EFFECT OF SUSTAINABILITY REPORTING ON FINANCIAL PERFORMANCE OF QUOTED INDUSTRIAL GOODS COMPANIES IN NIGERIA

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Abstract: This study ascertained the effect of sustainability reporting on financial performance of quoted industrial goods companies in Nigeria from 2008-2019. Specifically, this study examined the effect of environmental reporting on cash value added; effect of social reporting on cash value added and effect of economic reporting on cash value added. Purposive sampling technique was employed to select eleven (11) industrial goods companies from a population of fifteen (15) quoted industrial goods firms in Nigeria. Panel data were used in this study, which were obtained from the annual reports and accounts of sample firms for the periods 2008-2019. Ex-Post Facto research design was employed. Descriptive statistics of the dataset from the sample firms were described using the mean, standard deviation, minimum and maximum values of the data for the study variables. Inferential statistics using Pearson correlation coefficient, Panel least square regression analysis, granger causality test and Hausman test were applied to test the hypotheses of the study. The results showed that environmental reporting, social reporting and economic reporting have a significant positive effect on cash value added respectively at 5% level. This study recommended inter alia that there should be a promotion of environmental policies through direct regulations to encourage energy/resource savings through innovations in technology and management, thereby reducing the cost of environmental measures, in general and also stimulating improvements in value-added.

Keywords: environmental reporting, social reporting, economic reporting, cash value added

Introduction

Background to the Study

The sustainability performance of industrial goods firms is judged by the stability in microeconomic variables, such as environmental performance, social performance and economic performance. The policy makers at both the macro and micro levels expect that sustainability condition would remain stable and favorable to sustain business performance. Moreover, it is the wish of potential and existing investors that these microeconomic elements remain pleasant so as not to threaten the firm's ability to meet up with set objectives. Firms make several operational and strategic decisions which are usually moderated by the fundamentals of business operating environment; these include financing decision, investing decision and operational decision. Hence, firms must pay particular engrossment than before to their operating environments when formulating and implementing survival and growth strategies (Ezeokafor & Amahalu, 2019).

The overall objective of industrial goods firms in Nigeria is to consistently grow and survive on a long term basis. Most managers are also aware that their organizations are part of a large system which has profound direct and indirect influence on their operations. This implies that if these organizations must effectively and efficiently meet their objectives, they should properly adapt themselves to their environments. The environment in which businesses operate is on an unsustainable course. The environment is faced with serious challenge of environmental changes such as global warming, health care and poverty.

Companies can report about sustainability initiatives using a variety of different methods because no Nigeria law or regulation exists regarding the need to release a full sustainability report. The regulations regarding environmental reporting stem from the Sarbanes-Oxley Act of 2002. According to Sarbanes-Oxley, environmental costs must be released in a report: “Sab-92 states that, with respect to contingent losses, companies should provide detailed disclosures regarding the facts and assumptions underlying the amounts of environmental
liabilities” (McKenna-Long & Aldridge, 2005). Firms must now quantify environmental liabilities if they represent an amount that is deemed material to their financial statements. If the environmental liability is not easily quantifiable, then a note must be attached detailing the nature of the environmental cost. Due to increased pressure from stakeholders to release environmental and social initiatives, firms are not only reporting on environmental costs but also providing the public with an adequate representation of their sustainability initiatives and performance. Common frameworks that firms are using to report on their sustainability initiatives include the Global Reporting Initiative (GRI) and International Organisation for Standardisation (ISO) 14000 frameworks. The GRI Sustainability Framework works in conjunction with the United Nations, which gives it credibility across the globe. Furthermore, it has grown into one of the most common frameworks (Global Reporting Initiative, 2012). The ISO 14000 is a set of standards that helps to address environmental management. It provides organizations with a framework to improve their environmental impact and performance in an attempt to lower costs and improve corporate image (ISO, 2018). The use of Sustainability Reporting (a term used to describe a company’s reporting on its economic, environmental and social performance) techniques has been increasing rapidly in recent years. An understanding of the basis of this reporting system, and its effect on corporate performance is very crucial in determining the essence of its application.

