also environmental ones.

There is a growing environmental awareness among company leaders, and the concept that includes activities such as green-thoughts, green-talk, or going green became one of the prevalent concepts in the twenty-first century.

The decision of company's leaders to invest money or allocate a part of the profit in the preservation and improvement of natural systems turned out to be a good idea. Environmental investments can have a positive financial impact on companies.

This challenges the conventional wisdom of a negative financial impact of environmental investments (Nehrt, 1996). The result is a double benefit--preserving nature and gaining profit through a transition to a neutral and sustainable world. Environmental investments are a necessary precondition for a harmonious society.

Companies making environmental investments are often focused on renewable energy (solar, wind, geothermal, etc.), climate change, and environmental pollution abatement, including carbon reduction, clean technologies, green building and efficiency, transportation, and water issues (The Eco Investor Guide 2012). Environmental awareness on the part of companies helps create good reputation as an important driver for companies seeking to present themselves as good "social entities" that do not pollute the environment.

Nevertheless, the leaders of the companies that make environmental investments feel a kind of ethical obligation, which is not primary. In addition to being based on ethical principles, environmental investments are aimed at increasing the company's profit. Accordingly, they may be a win-win venture both for the environment and for business. Due to environmental investments, some channels of potential revenue develop and costs are reduced.

The benefits of environmental investments include a better access to certain markets; product diversification; the selling of pollution-control technologies; better risk management and relations with external stakeholders; a lower cost of materials, energy, and services; as well as more favorable costs of capital and labor (Ambec and Lanoie, 2008).

Keeping in mind the growing potential of the Eco market, investors' profits are also expected to increase.

However, opinions among economic analysts are divided. While some consider that investing in environment-friendly technologies enables profit increase, others think the opposite. Potential risks associated with environmental investments may include the dependence on erratic government tax incentives, government's favoring of one technology over another, hindered adoption of new regulations, investment, and public support due to prolonged recession.

Dependence on social movements and consumer demand may hold back green companies. Disruptive technology may cause volatility; promising technologies may fail to scale up; what is green today may not be green tomorrow; oil and fossil fuel energy prices may remain low; the climate change "debate" may continue to plague the sector, etc. (Eco Investor Guide 2012). Furthermore, it is disputable whether this is short-term or long-term profit.

A study that tracked indices for five segments of environmental investment (alternative energy, clean technology, green building, sustainable water, and pollution prevention) over a period of roughly 9 years revealed that in the long term, the indices' behavior was autonomous, creating opportunities to diversify investment. In the short term, the environmental segments exhibited a similar behavior, approximating the behaviors described by conventional indices (De Sousa Gabriel and Rodeiro-Pazos, 2017). Regardless of the divided opinions, the environmental investment market as recorded a significant increase over years (Bivell, 2008).

Water Protection Investment

Investment in water protection is emerging as a priority, because clean water is the planet's most precious resource. It is necessary for the functioning of all living beings, but it is also a significant factor of global climate change. Water scarcity and protection is a global problem, which is becoming more and more important with the growth of the world's population.

Due to appropriate investment, some companies benefited from water scarcity, both in terms of profit and water protection. Some of the investments that contribute to water protection are related to improving water treatment and water infrastructure (transport), increasing water efficiency (irrigation systems, water pumps), water quality analysis.

Water funds are developed by the Nature Conservancy in order to design and enhance funding and governance mechanisms with the aim of ensuring water security through a five-stage process: feasibility, design, creation, operation, and maturity. Their activities are determined by specific spatial conditions, local opportunities, and regulations. The first water fund was established in Quito (Equator). Thirty-four water funds are currently in operation, and more than 30 are being developed in Africa, Asia, and Latin and North America (Water Funds 2018).

Air Protection Investment

Major air pollutants are industrial activities, exhaust from vehicles, smoke stacks of fossil fuel power stations, and emissions of various gases caused by natural processes on the Earth. Carbon dioxide (CO_2), a greenhouse gas emitted by burning fossil fuels, such as natural gas or gasoline, is one of the leading pollutants, and it is responsible for global warming.

