Sustainability Reporting and Earnings Per Share of Listed Industrial Goods Firms in Nigeria

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Abstract
This study investigated the effect of sustainability reporting on earnings per share of listed industrial goods firms in Nigeria. The specific objectives were to determine the influence of environmental sustainability disclosures on earnings per share of listed industrial goods firms in Nigeria; examine the effect of economic sustainability disclosures on earnings per share of listed industrial goods firms in Nigeria, and evaluate the influence of social sustainability disclosures on earnings per share of listed industrial goods firms in Nigeria. The study adopted an ex-post facto research design and utilized panel data of one hundred and twenty (120) pooled observations gathered across a sample of twelve (12) listed industrial goods firms in Nigeria over ten (10) years (2013-2022). The study employed descriptive and inferential (correlation and panel data Generalized Method of Moments) techniques to analyse the data collected via Eviews 10.0 statistical package. The study findings revealed that environmental sustainability disclosure (Coeff. = -102.0933{0.0000}) has an insignificant negative effect on earnings per share of listed industrial goods firms in Nigeria, while economic sustainability disclosure (Coeff. = -6.5026{0.0000) has a significant negative effect on earnings per share of listed industrial goods firms in Nigeria and social sustainability disclosure (Coeff. = 29.72095{0.0000}) has a significant positive effect on earnings per share of listed industrial goods firms in Nigeria. Given these, it was thus concluded that sustainability reporting has a significant effect on earnings per share of listed industrial goods firms in Nigeria at a 5% significance level. The study recommended, amongst others, that firms should strengthen social sustainability efforts by prioritizing ethical business practices, fostering strong relationships with stakeholders, and actively engaging in socially responsible initiatives to not only improve earnings per share but also build a sustainable and resilient business model.

Keywords: Sustainability reporting, environmental sustainability disclosures, economic sustainability disclosures, social sustainability disclosures, earnings per share

1.0 Introduction

Several management theories assume that the main objective of a corporation is profit maximization, thus making the shareholder's wealth maximization an overriding concern in business organizations. Corporations do not exist in a vacuum or closed system without any form of interaction with their environment but in an open system in which activities carried on by them have some impact on the immediate environment in which they are located as well as the environment at large. (Uwalomwa, *et al*, 2018). According to Vleg & Steg (2007), as the human population grows, material consumption intensifies and production technology further expands. This resulted in a steady decline in the quantity of environmental concern resources. There is a continuing concern about nature fragmentation and loss of biodiversity, shortages in freshwater availability, overfishing of the seas, global warming, air pollution, environmental noise etc. In light of this, organizations have been identified as central to the problem and thus must also be central to the solution. This made conventional financial reporting insufficient as these reports do not reflect the effect of the corporations on the environment.

According to Simnet *et al.* (2009), over the past decade, conventional financial reporting has been criticized for not representing multiple dimensions of a corporation's value. This gave rise to the sustainability agenda (sustainability reporting). Sustainability is the level of human consumption and activity which can continue in the foreseeable future so that the systems which provide goods and services to humans persist indefinitely. Sustainability reporting as described by Elkington (2004) is the integration of the reporting and accounting for social, environmental and economic issues in corporate reporting or simply "triple bottom line reporting." This concept can be linked to earlier ideas like the accounting for human resource and social audits of the 1970s and triple bottom reporting and environmental reporting in the 1990s, corporate social responsibility reporting and various versions of the Global Reporting Initiative (GRI) guidelines (Simnet *et al.,* 2009).

Sustainability reporting as part of corporate reporting is fast gaining momentum the world over both in developed and developing economies. This is evidenced in the statistics from GRI. The Global reporting initiative is the most prevalent guideline in the world, this framework enables measurement and reporting on three key areas of sustainability – environmental, social and economic performance. This profit must be maximized through activities that seek to integrate social and environmental considerations into the decision-making process (Asuquo *et al.* 2018). Some scholars argue that corporations can ensure long-term financial success by meeting the needs of other stakeholders (Ballou et al., 2005; Unerman et al., 2007). However, corporations may be unsure of how the market would react to their corporate sustainability reporting. If the initiatives are favourable, investors may be interested in the firm due to an increase in the price of the stock, hence deciding to invest.

Statement of the Problem

The need for transparency in sustainability reporting has been on the increase in recent times. According to the KPMG International Survey of 2011 which covers thirty-four (34) countries including Nigeria, 95% of the 250 largest global companies now report on their corporate sustainability activities (KPMG, 2011). This is in response to the increased demand by stakeholders for organizations to be more transparent in how they treat their social, economic and environmental activities. It is widely believed and suggested by researchers that in today's dynamic and complex environment, corporate sustainability is likely to influence corporate profitability and performance thereby laying a foundation for enhanced firm value.