Statement of the Problem

Sustainability is currently a burning issue and a major cause of concern across the globe. The interest of investors in company’s non-financial performance has grown significantly over the past few years. The poser is, how do industrial goods firms take accountability for various beneficial and harmful impacts of their activities on the overall society and environment in which they exist? do firms make proper disclosure of these impacts in an appropriate sustainability report, which provides a detailed description of their governance structure, stakeholder engagement approach and triple bottom line performance? So far it is unclear on what effect sustainability reporting has actually had on organisation strategies, practices and outcomes. The reviewed extant and anecdotal researches on the relationship between sustainability reporting and performance hold divergent view spanning from positive to negative, significant to non significant. The relationship between sustainability reporting and firm performance has provided no conclusive evidence whether the relationship is positive (Amahalu, Ezechukwu & Obi, 2017; Okafor, 2018; García-Sánchez, Hussain, Martínez-Ferrero, Ruiz-Barbadillo, 2019), negative (Liu, Liu, Guo, Da, Guan & Chen, 2019; Erhirhie and Ekwueme, 2019), or non significant (Yahaya, 2019; Baalouch, Ayadi and Hussainey, 2019), thereby constituting a gap in knowledge which this study tends to fill.

Objectives of the Study

The main objective of this study is to ascertain the effect of Sustainability Reporting on Financial Performance of quoted industrial goods companies in Nigeria.

The specific objectives were to:

i. Ascertain the effect of Environmental Reporting on Cash Value Added.

ii. Determine the effect of Social Reporting on Cash Value Added.

iii. Evaluate the effect of Economic Reporting on Cash Value Added.

Research Hypotheses

To answer the research questions, three null hypotheses would be designed:

Ho1: Environmental Reporting has no significant effect on Cash Value Added of quoted industrial goods companies in Nigeria.

Ho2: Social Reporting has no significant effect on Cash Value Added of quoted industrial goods companies in Nigeria.
Ho: Economic Reporting has no significant effect on Cash Value Added of quoted industrial goods companies in Nigeria.

Review of Related Literature

Sustainability Reporting

Sustainability reporting is a broad term generally used to describe a company's reporting on its economic, environmental and social performance (Ecowas. Omojolaibi, Oladipupo & Okudo. 2019). It can be synonymous with triple bottom line reporting, corporate responsibility reporting and sustainable development reporting, but increasingly these terms are becoming more specific in meaning and therefore subsets of sustainability reporting (KPMG, 2008). Amahalu, Okoye and Obi (2018) define sustainability reporting as a subset of accounting and reporting that deals with activities, methods and systems to record, analyse and report, firstly, environmentally and socially induced financial impacts and secondly, ecological and social impacts of a defined economic system (example, a company, production site, and nation). Thirdly, sustainability reporting deals with the measurement, analysis and communication of interactions and links between social, environmental and economic issues constituting the three dimensions of sustainability.

Environmental Reporting

Environmental reporting is the process by which a corporation communicates its information regarding range of its environmental activities to a variety of stakeholders. Herrera, Larrán, Martínez, Martínez-Martínez (2015) defined environmental reporting as the assessment of the impact of environmental issues on the company’s financial performance and that it requires changes to the way company discloses environmental issues in their annual/financial report (Amahalu, Abiahu., Okika & Obi 2016). Environmental reporting is to fulfill its accountability regarding environmental efforts in their activities, and to provide useful information to decision making of interested parties.

Social Reporting

Social reporting refers to the obligations of businessmen to pursue those policies, to make those decisions, or to follow those lines of action which are desirable in terms of the objectives and values of our society (Amahalu, Ezechukwu & Obi, 2017). According to the European Commission (2011). Social Responsibility is the responsibility of enterprises for their impact on society’. Companies can become socially responsible by following the law, as well as by integrating social, environmental, ethical, consumer, and human rights concerns into their business strategies and operations. These companies inform stakeholders about their corporate social responsibility achievements (i.e., companies’ social and environmental performance) in their annual, integrated, and social reports, as well as on their corporate websites.

Economic Reporting

Economic reporting refers to the impact of the entity on the economic systems in which it operates. The economic performance can be measured through analyzing the impact of the organizations on the stakeholders on a local, national and global level (Okudo, & Ndubuisi, 2021). Economic performance can influence the intangible assets of the organization, such as human capital and reputation. The economic reporting contains all the aspects of the economic interactions of the organization, including the traditional indicators used in financial accounting, but also intangible elements which do not usually show up in financial situations. Economic reporting includes investment in non-core business infrastructure, economic value generated, value and supply chain, climate change -implications, risks, opportunities and risk management (Sustainability Reporting Guide, 2016).