Investment in air pollution mitigation, originating from artificial sources, is achieved through investment in pollutant capture and filtration systems, the improvement of conditions for cycling or walking, free public transport, more efficient low-emitting vehicles, machines using renewable energy sources, etc. Natural sources of air pollution are more difficult to control.

Land Protection Investment

Land is a nonrenewable and highly endangered resource, the main source of carbon, and a significant factor in regulating the emission of carbon dioxide and other greenhouse effect gases. Healthy land is essential for boosting agricultural productivity. It leads to higher farmers' incomes, generates on-farm employment, increases food security, and lowers food prices (thereby reducing poverty).

Considering the prognosis for the growth of the world's population in the coming decades, investments in agriculture land protection may be of paramount importance for the provision of food and poverty reduction.

Land is endangered by the erosion process, declining water sources, the lack of nutrients, and the pollution of groundwater resulting in biodiversity loss. Investment in agriculture land protection includes investment in crops, the improvement of the existing land by using new equipment, soil remediation, solid waste management, and the reduction of waste and pollution by using recycled materials.

Air Protection Investment and Financial Performance

Air protection investment includes only those investments that may have a positive effect on the air quality and may additionally increase the profit of investors. Environmental investments are important for the preservation of all segments of the environment. The level of vulnerability of each of them, as well as human needs, dictates the need for investments in their preservation. Investing in natural infrastructures brings multiple benefits, and the main ones are associated with environmental protection.

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Financial Performance

The subject of financial performance has received significant attention from scholars in various areas of business and strategic management (Jat, 2006). It has also been the primary concern of business practitioners (managers and entrepreneurs in all types of organizations) because corporate performance is essential in organizations' success stories because of their perceived effectiveness and efficiency in managing their operations and their positive contributions to the well-being of their stakeholders.

But low performance organizations owe to their lack of such essential attributes (Makhamreh, 2000). Performance is however, a difficult concept in terms of definition and measurement. It has been defined as the result of activity and the appropriate measure selected to assess corporate performance is considered to depend on the type of organization to be evaluated and the objectives to be achieved through that evaluation (Hunger & Wheelan, 1997).

According to the Encyclopedia of Business (2011), performance measures can be grouped into two basic types: those that relate to results (outputs or outcomes such as competitiveness or financial performance) and those that focus on the determinants of the results (inputs such as quality, flexibility, resource utilization and innovation). This suggests that performance measurement frameworks can be built around the concepts of results and determinants. Zuriekat, Salameh and Alrawashdeh (2011) on the other hand opined that performance measurement systems were considered information systems that were used to evaluate both individual and organizational performance.

Until recently, companies concentrated on the use of financial performance measures as the foundation of performance measurement and evaluation purposes. According to Lin and Liu (2005), in business management, financial ratios are usually one of the indicators used to evaluate a firm's performance.

Generally, the financial information of a company's business operations will be reported in the yearly financial statements,

and a financial ratio simply constitutes one item divided by another in the financial statement. Financial ratios can be viewed as a preliminary reference to the analysis of the business performance.

This agrees with Osisioma's (1996) assertion that "ratios relate one set of values to another, with the resulting quotient serving as a measure, a standard or a norm by which performance is judged".

Traditionally, the measurement of a firm's performance usually employs a financial ratio method because it provides a simple description about the firm's financial performance in comparison with previous periods, helps to improve its performance of management.

According to Berger and Patti (2002) the measures of firm performance are usually ratios fashioned from financial statements or stock market prices such as industry-adjusted operating margins or stock market returns. Glautier and Underdown (2001) maintained that there were two aspects of a company's financial performance of interest to investors. First, its financial performance could be assessed by reference to its ability to generate profit.

That agreed with Pandey's (2005) assertion that it was assumed that profit maximization caused the efficient allocation of resources under the competitive market conditions, and profit was considered as the most appropriate measure of a firm's performance. Hill and Jones (2009) also asserted that the key measure of a company's financial performance was its profitability. According to Birley and Westhead (2013), organizational performance is the ability of an organization to achieve its goals and objectives.

From the study of Nwaimo (2020), performance of a firm is pointed out to three specific areas. These areas are financial performance, market performance, and shareholders returns. Financial performance refers to the level in which the financial health of an organization is being measured over time (Farrukh & Faizan, 2016). This is carried out to give stewardship accounting to the owners of the business (shareholders) by the management.