However, there still exists debate surrounding the worthwhileness of sustainability reporting. Jovanovich (1982) mentioned the cost factor associated with disclosure, such as the collection of data, process, compilation of information, analysis and the writing and publication of a sustainability report, the whole process can be seen as costly and irrelevant by investors, thereby producing a negative valuation effect. Also, as pointed out by Ingram & Frazier (1980), there is a common concern regarding the usefulness of this type of disclosure due to potential credibility and comparability issues. Extant literature on sustainability reporting lacks consensus as previous studies revealed mixed findings. Some studies conducted in Nigeria like Onoh et al., 2023; Nangih, Emeka-Nwokeji & Peters, 2022; Theophilus & Ademola, 2020; Okechukwu & Okeke-muogbo, 2020) documented a significant positive relationship between sustainability reporting and various measures ranging from financial performance, market value, earnings quality to stock valuation. Still in Nigeria, other studies such as Nurhasimah, *et al.* (2016) revealed an insignificant positive relationship. Invariably, some studies, for instance, Putri & Suputra, 2019; Wasara & Ganda, 2019 carried out in developed and emerging economies such as India and Indonesia also proved the existence of a positive relationship, while others (such as Qamruzzaman et al., 2021; Rizzato et al., 2019; Yusoff & Darus, 2014) revealed an insignificant negative relationship between the variables under study. This therefore generates a big research gap which the present study seeks to fill.

Objectives of the Study

The general objective of this study was to investigate the effect of sustainability reporting on earnings per share of listed industrial goods firms in Nigeria. The specific objectives were to:

1. Determine the influence of environmental sustainability disclosures on earnings per share of listed industrial goods firms in Nigeria.
2. Examine the effect of economic sustainability disclosures on earnings per share of listed industrial goods firms in Nigeria.
3. Evaluate the influence of social sustainability disclosures on earnings per share of listed industrial goods firms in Nigeria

Research Hypotheses

Based on the research objectives, the following research hypotheses were developed to guide the study and stated in the null form as follows;

Ho_1: Environmental sustainability disclosure has no significant effect on earnings per share of listed industrial goods firms in Nigeria.

Ho_2: Economic sustainability disclosure has no significant effect on earnings per share of listed industrial goods firms in Nigeria.

Ho_3: Social sustainability disclosure has no significant effect on earnings per share of listed industrial goods firms in Nigeria.

2.0 Conceptual Framework

Sustainability Reporting

Sustainability or triple bottom line was first coined in 1994 by John, the founder of a British Consultancy called Sustain-Ability (Elkington, 1998). He contended that companies should be preparing three different (and quite separate) bottom lines. One is the traditional measure of corporate profit, the "Bottom line" of the profit and loss account. The second is the bottom line of a company's "People account" – measure in some shape or form of how socially responsible an organization has been throughout its operations. The third is the bottom line of the company's "Planet" account – a measure of how environmentally responsible it has been. World Commission on Environment Development (1987) defines sustainability as the level of human consumption and activity which can continue into the foreseeable future that the systems which provide goods and services to humans persist indefinitely. Corporate sustainability reporting has been the subject of extensive research in the last decades but there is no single, generally accepted definition of sustainability reporting. One widely-used definition of corporate sustainability report identifies it as "public reports by companies to provide internal and external stakeholders with a picture of the corporate position and activities on economic, environmental and social dimensions" (WBCSD, 2002). Hahn & Kühnen (2013) identify Sustainability Reporting (SR) as a voluntary organization's activity with two general purposes: to assess the current state of an organization's economic, environmental and social dimensions, and to communicate an organization's efforts and sustainability progress to their stakeholders. Jasch & Stasiskiene (2005) define Sustainability Reporting as a subset of accounting and reporting that deals with activities, methods and systems to record, analyze and report, first, environmentally and socially induced financial impacts and second, ecological and social impacts of a defined economic system.

The size of a firm can significantly influence the relationship between sustainability reporting and earnings per share (EPS) (Ahmed & Courtis, 1999). Larger firms with more resources and visibility may be more inclined to prioritize sustainability reporting, leading to a stronger positive correlation with EPS (Clarkson et al., 2004). In contrast, smaller firms may face resource constraints, making sustainability reporting less of a priority, potentially weakening the link with EPS (De Villiers & Van Staden, 2006). Larger firms may experience increased scrutiny from stakeholders, driving them to emphasize sustainability reporting and, in turn, positively impacting EPS. Firm size can thus moderate the nexus between sustainability reporting and financial performance, as measured by EPS (Gao & Zhang, 2006). Total assets comprise both non-current and current assets, and the majority of non-current assets of industrial goods firms are items of property, plant, and equipment. IAS 16 provides a comprehensive framework for the recognition, measurement and disclosure of PPE, which is mandatory for Nigerian companies as stressed by Aluya & John (2024). A sustainability report is a report published by a company or organization about the economic, environmental and social impacts caused by its everyday activities. It also presents the organization's values and governance model and demonstrates the link between its strategy and its commitment to a sustainable global economy.