Financial Performance

Financial performance (FP) is a subjective measure of how well a firm can use assets from its primary mode of business and generate revenues. Financial performance is the measuring of bank’s policy and operations in monetary form. It also shows a bank’s overall financial health over a period of time, and it helps to compare different banks across the banking industry at the same time. Financial performance is a general measure of how
well a bank generates revenues from its capital. Amahalu and Obi (2020) looked at financial performance as a subjective measure of how well a firm uses its assets from primary mode of business to generate revenue. In order to assess financial performance there are variety of indicators which may be used. Some of the major financial performance indicators include Return on Asset (ROA), Return on Equity (ROE), Return on Capital Employed (ROCE), Earnings per Share (EPS) and so on. (Bagh, Khan, Azad, Saddique, & Khan, 2017).

2.1.6 Cash Value Added (CVA)

Cash value added is a measure of company performance that looks at how much money a company generates through its operations. Generally, a high cash value added figure is beneficial for both companies and investors, as it demonstrates a company's ability to generate cash from one financial period to another, creating profits. Cash value added (CVA) is a measure of a company’s ability to generate cash flow in excess of investors’ required cash flow return on investments by the company. Cash value added is a measurement of the amount of cash generated from operations minus the cash flow demands for the same period. Cash value added shows the residual cash flow which generates investment to an enterprise. An index of more than 1.0 will indicate profitability while an index below 1.0 will indicate value destruction ((Kenton, 2019).

Environmental Reporting and Financial Performance

It is difficult for firms to operate in today's business world where consumers have, and require, more knowledge regarding firms’ products and services, their ways of operating and about the firm itself (Okudo, Omojolaibi & Oladele, 2021). Consumers in today’s world are more aware and wide awake when it comes to their society and environment’s prosperity and how it is been treated by the firms. Thus, it is a huge responsibility for organizations to carry out their operations in a social and responsible manner as it not only affects the societies but also the consumer's decision on involving themselves with the specific organizations (Sridhar & Jones, 2013). Several theoretical models and frameworks have been applied in past researches to have a better understanding of the relationship between the concept of environmental reporting and firms' performances. For example, Oshiole, Elamah, & Amahalu (2020), and Rokhmawati (2015) found a negative relationship between environmental reporting and firms' performances while Mirinda (2016) documented a positive relationship.

Social Reporting and Financial Performance

The social impact of corporations is becoming a very important issue in business entity. Some proponents of the sustainability reporting (Soloman & Hansen 2015; Pava & Krausz 2016) find that investment in Corporate Social Responsibility have a big return in terms of image and overall, financial result; the related benefits, in fact are bigger than the related costs. Literature reveals the existence of many positive externalities that are linked to CSR in its bid to respond to stakeholders’ requirements. Amahalu and Obi (2020) believe that satisfying the interest of stakeholders (shareholders, employees, suppliers, community, environment and so on) and being accountable to them may actually have a positive impact on all firm dimensions, particularly financial performance. Positive reputations have often been linked to positive financial returns. Roberts & Dowling (2002); Okegbe, Eneh and Amahalu. (2019) posited that CSR initiatives can lead to reputation advantage as improvements in invested trust, new market opportunities and positive reactions of capital market would enhance organisation's financial performance, while Aupperle, Caroll and Hatfield (2015) found no relationship between social reporting and corporate financial performance.

Economic Reporting and Financial Performance

A firm's decision in financing, investing and any other decision pattern is primed on the trend of the behavior and disposed characters of its operating environment. Organisational performance has been a source of influence on the actions taken by companies and the degree to which an organisation realizes its goals as well as the stated objectives through the stated strategies and policies of the organisation (Egolum, Amahalu & Obi (2019). The increase in competitiveness and the development of an economy based on knowledge with an emphasis on the improvement of the energetic efficiency and the use of alternative bio-regenerating resources, the protection and improvement of the quality of the environment, the improvement of the living standards, the development and a more efficient usage of the human capital through social promotions are relevant requirements for a sustainable development (Omojolaibi, Okudo & Shojobi, 2019). Samimi, Kashefi, Salatin and Lashkarizadeh, (2011);
Cimpoeru, Radu and Cimpoeru (2011) proved a positive relationship between economic reporting and financial performance.