Hence, financial performance could be viewed from the difference between the starting point of a business concern and the target points within a space of time. According to Magara, Aming and Momanyi (2015), financial performance could be measured in different ways, including profitability, market share growth, return on investment (ROI), return on equity (ROE), and liquidity.

The Institute of Chartered Accountants of Nigeria Study Pact (2006) averred that the financial performance of a firm could be computed in various ways, like net profit margin (NPM), gross profit margin (GPM), earning per share (EPS) and other performance measures. In this study, financial performance was measured by returns on capital employed (ROCE).

Return on Assets

Return on assets is a profitability ratio that provides how much profit a company is able to generate from its assets. In other words, return on assets (ROA) measures how efficient a company's management is in generating earnings from their economic resources or assets on their statement of financial position. ROA is shown as a percentage, and the higher the number, the more efficient a company's management is at managing its balance sheet to generate profits.

Theoretical Framework

Stakeholder Theory

This study was anchored on the stakeholder theory which was propounded by Edward Freeman in 1984. It is one of the major approaches to social, natural and administration investigation. Scholars portray stakeholders as "those people who can influence or be influenced by the activities associated with trade" or as "the people who depend on the firm to attain their individual objectives and on whom the firm depends on for its existence".

The idea of stakeholder theory began to receive significant attention in organizational and management research after the publication of Strategic Management: A Stakeholder Approach by Edward Freeman in 1984. The theory refers to how business works at its best, and how it can work. It is about value creation, trade and how to manage the business effectively.

The stakeholder theory argues that firms have a moral obligation to consider and appropriately balance the interest of all stakeholders (Freeman, 1984). Successful firms protect the interest of different stakeholder groups such as: shareholders, creditors, employees, suppliers, customers, communities and the public (Hill & Jones, 2012). The stakeholder theory has fundamentally become a basis of knowledge for companies to secure their relationship with stakeholders through social and environmental reporting. Sustainability reporting is considered as a strategic approach by which organizations denote stakeholders participation and reduce information asymmetry.

It has been recognized that organizations that consider stakeholders' requirements tend to show a better a performance than those which do not (Masud et al. 2017). This theory relates to the study since sustainability reporting is the incorporation of environmental, societal and economical aspects of an organization to reporting and communication of vital information to a wider stakeholder base of the organization (Cheng, Ioannou & Serafein, 2014). This vital information has proved to be a useful tool for promoting firm performance.

Empirical Framework

Eri (2011) examined the effect of the environmental investment on firm performance in Japan. The study adopted the use of ordinary least-square regression for the analysis of its data. The study found that in the short term, environmental investment does not influence firms' performance but in the long term, it has an impact on firms' performance. The study suggested that there is a time interval between investment and profitability valuation in accordance with consumers and shareholders.

Vinayagamoorthi, Murugesan, Kasilingam, and Ramanchandran (2015) studied the relationship between environmental performance and profitability of Indian firms. The study adopted the use of Granger causality test. The study revealed that there is an inverse relationship between the return on capital employed (ROCE) and energy intensity (EI) while a direct relationship exists between the firms return on equity (ROE), return on asset (ROA), return on sales (ROS) and energy intensity (EI).

The study recommended that the practitioners and policymakers should implement environmentally friendly technologies and inspire the Indian firms to use more energy proficient technology.

Oshiole, Elama and Ndubuisi (2020) investigated the effect of environmental disclosure of listed oil and gas firms in Nigeria using employees' health and safety costs and environmental remediation cost as proxies of investigation spanning 2010 to 2019. Correlation and Panel Least Square (PLS) regression analysis were used to test the hypotheses of the study. The findings showed that environmental health and safety costs and environmental remediation costs have positive and significant effects on the financial performance of the sampled companies.

Nwaimo (2020) examined the effect of environmental costs on the performances of 64 industrial firms in sub-Saharan Africa, covering South Africa, Nigeria, Ghana, and Tanzania between 2007 and 2016, using remediation and community development cost as proxy variables. The outcome revealed that RC and CDC have no significance effect on the ROCE. However, Anselm and Janefrances (2020) expressed divergent views with statistical proof that RC and CDC have positive and significant effects on the performances.