Environmental Indicators

The environmental dimensions of sustainability concern an organization's impacts on living and non-living natural systems, including ecosystems, land, air and water. Ecological indicators cover performance related to inputs (e.g. material, energy, water). Ecological indicators include materials used by weight and volume, energy both direct and indirect consumed from primary energy sources, energy served due to conservation and efficiency improvements, water, biodiversity, emissions, effluents and waste, products and services, compliance, transport and general total environmental protection expenditures and investment by type.

Economic Indicators

According to Global Reporting Initiative (2016) section 200, the economic aspect of sustainability concerns the organization's impacts on the economic conditions of its stakeholders and economic systems at local, national and global levels. The economic indicators illustrate the flow of capital among different stakeholders and the main economic impacts of the organization throughout society. They include economic performance, market presence, indirect economic impacts and procurement practices, anti-corruption and anti-completion behaviour, economic performance which is direct economic value generated and distributed including revenues, operation cost, employee compensation, donations and other community investments and other risks and opportunities for the organization's activities due to climate change, coverage of the organization's defined benefit plan obligations, significant financial assistance received from the government, a market presence which explains the range of ratios of standard entry level wage compared to local minimum wage at significant locations of operation, policy, practices and proportion of spending on locally-based suppliers' and significant locations of operations, the procedure for local hiring and proportion of senior management hired from the local community at the significant location of operations.

Social Indicators

GRI (2016) section 400 puts it that the social impact aspect of sustainability concerns the impacts an organization has on the social systems within which it operates. These indicators are fragmented into employment, labour/management relations, occupational health and safety, training and education, diversity and equal opportunity, non-discrimination, freedom of association and collection barging, child labour, forced or compulsory labour, security practices, rights of indigenous people, human rights assessment, local communities, supplier social assessment, public policy, customer health and safety, marketing and labelling, customer privacy and socioeconomic compliance, sectors with varying market cap compositions to capitalize on changing market trends.

Earnings Per Share

Earnings per share (EPS) is a critical financial metric used by investors, analysts, and financial professionals to evaluate a company's profitability on a per-share basis. EPS represents the portion of a company's net income that is attributed to each outstanding share of common stock. It is calculated by dividing the company's net income by the total number of outstanding shares (Damodaran, 2012). EPS is a key indicator of a company's performance and is widely used to assess its earnings potential and attractiveness as an investment opportunity. EPS provides valuable insights into a company's ability to generate profits and return value to its shareholders. A higher EPS is generally perceived positively by investors, as it signifies strong earnings growth and potentially higher dividends or stock price appreciation. On the contrary, a declining or negative EPS may raise concerns about the company's financial health and prospects (Choi et al., 2020). Therefore, EPS serves as a critical benchmark for investors to evaluate a company's profitability and growth trajectory.

EPS is a key input in discounted cash flow (DCF) models and other valuation techniques to estimate a company's value based on its expected future earnings.

Environmental Sustainability Reporting and Earnings Per Share

Environmental sustainability reporting involves disclosing a company's environmental impacts, initiatives, and practices related to energy consumption, waste management, greenhouse gas emissions, and pollution control to stakeholders (Jizi et al., 2016). Earnings per share, as a key financial metric, represents the portion of a company's profit allocated to each outstanding share of common stock. Awe *et al.* (2018) suggest that companies that actively engage in environmental sustainability reporting tend to experience higher profitability, lower operating costs, and improved access to capital markets. By adopting environmentally friendly practices, such as reducing energy consumption, optimizing resource use, and implementing pollution prevention measures, companies can enhance their operational efficiency, reduce environmental risks, and capture cost savings that translate into higher earnings per share.

Economic Sustainability Reporting and Earnings Per Share

Economic sustainability reporting involves disclosing a company's financial health, economic impact, governance structures, and business ethics to shareholders, investors, and other stakeholders (Adam et al., 2019). Earnings per share, as a key financial metric, reflects a company's profitability and shareholder value by indicating the amount of earnings allocated to each outstanding share of common stock. Extant studies such as that of Orlitzky et al. (2003) suggest that companies with strong economic sustainability reporting practices tend to exhibit higher financial performance, improved risk management, and enhanced investor confidence. By transparently disclosing their financial results, corporate governance structures, business ethics initiatives, and compliance with accounting standards, companies can build trust with investors, reduce information asymmetry, and create value for shareholders in the long run. Effective economic sustainability reporting can also contribute to improved access to capital, lower financing costs, and increased market liquidity for listed industrial goods firms in Nigeria (Aluya & John, 2024). By providing comprehensive financial information, strategic insights, and performance metrics to the investment community, companies can attract capital from diverse sources, including equity markets, debt markets, and institutional investors (Cho et al., 2012).