Table 1: Categories and Aspects in the Guidelines

<table>
<thead>
<tr>
<th>Category</th>
<th>Economic</th>
<th>Environmental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aspects</td>
<td>Economic Performance</td>
<td>Materials</td>
</tr>
<tr>
<td></td>
<td>Market Presence</td>
<td>Energy</td>
</tr>
<tr>
<td></td>
<td>Indirect Economic Impacts</td>
<td>Water</td>
</tr>
<tr>
<td></td>
<td>Procurement Practices</td>
<td>Biodiversity</td>
</tr>
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<td>Emissions</td>
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<td>Effluents and Waste</td>
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<td>Products and Services</td>
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<td>Compliance</td>
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<td></td>
<td>Transport</td>
</tr>
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<td></td>
<td></td>
<td>Overall</td>
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<tr>
<td></td>
<td></td>
<td>Supplier Environmental Assessment</td>
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<tr>
<td></td>
<td></td>
<td>Environmental Grievance Mechanisms</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Category</th>
<th>Social</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sub- Categories</td>
<td>Human Rights</td>
</tr>
<tr>
<td>Labor Practices and Decent Work</td>
<td>Society</td>
</tr>
<tr>
<td>Aspects</td>
<td>Product Responsibility</td>
</tr>
<tr>
<td>Employment</td>
<td>Local Communities</td>
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<tr>
<td>Labor/Management Relations</td>
<td>Anti-corruption</td>
</tr>
<tr>
<td>Occupational Health and Safety</td>
<td>Public Policy</td>
</tr>
<tr>
<td>Training and Education</td>
<td></td>
</tr>
<tr>
<td>Diversity and Equal Opportunity</td>
<td>Anti-competitive Behavior</td>
</tr>
<tr>
<td>Equal Remuneration for Women and Men</td>
<td>Customer Privacy</td>
</tr>
<tr>
<td>Supplier Assessment for Labor Practices</td>
<td>Supplier Compliance</td>
</tr>
<tr>
<td>Labor Practices</td>
<td></td>
</tr>
<tr>
<td>Grievance Mechanisms</td>
<td>Supplier Assessment for Impacts on Society</td>
</tr>
<tr>
<td>Assessment</td>
<td>Grievance Mechanisms for Impacts on Society</td>
</tr>
<tr>
<td>Supplier Human Rights Assessment</td>
<td></td>
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<tr>
<td>Human Rights Grievance Mechanisms</td>
<td></td>
</tr>
</tbody>
</table>

Source: GRI G4 Sustainability Reporting Guidelines, 2021
Theoretical Framework

Stakeholder Theory

Stakeholder theory was propounded by Dr. F. Edward Freeman in 1984. The traditional definition of a stakeholder is any group or individual who can affect or is affected by the achievement of the organization’s objectives (Freeman 1984). The general idea of the stakeholder concept is a redefinition of the organization. In general the concept is about what the organization should be and how it should be conceptualized. Friedman and Miles (2006) state that the organization itself should be thought of as grouping of stakeholders and the purpose of the organization should be to manage their interests, needs and viewpoints. This stakeholder management is thought to be fulfilled by the managers of a firm. The managers should on the one hand manage the corporation for the benefit of its stakeholders in order to ensure their rights and the participation in decision making and on the other hand, the management must act as the stockholder’s agent to ensure the survival of the firm to safeguard the long term stakes of each group (Friedman and Miles, 2006). Stakeholder theory looks at the relationship between an organization and others in its internal and external environment. It also looks at how these relationships affect how the organization conducts its activities (Freeman 2004). Stakeholders can come from inside or outside of the stockholders, suppliers, non-profit community organizations, government, and the local community among others.