From the perspective of Ayu, Gamayuni and Urbanski (2020), the outcome of the investigation carried out in Indonesia, through the use of primary data and Smart Panel Least Square (PLS), suggests that environmental and social costs significantly and positively affect the financial performances of international energy corporations in Indonesia. Iliemena (2020) investigated the effects of environmental accounting practices on the corporate performance of listed oil and gas companies in Nigeria, covering 2012-2018. Through the use of simple linear regression, findings revealed that environmental accounting has had a positive and significant effect on ROCE.

The study of Chinedu, Udama and Ali (2019) examined the impact of environmental disclosure on the performance of cement companies in Nigeria using environmental

health and safety cost as one of the explanatory variables. Data was sourced secondarily from the annual reports of the companies covering 2006-2017. Through the use of a panel regression model, the outcome indicated that environmental health and safety costs had a negative and significant impact on the firms' performance.

Agboola and Oroge (2019) evaluated the effect of environmental cost on the financial performance of two quoted cement companies in Nigeria. Primary and secondary data were employed for the study. The primary data was sourced through the use of questionnaires, while the secondary data was sourced from the annual financial reports and accounts of the companies spanning 2013 to 2018. Regression analysis was adopted for the data analysis. It was found that environmental costs had significant and positively effects on the financial performance of the cement companies in Nigeria.

It was further revealed from the study of Onuora and Christian (2019) that environmental costs had a negative and insignificant effect on the ROCE of 11 listed oil and gas companies in Nigeria between 2017 and 2018. This was made known with correlation and OLS analytical technique.

Iheduru and Chukwuma (2019) examined the effect of environmental and social costs on the performance of selected manufacturing companies in Nigeria using 2016 annual reports and accounts. Using multiple regression models, it was found that environmental and social costs have a negative and significant relationship with ROCE.

Egbunike and Okoro (2018) investigated whether green accounting, as measured by environmental health safety costs and social costs, affected the profitability of ten non-consumer goods firms listed on NSE during 2012-2016. Data was sourced from the annual reports and accounts of the firm, using environmental health safety cost and social costs as proxies of green accounting. Canonical correlation was used for the analysis, and the result showed that there was no significant relationship between environmental health safety cost and social cost and the profitability measure of the sampled banks.

Otu, Okon and Okafor (2018) examined the relationship between the environmental accounting and oil companies in Nigeria. The secondary data used was extracted from the audited financial statements of the companies, covering 2014-2016. The analytical tool used for the study was multiple linear regressions. The outcome of the study showed that there were positive insignificant relationships between environmental accounting and the performance variable of the companies.

Agbiogwu, Ihendinihu and Okafor (2016) examined the impact of environmental and social costs on the performance of Nigerian manufacturing companies. Data was gleaned from the annual reports and financial summary of 10 randomly sampled firms covering 2014 only. The outcome revealed that environmental and social cost had significantly positive effects on the ROCE of the sampled companies.

Makori and Jagongo (2013) examined the effect of environmental accounting and firms' profitability for 14 randomly selected quoted companies in India. The data gleaned from the secondary source was analysed, using multiple regression models. The outcome of the study suggested that environmental accounting has a significant negative relationship with ROCE.

In a study carried out in Niger Delta Region of Nigeria Bassey, Effiok and Eton (2013) indicated that environmental cost has significant influence on a firms' profitability. In view of the theoretical and empirical review, this study advanced a null hypothesis that there is no significant effect of environmental accounting on the financial performance of family owned companies in Nigeria.

METHODOLOGY

Ex-post facto research design was used in the study. The choice of this design was based on the fact that it is not possible to directly manipulate or control any of the independent variables; inferences about the variables are made, without direct intervention from independent and dependent variables (Okpo, Umoren, and Simeon, 2024).