Social Sustainability Reporting and Earnings Per Share

Social sustainability reporting involves disclosing a company's social and environmental impacts, community engagement efforts, human rights practices, and diversity and inclusion initiatives to stakeholders (Adams & Zutshi, 2004). Earnings per share, as a key financial metric, reflects a company's profitability and shareholder wealth by indicating the portion of a company's profit allocated to each outstanding share of common stock. Ioannou & Serafeim (2017) documented that companies with robust social sustainability reporting practices are more likely to enhance their reputation, build trust with stakeholders, and improve financial performance. By transparently disclosing their social and environmental impact assessments, sustainable supply chain practices, employee welfare programs, and philanthropic activities, companies can demonstrate their commitment to social responsibility and sustainability, which can positively influence investors' perceptions and valuation of the firm. Social sustainability reporting can also lead to increased stakeholder engagement, improved brand loyalty, and enhanced market competitiveness for listed industrial goods firms in Nigeria.

Theoretical Framework

Stakeholder Theory by Edward Freeman (1984)

The stakeholder theory was propounded as a result of the battles between Berle and Dodd in the 1930s with later developments usually referring back to R. Edward Freeman. This theory was developed by Freeman (1984) by incorporating corporate accountability to a broad range of stakeholders. Dodd believed that directors are the trustees of corporations, with the result that they have to balance the interests of all constituents of companies and behave in socially responsible behaviour. There are three aspects of the theory: instrumental power, descriptive accuracy and normative validity. The first aspect of the theory creates a framework for checking the connections between the practice of stakeholder management and the success of a corporation's performance. The second aspect of the theory is used to describe particular corporations' behaviour. The normative validity is a fundamental basis of the theory used to interpret the purpose of companies. Because the objective of corporations is a key issue of corporate governance, normative validity is the central core of the theory.

The stakeholder theory is a theory of organizational management and business ethics that accounts for multiple constituencies impacted by business entities like employees, supplies, local communities, creditors and others (Aluya & John, 2024). It addresses morals and values in managing an organization, such as those related to corporate social responsibility, market economy, and social contract theory. Stakeholder theory succeeds in becoming famous not only in the business ethics fields but also used as one of the frameworks in corporate social responsibility methods. This theory proposes that the success of a firm depends on the management of all relationships of a firm with its stakeholders. Stakeholders refer to those individuals, groups or organizations that are likely to influence or be influenced by the operations and decisions of the firm. According to Freeman (1984), the stakeholder theory upholds that firms have accountability towards a broad range of stakeholders, apart from shareholders, i.e. creditors, customers, suppliers, employees, government, community, environment, and future generations. King (2002) recognized the significance of integrated sustainability reporting in strengthening the relationship between the firm and the society in which it operates. Ignoring the stakeholder interests may taint a firm's public image, which would unfavourably affect its financial performance.

Empirical Review

Aniebiet et al. (2024) scrutinized the effect of environmental waste management disclosure on the financial performance of listed consumer goods companies in Nigeria. This study considered environmentally related costs as a proxy for environmental waste management and return on equity (ROE) as a proxy of financial performance, using 21 listed consumer goods companies as the study population. Secondary data were extracted from the annual reports of these companies while a simple purposive sampling technique was adopted for the selected sample size (17). In testing for the effect of environmental waste management on the financial performance of the consumer goods sector, the researchers conducted panel least square regression after checking for inconsistencies with the basic assumptions of the least square regression method. The result obtained however, revealed that environmental waste management has a significant negative effect on the financial performance of listed consumer goods companies in Nigeria and it was recommended that the firms involved should evaluate the efficiency and cost-effectiveness of their current environmental waste management practices, exploring innovative solutions, and aligning environmental initiatives with overarching financial objectives to eliminate the negative effect that existed.

Emenyi & Okpokpo (2023) investigated the relationship between environmental disclosure and the quality of financial reports within the Nigerian manufacturing sector. The study reported that, among the three components of environmental accounting information examined, namely Environmental Restoration (ER) and Environmental Donations and Sponsorship (EDS), only Environmental Waste Management was found to have a significant impact on the quality of financial reports among the selected manufacturing firms in Nigeria. The null hypotheses for Environmental Restoration and Environmental Donations and Sponsorship were reported as accepted, signifying that these factors did not exert a significant influence on financial report quality. The study concluded that the disclosure of accounting information about environmental restoration and environmental donations and sponsorship in the past had an insignificant effect on the quality of financial reports for manufacturing firms in Nigeria. The recommendation highlighted the suggested collaboration between standard setters, policy-makers and the Ministry of Environment to institute consistent mandatory disclosures aligned with global best practices, aiming to enhance transparency and accountability in environmental reporting by manufacturing firms in Nigeria.