Empirical Review

Amahalu, Ezechukwu and Obi (2017) ascertained how corporate social responsibility (CSR) relates with financial performance of quoted deposit money banks in Nigeria from 2010-2016. Specifically, this study aimed to ascertain the extent of relationship that exists between donation and return on assets; determined the extent of relationship that exists between donation and return on equity and to evaluate the extent of relationship between donations and market-to-book value of quoted deposit money banks in Nigeria. The study employed ex-post fact research design. The sample size of this study consists of the fifteen quoted deposit money banks in Nigeria. Pearson Coefficient Correlation, Panel Least Square (PLS) regression analysis and Granger Causality test were employed via E-View 9.0. The study found a significant positive relationship between return on asset, return on equity, market-to-book value and donations at 5% level of significance. The implication of the findings is that CSR implementation maximizes future returns for deposit money banks in Nigeria. It was recommended among others that since CSR has a positive and significant relationship with financial position, deposit money banks should engage in CSR practices as this will guarantee a safer environment for smooth operations and maximisation of shareholders wealth.

Lawrence, Thomas and Wang (2017) investigated the relationship between sustainability reporting and firm value based on listed companies in Singapore from 2004-2015. The study used an established sustainability reporting assessment framework and test how both the adoption and quality of sustainability reporting are related to a firm’s market value. Empirical results suggested that sustainability reporting is positively related to firm’s market value and this relationship is independent of sector or firm status such as government-linked companies and family businesses.

Ali, Nobanee and Khare (2018) examined the impact of corporate sustainability on corporate financial performance in Abu Dhabi from 2002-2017. The study identified developing trends and the issues that hindered conclusive consensus on that relationship. The study used content analysis to examine the literature and establish the current state of research. A total of 132 papers from top-tier journals are shortlisted. The study reported a positive relationship between corporate sustainability and financial performance.

Wei-Lun and Fu (2019) studied the relationship between the environmental and financial performance of corporate from 20013-2017. The statistics results on the financial and environmental performances of listed companies which had adopted the environmental accounting system in Taiwan indicated that the adoption of environmental accounting made the corporation’s financial performances worse.
METHODOLOGY

Research Design

The research designs employed in this study are content analysis and *ex-post facto* research designs, in order to establish the meaningful relationship between sustainability reporting and performance.

Population of the Study


Sample Size and Sampling Technique

Eleven (11) industrial goods firms represented the sample size for this study. This study employed purposive sampling technique where specific elements which satisfy some predetermined criteria are selected. Care was taken to select those industrial goods firms that had complete data in the financial statement for the eleven year period from 2008 to 2019; firms whose stock are actively traded on the floor of stock exchange for the study period; firms that consistently filed their annual reports for the study period; firms that have embraced Sustainability Reporting in line with global best practices and have integrating sustainability information in their annual reports. The selected firms are: Ashaka Cement Plc, Avon Crowncaps & Containers, Berger Paints Plc, Beta Glass Co. Plc, CAP Plc, Cutix Plc, Dangote Cement Plc, First Aluminum Nigeria Plc, Lafarge Nigeria Plc, Meyer Plc, Portland Paints & Products Nigeria Plc.

Source of Data

This study primarily employed secondary data. The Panel data were sourced from fact books and annual reports and account for the period of twelve (12) years spanning from 2008-2019.

Measurement of Research Variables

Table 1 Variables Definition and Measurement Units

<table>
<thead>
<tr>
<th>Variable Type</th>
<th>Indicators</th>
<th>Measurement Unit</th>
<th>Variable Symbols</th>
<th>Variables Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent Variables (Sustainability Reporting)</td>
<td>Environmental Reporting</td>
<td>Dummy Variable</td>
<td>ENVR</td>
<td>Total Level of Environmental Disclosure</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Environmental Occurrence (12x3=36)</td>
</tr>
<tr>
<td></td>
<td>Social Reporting</td>
<td>Dummy Variable</td>
<td>SOCR</td>
<td>Total Level of Social Disclosure</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Social Occurrence (30x3=90)</td>
</tr>
<tr>
<td></td>
<td>Economic Reporting</td>
<td>Dummy Variable</td>
<td>ECOR</td>
<td>Total Level of Economic Disclosure</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total Economic Occurrence (4x3=12)</td>
</tr>
</tbody>
</table>
Dependent Variable (Financial Performance)

<table>
<thead>
<tr>
<th>Cash Value Added</th>
<th>CVA</th>
<th>Cash Flow Statement - Operating Cash Flow</th>
</tr>
</thead>
</table>