The research design was adopted to allow a complete assessment of the environmental

investment and financial performance of quoted industrial goods companies in Nigeria (Simeon and Essien, 2021). The population of this study consists of 13 quoted Industrial goods companies that are listed on the Nigerian Stock Exchange between 2018 and 2022. From the population of 13 quoted Industrial goods companies listed on the Nigerian Stock Exchange between 2018 and 2022. Sample size will be determined, using Yamene (1967) formula as follows:

$$n = \frac{N}{1 + N(e)^2}$$ **Where:**

n = the sample size
N = the population
e = error term (5% on the basis of 95% confidence interval)
Thus,

n = $\frac{13}{1 + 13(0.05)^2}$
n = 12.5 or 13

Because of lack of availability of information in the financial reports of the companies, only 6 Industrial goods companies was considered for the study.

Purposive sampling technique was used for the study. The technique enhances selection of Industrial goods firms that disclosed environmental investment related information. The sample companies are: BUA Cement, Dangote Cement PLC, Lafarge Africa PLC, Meyer PLC, Berger Paints PLC and Premier Paints.. This selection is based on the nature in which companies report on the environmental investment and most importantly availability of the annual reports on the web over the period of the study. Secondary data was the main source of data for the study.

The data is obtained from financial reports and accounts of companies selected for the study. The other relevant data for this study was collected from various books, journals, magazines, and websites. Data from financial reports was obtained through an in-depth examination with contents analysis method. Identification and measurement of the variable consists of dependent variable and independent variable.

Dependent Variable

The dependent variable in this study is financial Performance.

This is measure using return on assets (ROA) model. Therefore, the financial Performance (FP), which is the dependent variable in this study, is measure using the Return on assets (ROA) model. The model is stated as follows:

$$FP_{kt} = ROA_{kt}, \text{--------} \quad (1)$$

Where: FP_{kt} = The Financial Performance characteristics of financial reports for Industrial goods firm k in year t

ROA_{kt} = Return on assets for Industrial goods firm k in year t

Independent Variable

The Independent variable in this study is environmental investment disclosure which is being measure using its components; Air protection investment (APD), Water protection investment (WPD) and Land protection investment (LPD). Thus, the other equation is stated as follows:

$$ROA_{kt} = f(API_{kt}, WPI_{kt}, LPI_{kt},) \text{ -----------} \quad (2)$$

ROA_{kt} = The Return on asset of financial reports for Industrial good firm k in year t
APD_{kt} = Air protection disclosure for Industrial good firm k in year t
WPD_{kt} = Water protection disclosure for Industrial good firm k in year t
LPD_{kt} = Land protection disclosure for Industrial good firm k in year t
e_t = Error term in year t.

Model Specification

Multiple Linear Regressions

The linear models for multiple-regression is expressed as follows:

$$ROA_{kt} = ß_o + ß_1 APD_{kt} + ß_2 WPD_{kt} + ß_3 LPD_{kt} + e_t$$

Where: $ß_1, ß_2, ß_3, ß_4,$ = coefficient.

$ß_o$ = Constant
ROA_{kt} = Return on assets for Industrial good firm k in year t
APD_{kt} = Air protection disclosure for Industrial good firm k in year t
WPD_{kt} = Water protection disclosure for Industrial good firm k in year t

LPD_{kt} = Land protection disclosure for Industrial good firm k in year t e_t= Error term in year t.

METHOD OF DATA ANALYSIS

Descriptive and inferential statistical methods was used to analyzed the data in the study. The descriptive statistics such as one sample T-test, tabulation and percentages was used in summarizing the information as well as their perceptions on the environmental investment.

Correlation and Multiple regressions technique was adopted as inferential statistics, to determine whether a relationship exists between the environmental investment and financial Performance of Industrial goods companies in Nigeria. The data for the dependent and independent variables was extracted from the financial reports using contents analysis method and collated with the aid of Microsoft Excel and SPSS software.

DATA PRESENTATION, ANALYSIS AND FINDINGS

Data Presentation

The study had three independent variables and one dependent variable. The independent variable was air, water and land disclosures. The dependent variable was financial performance which was proxied by return on assets. The descriptive statistics of the data set is presented in Table 4 of the study.

Descriptive Statistics

The descriptive statistics include the mean, median, standard deviation of the data set.