Gerged et al. (2023) examined whether internal corporate governance (CG) mechanisms moderate the relationship between a firm's engagement in corporate environmental disclosure (CED) and earnings management (EM) practices in an emerging economy. A sample of 100 Jordanian-listed firms from 2010 to 2014, constituting 500 firm-year observations, was utilized. The findings revealed a negative relationship between CED and earnings manipulations. However, the links between CG arrangements and EM were found to be heterogeneous, indicating that they might either reduce or increase earnings manipulations in Jordan. Furthermore, certain CG structures, such as board size, managerial, and institutional ownership, were identified as having moderate effects on the CED-EM nexus. The research emphasized the importance of considering internal CG mechanisms to elucidate the link between CED and EM in emerging economies. The results contributed to a better understanding of the mixed results on the association between CED and earnings manipulations, particularly highlighting the potential impact of CG structures on this nexus. The study offered valuable insights for policymakers, board directors, and managers, providing context-specific recommendations to enhance corporate sustainability efforts in emerging economies.

Onoh et al. (2023) examined the effect of sustainability reporting practices of environmental, social and economic on the firm value proxied by Tobin's Q of listed oil and gas firms in Nigeria. The work relied mainly on secondary sources of data and comprised published annual reports. The analytical tools consist of descriptive and correlation matrices. The hypotheses were tested using multiple regression. The research answered that environmental sustainability reporting has a positive significant effect on the value of listed oil and gas firms in Nigeria. Also, economic sustainability reporting has a negative significant effect on the value of listed oil and gas firms in Nigeria. The result also showed that firm characteristics proxied by sales growth and leverage exert a negative significant effect, whereas, firm size exerts a positive significant effect on sustainability reporting and firm value of oil and gas companies in Nigeria.

Udomah & Emenyi (2023) delved into the impact of sustainability reporting on the financial performance of selected cement firms in Nigeria, employing an ex-post facto research design with a population comprising 10 cement firms spanning the years 2016-2020. The key findings indicated a negative and insignificant correlation between environmental reporting and the performance of cement companies in Nigeria. Conversely, economic reporting demonstrated a positive influence on the financial performance of these cement firms, while social reporting was associated with a decrease in their financial performance. The overall conclusion was that sustainability reporting significantly affects the composite financial performance of healthcare companies in Nigeria. Notably, individual components of sustainability reporting did not exert a significant impact on the financial performance of cement firms. The study recommended that government policymakers enforce the compulsory inclusion of sustainability reports in the annual reports of cement companies, shifting from voluntary disclosure to mandatory reporting. Furthermore, it suggested that the management of manufacturing firms should prioritize the disclosure of economic reports, given their positive effect on performance.

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Carnini*et al.* (2022) reviewed the influence of environmental, social, and governance (ESG) disclosure on firm performance, given the growing attention from stakeholders to a firm's ESG practices. Operating within the agency and signalling theory frameworks, this research centred on the Italian landscape, where Legislative Decree 254/2016 transposed the European Directive into law, obligating the largest firms (those with over 500 employees) to provide comprehensive disclosures about their social and environmental activities starting in 2017. Employing panel regression analysis with a sample comprising the largest Italian listed companies and a time frame spanning a decade (from 2011 to 2020). This study uncovered a positive correlation between environmental, social, and governance disclosure and firm performance, measured through Earnings Before Interest and Taxes (EBIT). These findings offered valuable insights for stakeholders, decision-makers, policymakers, and academics, enhancing their understanding of the impact of ESG disclosure on firm performance, both as a holistic concept and individually across its constituent pillars. The results, which endorsed the positive association between ESG disclosure and firm performance, should serve as an incentive for managers to invest in corporate social responsibility (CSR) practices.

Ismail & Sakr (2022) studied the determinants and impacts of voluntary disclosures in Egypt during the crucial period of 2014 to 2020, marked by heightened attention to corporate governance. Focusing on sustainability and transparency factors encompassing social, environmental, and intellectual capital disclosures, the study employed an average voluntary disclosure index as the independent variable, while controlling for variables like Firm Size, Short-Term Debt Leverage (S.T.D), Long-Term Debt Leverage (L.T.D), and Industry. Firm performance was assessed through five dimensions: Return on Assets (ROA), Return on Sales (ROS), Market Capitalization (Market Cap), Earnings per Share (EPS), and Tobin's Q. The analysis conducted with EViews version 10 with data from 46 companies, revealed significant associations between ROA, Market Cap, and Tobin's Q with average voluntary disclosure, whereas ROS and EPS showed insignificant relationships. These results underscored the positive influence of voluntary disclosure on specific facets of firm performance, incentivizing greater transparency in corporate practices.

3.0 Methodology

This study adopted an *ex-post facto* research design using panel data for 10 10-year (2013 - 2022) period of study. Ex post facto design is a quasi-experimental study that examines the relationship between an independent variable and dependent variables within an experiment. A secondary source of data was employed in this research work. These sources include published journals, thesis and dissertations, textbooks, annual reports of listed firms across all the sectors of the NSE, gazettes, publications of CBN, audit firms and professional bodies etc. In this study, a sample size of twelve (12) listed industrial goods firms was selected from the population of thirteen industrial goods firms listed on the Nigerian Exchange Group. Three main categories of variables were used in this study – the dependent (firm value), the independent (sustainability reporting) and the control variable (Firm size). The dependent variable used was earnings per share (EPS). The economic, environmental and social disclosure index was calculated based on the number of indicators that were disclosed (occurrence) and the level of disclosure (quantitative and qualitative). If a company disclosed any indicator, that is the occurrence of an indicator in the company's financial statement, the researcher assigned 1, but if the company failed to disclose any indicator, the researcher assigned 0. The disclosure index was measured by dividing the total disclosed items by the total expected disclosures on that item for each year. The study employed descriptive and inferential (correlation and panel data Generalized Method of Moments) techniques to analyse the data collected. The decision rule was based on the specific probability value of the test statistic used as a critical value for taking reject or do not reject decisions (e.g., reject H0 if $p > .05$). In this study, the null hypotheses (H0) were rejected when the probability value is greater than 5% (i.e. 0.05 confidence level); otherwise, we reject the null hypotheses.

The model specification used in the study followed the typical panel multiple regression format, functionally specified as follows:

$$Y_{it} = \int(X_{1it}, X_{2it}, X_{3it}, \ldots, X_{nit}) \quad .. \quad .. \quad (1)$$

Where:

Y_{it} = the dependent variable of company *i* in time *t*.

X_{it} = the series of independent variables of company *i* in time *t*.

Based on the nature of the hypotheses formulated and the outcome of various data screening/pre-estimation tests conducted, the model considered to be appropriate for estimating the study parameters is the Panel Generalized Method of Moments (GMM) Regression model. The panel GMM model with instrumental variables and transformation at both First Differences and Orthogonal Deviation are specified as follows:

$$EPS_{it} = \beta_1 EPS(-1)_{it} + \beta_2 ENVSD_{it} + \beta_3 ECOSD_{it} + \beta_4 SOSD_{it} + \beta_5 FSIZE_{it} + \mu_{it} \quad (2)$$

Instrument Specification

@DYN(EPS(-2) ENVSD(-1) ECOSD(-1) SOSD(-1) FSIZE (-1) (3)

Where;

β_1 to β_5 = the coefficients (rate of change) in the predictor or exogenous variables.

EPS = earnings per share

ENVSD = environmental sustainability disclosure

ECOSD = economic sustainability disclosure

SOSD = social sustainability disclosure

FSIZE = firm size as control variable

u = error term

4.0 Data Analysis and Discussion of Findings

Descriptive Statistics:

Table 4.1: Descriptive analysis of EPS, ENVSD, ECOSD, SOCSD and FSIZS

	EPS	ENVSD	ECOSD	SOCSD	FSIZE
Mean	7.174000	0.353790	0.592594	0.515152	15.83154
Median	0.325000	0.272730	0.555560	0.500000	15.10415
Maximum	280.3100	0.727270	0.777780	0.818180	21.68480
Minimum	-3.130000	0.181820	0.333330	0.272730	12.06420
Std. Dev.	34.77078	0.152208	0.139163	0.163868	2.581138
Skewness	7.071999	1.131886	-0.133671	0.160088	0.764865
Kurtosis	53.15480	3.619172	2.051029	2.158192	2.609660
Jarque-Bera	13577.78	27.54018	4.860087	4.055769	12.46219
Probability	0.000000	0.000001	**0.088033**	**0.131614**	0.001967
Sum	860.8800	42.45477	71.11130	61.81821	1899.785
Sum Sq. Dev.	143871.8	2.756898	2.304592	3.195493	792.8105
Observations	120	120	120	120	120

Source: Researcher's computation (2024) using Eviews 10.0

As shown in Table 4.2, the standard deviation (Std. Dev.) indicates the dispersion from or spread in the series from their mean values. Earnings per share has the highest dispersion of 34.77078, followed by firm size (FSIZE) with 2.581138. However, social sustainability disclosures (SOSD), environmental sustainability disclosures (ENVSD) and economic sustainability disclosures (ECOSD), have low dispersion from their means of 0.163868, 0.152208 and 0.139163 respectively. Skewness which depicts the asymmetry of the distribution around the mean reveals that EPS, ENVSD, SOSD and FSIZE have a long right tail (positive Skewness) while ECOSD has long left tails (negative skewness). The peakness or flatness of the distribution of the series is indicated by Kurtosis. Statistics reveal that EPS and ENVSD were not normally distributed as their values exceed the acceptable value of 3 and are thus presumed to be peaked (leptokurtic) relative to the normal, while ECOSD, SOSD and FSIZE with values less than 3 are presumed to be flat (playtykurtic) relative to the normal.

The statistical significance for the Jarque-Bera statistics (JB) of the variables as reported in table 4.1 confirms that some of the series have probability values that are less than 0.05. All the series except ECOSD and SOCSD failed to meet the assumption of normality. This is an indication of uncertainty in the trend of the distribution of the data set collected for the study, hence a linear model was considered unsuitable for predicting the parameters. Again, the panel data is a short panel with the period (10 years covering from 2013 to 2022) less than the number of cross-sessions (12 listed industrial goods firms). These features of the data set call for the use of an appropriate dynamic model/estimation technique (the GMM) that can take care of these problems in the estimation process.