Table 1: Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
APD	30	1.00	2.00	1.4217	.49683	.323	.264	-1.943	.523
WPD	30	4.00	9.00	7.2289	1.75531	-.664	.264	-.879	.523
LPD	30	.00	3.00	1.6265	.97168	-.162	.264	-.923	.523
ROA	30	-404.10	148.37	2.1178	58.11138	-4.423	.264	29.899	.523
Valid N (listwise)	30								

Source: Researcher's Computation (2024)

The financial performance (ROA %) had a minimum value of -404.10% and a maximum value of 148.37% with a mean value 2.11%. The mean value implies that for every one naira invested in the assets of the industrial goods firms, a return of 2.11% is expected. The maximum value implies that the highest return that the shareholders can obtain from the companies was 148.37%.

The average air protection disclosures by the selected companies were 7 while the maximum value was 9. The minimum value was 4.

There was a total of 12 air protection disclosures that were expected from the industrial goods companies.

The water protection disclosures incurred stood at an average value 1.42 while the maximum and minimum values were 2 and 1 respectively.

There was a total of 2 water disclosures that were expected from the industrial goods companies. The land protection disclosure had a minimum value of 0 which means some of the companies did not disclose their land protection information.

The maximum disclosure was 3 and the average disclosure stood at 1.62 respectively. There was a total of 11 land protection disclosures that were expected from the industrial goods companies.

Model Evaluation

The suitability of the data set and the data set was assessed as followings;

Normality

It is assumed in regression analysis that each mean is distributed normally. The test the normality of the data set, Kolmogorov-Smirnov and Shapiro Wilk statistics were

carried out and the result presented in Table 2.

Table 2: Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
APD	.380	30	.000	.627	30	.000
WPD	.272	30	.000	.821	30	.000
LPD	.216	30	.000	.878	30	.000
ROA	.330	30	.000	.558	30	.000

a. Lilliefors Significance Correction
Source: Researcher's Computation (2024)

Autocorrelation

Autocorrelation is a correlation between a particular observation and values that precede and succeed it. The CNLRM assumes that such autocorrelation does not exist in the disturbance of the mean. Autocorrelation is detected and measured by Durbin-Watson (D) statistics. Durbin Watson value will approach zero, if the residuals are not correlated, the value of Durbin Watson will be close to 2, if there is negative autocorrelation.

Durbin Watson can be greater than 2 and could even approach its maximum value of 4. However, Field (2009) and Okpo, and Emenyi, (2023) suggest that value less than 1 and more than 3 are definite cause for concern. Thus, Durbin-Watson statistics for this study was 1.576 which are not less than 1 or more than 3.

Multicollinearity

The CNLRM assumes that there is no multicollinearity among the independent variables included in the model. It means that there does not exist 'perfect' linear relationship among some or all independent variables of the regression model.

Kvanli pavur and Guynes (2000) suggest that if correlation is larger (above 0.8) then variance inflationary factor (VIF) will be large (greater than 10) when the maximum VIF is larger than 10, a commonly used procedure is to conclude that severe multicollinearity exist in the sample data. In this study, none of the results show VIF of larger than 10. The VIF values for the independent variables were as shown in Table 4.5; air protection disclosures (1.000), water protection disclosures (1.010) and land protection disclosures (1.597).

Test of Hypotheses

Table 3: Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.532[a]	.283	.251	.49528	1.408
a. Predictors: (Constant), APD, WPD, LPD					
b. Dependent Variable: LOGROA					

Source: Researcher's Computation (2024)

Table 4: ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	6.398	3	2.133	8.694	.000[b]
	Residual	16.190	26	.245		
	Total	22.589	29			
a. Dependent Variable: LOGROA						
b. Predictors: (Constant), APD, WPD, LPD						

Source: Researcher's Computation (2024)

Table 5: Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-.165	.312		-.530	.598		
	APD	-.666	.178	-.584	-3.752	.000	.448	2.231
	WPD	.267	.064	.745	4.182	.000	.342	2.926
	LPD	.041	.079	.072	.518	.606	.568	1.760
a. Dependent Variable: LOGROA								

Source: Researcher's Computation (2024)

Hypothesis One

The null hypothesis one states that there is no significant effect of air protection disclosure on return on assets of listed industrial goods firms in Nigeria. Based on the decision rule of the study, the null hypothesis one of the study is rejected and the alternate accepted because the p-value of 0.000 shown in Table 4.5 is less than 0.05. The null hypothesis is further rejected because the t-cal value of 3.752 is greater than the critical value of t which was 1.989.

Hypothesis Two

The null hypothesis two states that there is no significant effect of water protection disclosure on return on assets of listed industrial goods firms in Nigeria. Based on the decision rule of the study, the null hypothesis two of the study is rejected and the alternate accepted because the p-value of 0.000 shown in Table 4.5 is less than 0.05. The null hypothesis is further rejected because the t-cal value of 4.182 is greater than the critical value of t which was 1.989.

Hypothesis Three

The null hypothesis three states that there is no significant effect of land protection disclosure on return on assets of listed industrial goods firms in Nigeria. Based on the decision rule of the study, the null hypothesis three of the study is accepted and the alternate rejected because the p-value of 0.000 shown in Table 4.5 is less than 0.05. The null hypothesis is further rejected because the t-cal value of 3.752 is greater than the critical value of t which was 1.989.

Discussion of the Findings

The result of the analysis showed a beta coefficient of -0.584 for air protection disclosures. This implies that -58.4% of the variation in financial performance in the industrial goods companies is accounted for by air protection disclosures.

This result means that more disclosures on air protection activities will decrease the financial performance of the selected companies. The result also suggests that disclosures on protection activities have negative impact on the financial performance of the selected industrial goods firms. In essence, air protection disclosures as critical component of environmental reporting decreases the financial performance of the selected industrial goods firms.

The result of the analysis showed a beta coefficient of 0.745 for water protection disclosure. This implies that 74.5% of the variation in financial performance in the industrial goods companies is accounted for by water protection disclosures This result means that more disclosures on water protection activities will increased the financial performance of the selected companies.

The result also suggests that water protection disclosures have positive impact on the financial performance of the selected industrial goods firms. In essence, water protection disclosures as critical component of environment reporting depletes the financial performance of the selected industrial goods firms.

The result of the analysis showed a beta coefficient of 0.072 for land protection disclosures. This implies that 7.2% of the variation in financial performance in the industrial goods companies is accounted for by land protection disclosure.

This result means that more land protection disclosures will increase the financial

performance of the selected companies. The result also suggests that land protection disclosures have a positive impact on the financial performance of the selected industrial goods firms. In essence, land protection disclosures as critical component of environmental reporting increases the financial performance of the selected industrial goods firms.

The result of the analysis showed an adjusted R-square of 0.251 for environmental reporting. This implies that 25.1% of the variation in financial performance in the industrial goods companies is accounted for by environmental disclosures. This implies that the combined influence of air, water and land protection disclosures on the financial performance of selected oil firms in Nigeria is 25.1%.

In summary. the results show that air protection disclosure have negative influence on the financial performance while water and land disclosures also affect financial performance positively. This means that as air protection disclosures increases the financial performance of the companies decreases significantly. On the other hand, as water and land protection disclosures increase the financial performance of the selected firms will also increase.

SUMMARY

Summary of the findings

- There is a negative and significant relationship between air protection disclosures and the performance of industrial goods companies in Nigeria

- There is a positive impact of water protection disclosures on the performance of industrial goods companies in Nigeria

- The result of the analysis showed a beta coefficient of 0.072 for land protection disclosure. This implies that 7.2% of the variation in financial performance in the industrial goods companies is accounted for by land protection disclosures.

CONCLUSION

This study analysed the effect of environmental investment and reporting on financial performance from the perspective of air, water and land protection activities.

Based on the findings of the study, it can be concluded that the effect of environmental reporting on financial performance of the industrial goods companies in Nigeria is significant.

RECOMMENDATIONS

Based on the findings of the study, the following recommendations were made by the researcher;

- The management of the industrial goods companies should disclose their water protection activities in their financial statement. This will boast the confidence of all stakeholders in the industrial goods sector

- The amount of disclosures on the land protection activities of the firms should be increased as this will increase the financial performance of the selected industrial goods firms.

- The companies should put in place adequate cost control mechanism to ensure air protection cost does not significantly deplete the financial performance of the industrial goods firms in Nigeria.

- Regulatory authorities such as the Financial reporting council of Nigeria, Central Bank of Nigeria, Nigerian Exchange group should develop standards and policies for reporting disclosures of the various components of environmental protection reports.

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