Table 4.2: Correlation Analysis of the Study Variables

	EPS	ENVSD	ECOSD	SOCSD	FSIZE
EPS	1.000000	0.372611	0.230398	0.287158	0.129701
ENVSD	0.372611	1.000000	0.321921	0.606070	-0.006510
ECOSD	0.230398	0.321921	1.000000	0.719617	0.485054
SOCSD	0.287158	0.606070	0.719617	1.000000	0.240348
FSIZE	0.129701	-0.006510	0.485054	0.240348	1.000000

Source: Researcher's computation (2024) using Eviews 10.0

Table 4.2 shows the association between two pairs of the variables of the study. Of particular interest is the relationship existing between each pair of the independent variables. As highlighted, no pair of the independent variables have correlation coefficient that is greater than 0.80. Suggests the absence of multicollinearity problem in the series.

4.2 Regression Analysis

Table 4.3: Test result of the effect of ENVSD, ECOSD and SOSD on the Earnings per share (EPS) of listed industrial goods firms in Nigeria.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
EPS(-1)	0.409088	0.002874	142.3321	0.0000
ENVSD	**-102.0933**	2.873085	**-35.53440**	**0.0000**
ECOSD	**-6.502657**	0.634283	**-10.25198**	**0.0000**
SOCSD	**29.72095**	4.082432	**7.280207**	**0.0000**
FSIZE	-9.240684	0.734134	-12.58719	0.0000
		Effects Specification		
Cross-section fixed (first differences)				
Mean dependent var	0.451458	S.D. dependent var		35.07284
S.E. of regression	37.39445	Sum squared resid		127249.4
J-statistic	**5.566543**	Instrument rank		12
Prob(J-statistic)	**0.591170**			

Source: Researcher's computation (2024) using Eviews 10.0

The table provides results to evaluate the validity of the entire model using the J-statistic of 5.566543. The probability of the J-statistic is reported as 0.591170, further indicating that the model is valid and can be relied upon in predicting the effect of sustainability reporting on earnings per share. The results obtained also show that ENVSD, ECOSD, and SOSD have a significant influence on earnings per share (EPS) at the 5% level (with all their p-values as 0.0000) of the listed firms investigated. SOSD exacted a positive effect, while ENVSD and ECOSD negatively correlated with EPS.

The value of the beta coefficient for ENVSD of -102.0933 implies that a unit increase in the number of environmental sustainability disclosures will lead to about a 102.1% decrease in the earnings per share of the listed industrial goods firms in Nigeria if other factors are held constant. In the same vein, ECOSD has a coefficient of -6.502657, implying that a unit increase in economic sustainability disclosure (ECOSD) will result in a 6.5% decrease in the level of earnings per share of the firms. On the contrary, a unit increase in social sustainability disclosure (SOSD) with a coefficient of 29.72095 suggests an increase of 29.7% in the earnings per share of the listed industrial goods firms investigated.

Test of Hypotheses

In testing the three hypotheses formulated for investigation in section one of this study, the results as shown in table 4.3 above were used. To test each of the hypotheses, the decision rule stated in section three was strictly followed.

Testing for the Effect of Environmental Sustainability Disclosure on Earnings per share (EPS) of listed industrial goods Firms in Nigeria.

$H0_1$: Environmental sustainability disclosure has no significant effect on earnings per share of listed industrial goods firms in Nigeria.

HA_1: Environmental sustainability disclosure has significant effect on earnings per share of listed industrial goods firms in Nigeria.

Results in Table 4.3 indicate that the t-statistic for environmental sustainability disclosure (ENVSD) of -35.53440 is significant at a 5% level (P = 0.0000 > 0.05). Accordingly, $H0_1$ is rejected, with the conclusion that the environmental sustainability disclosure has a significant effect on earnings per share of listed industrial goods firms in Nigeria.

Testing for the Effect of Economic Sustainability Disclosure on Earnings per share of listed industrial goods Firms in Nigeria.

The second hypothesis is restated in the null and alternate forms as follows:

$H0_2$: Economic sustainability disclosure has no significant effect on earnings per share of listed industrial goods firms in Nigeria.

HA_2: Economic sustainability disclosure has a significant effect on earnings per share of listed industrial goods firms in Nigeria.

Results in Table 4.3 indicate that the t-statistic for economic sustainability disclosure (ECOSD) of -10.25198 is significant at a 5% level (P = 0.0000 > 0.05). Accordingly, the result supports the rejection of $H0_2$ with the conclusion that the effect of economic sustainability disclosure on earnings per share of listed industrial goods firms in Nigeria is statistically significant.

Testing for the Effect of Social Sustainability Disclosure on Earnings per share of listed industrial goods Firms in Nigeria.

The third hypothesis is restated in its null and alternate forms as follows:

$H0_3$: Social sustainability disclosure has no significant effect on earnings per share of listed industrial goods firms in Nigeria.

HA_3: Social sustainability disclosure has significant effect on earnings per share of listed industrial goods firms in Nigeria.

Results in Table 4.3 indicate that the t-statistic for social sustainability disclosure (SOSD) of 7.280207 is significant at a 5% level (P = 0.0000 > 0.05). Accordingly, we fail to accept $H0_3$ and conclude that social sustainability disclosure has a significant effect on earnings per share of listed industrial goods firms in Nigeria is statistically significant.

Discussion of Findings

Environmental Sustainability Disclosure and Earnings Per Share

The study findings also revealed that environmental sustainability disclosure (Coeff. = -102.0933{0.0000}) has an insignificant negative effect on earnings per share of listed industrial goods firms in Nigeria. The highly negative coefficient of -102.0933 suggests that for every unit increase in environmental sustainability disclosure, earnings per share decreased by a substantial amount. However, this effect was statistically insignificant. This implies that environmental sustainability disclosures do not significantly influence earnings per share for industrial goods firms in Nigeria. Companies may need to align their environmental strategies with revenue generation and cost management to enhance their financial outcomes. This position is not in line with extant literature, such as that of Nangih et al. (2022) and Alhassan et al. (2021). These studies, at a 5% significance level indicated that sustainability reporting, measured by economic, environmental, and social performance indices, had a positively significant effect on return on assets, return on equity, and earnings per share.

Economic Sustainability Disclosure and Earnings Per Share

Economic sustainability disclosure (Coeff. = -6.5026{0.0000}) has a significant negative effect on earnings per share of listed industrial goods firms in Nigeria. The strongly negative coefficient of -6.5026 indicates that for every unit increase in economic sustainability disclosure, earnings per share decrease significantly. This effect was statistically significant. The findings indicate that economic sustainability practices may have a negative impact on earnings per share for these firms. Firms should carefully evaluate the costs and benefits of economic sustainability practices to ensure long-term financial sustainability while addressing stakeholder expectations. This position is not in line with extant literature, such as that of Nangih et al. (2022) and Alhassan et al. (2021). These studies, at a 5% significance level, indicated that sustainability reporting, measured by economic, environmental, and social performance indices, had a positively significant effect on return on assets, return on equity, and earnings per share.

Social Sustainability Disclosure and Earnings Per Share

In addition, the study also documented that social sustainability disclosure (Coeff. = 29.72095{0.0000}) has a significant positive effect on earnings per share of listed industrial goods firms in Nigeria. The positive coefficient of 29.72095 suggests that for every unit increase in social sustainability disclosure, earnings per share increase by 29.72095 units. This effect was statistically significant. It implies that social sustainability disclosures have a positive impact on earnings per share for listed industrial goods firms in Nigeria. Firms that effectively integrate social considerations into their business strategies could enhance their competitiveness, reputation, and ultimately, their financial success. This, however, disagrees with the majority of extant studies conducted in Nigeria, for example, Onoh et al., 2023; Nangih et al., 2022; Theophilus & Ademola, 2020; Okechukwu & Okeke-muogbo, 2020) which documented a significant positive relationship between sustainability reporting and various measures ranging from financial performance, market value, earnings quality to stock valuation.

5.0 Conclusion and Recommendations

In conclusion, this study sheds light on the intricate relationship between sustainability reporting and firm value among listed industrial goods firms in Nigeria. While environmental sustainability disclosures may not currently sway earnings per share significantly, economic sustainability practices emerge as a key driver of increased market value. Surprisingly, social sustainability disclosures play a notable role in enhancing earnings per share, underscoring the importance of holistic sustainability strategies for long-term financial success. These findings call for a nuanced approach to sustainability reporting, urging firms to balance environmental, economic, and social considerations strategically to optimize both market performance and shareholder returns. In view of the above, it is thus concluded that sustainability reporting has a significant effect on earnings per share of listed industrial goods firms in Nigeria at a 5% significance level. These recommendations were based on the study findings

1. With an insignificant negative effect on earnings per share, firms should still prioritize environmentally sustainable practices for long-term viability. Firms are thus recommended to invest in sustainable environmental strategies to mitigate risks, reduce costs, and enhance reputation, even if the direct impact on earnings per share may not be immediate.
2. Despite the significant negative effect on earnings per share identified, economic sustainability remains crucial for overall business success. It was recommended that balance economic sustainability initiatives with profitability goals should be maintained, ensuring that sustainable practices contribute to long-term value creation while carefully managing short-term financial impacts to maintain investor confidence.
3. The study highlighted a significant positive effect of social sustainability disclosure on earnings per share, emphasizing the importance of social responsibility in driving financial performance. Firms are thus recommended to strengthen social sustainability efforts by prioritizing ethical business practices, fostering strong relationships with stakeholders, and actively engaging in socially responsible initiatives to not only improve earnings per share but also build a sustainable and resilient business model.

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