Control Variables

<table>
<thead>
<tr>
<th>Leverage</th>
<th>LEV</th>
<th>Total Debt/Total Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm Size</td>
<td>FSZ</td>
<td>Natural logarithm of total assets</td>
</tr>
</tbody>
</table>

Method of Data Analysis

In this study, sustainability reporting refers to the disclosure of non-financial information, including aspects such as economic, social and environmental. This study took information disclosed by industrial goods companies from 2008 to 31 December 2019 into account. Sustainability practices of companies disclosed on their corporate website, standalone sustainability report, and/or in the annual report were considered. First, this study analyzes whether a company has reported sustainability, and then for those that do, this study would further evaluate the sustainability reporting level by generating a score using a measurement scheme developed by Global Reporting Index (GRI) guidelines; a checklist was developed comprising of three categories: (i) Environment Reporting which contains 12 indicators (Materials; Energy; Water; Biodiversity; Emissions; Effluents and Waste; Products and Services; Compliance; Transport; Overall; Supplier Environmental Assessment; Environmental Grievance Mechanisms); (ii) Social Reporting which contains 30 indicators (Employment; Labor/Management Relations; Occupational Health and Safety; Training and Education; Diversity and Equal Opportunity; Equal Remuneration for Women and Men; Supplier Assessment for Labor Practices; Labor Practices Grievance Mechanisms; Investment; Non-discrimination; Freedom of Association and Collective Bargaining; Child Labor; Forced or Compulsory Labor; Security Practices; Indigenous Rights; Assessment; Supplier Human Rights Assessment; Human Rights Grievance Mechanisms; Local Communities; Anti-corruption; Public Policy; Anti-competitive Behavior; Compliance; Supplier Assessment for Impacts on Society; Grievance Mechanisms for Impacts on Society; Customer Health and Safety; Product and Service Labeling; Marketing Communications; Customer Privacy; Compliance); (iii) Economic Reporting which contains 4 indicators (Economic Performance; Market Presence; Indirect Economic Impacts and Procurement Practices).

The independent variables were measured by scoring index based on performance indicators selected from Global Reporting Initiative guidelines as applied in previous studies (Amahalu, Okoye & Obi, 2018; Mihai, Pavaloaia, Afrasinei & Georgescu, 2019). The economic, environmental and social disclosure index was calculated based on the number of indicators that are disclosed (occurrence) and the level of disclosure (quantitative and qualitative). If a company disclosed about any indicator, that is the occurrence of an indicator in the company’s financial statement, the researcher assigned 1 or that company did not disclosed about any indicator, the researcher assigned 0. On the other hand if the level of the indicator disclosed is qualitative the researcher assigned 2 and a quantitative disclosure the researcher assigned 3.

Economic, environmental or social index = Total Level of Disclosure / Total Occurrence. (4+12+30 = 46x3 = 106)

Model Specification

To test H1, H2, and H3, this study estimated the following regression equations. The equation examined the association between sustainability reporting and financial performance of quoted Industrial Goods companies in Nigeria:

\[
\text{CVA}_{it} = \beta_0 + \beta_1\text{ENVR}_{it} + \beta_2\text{LEV}_{it} + \beta_3\text{FSZ}_{it} + \mu_{it} - - - - - \quad \text{Ho}_1
\]

\[
\text{CVA}_{it} = \beta_0 + \beta_1\text{SOCR}_{it} + \beta_2\text{LEV}_{it} + \beta_3\text{FSZ}_{it} + \mu_{it} - - - - - \quad \text{Ho}_2
\]

\[
\text{CVA}_{it} = \beta_0 + \beta_1\text{ECOR}_{it} + \beta_2\text{LEV}_{it} + \beta_3\text{FSZ}_{it} + \mu_{it} - - - - - \quad \text{Ho}_3
\]
Where:

\[ \text{ENVR}_{it} = \text{Environmental Reporting of firm } i \text{ in period } t \]
\[ \text{SOCR}_{it} = \text{Social Reporting of firm } i \text{ in period } t \]
\[ \text{ECOR}_{it} = \text{Economic Reporting of firm } i \text{ in period } t \]
\[ \text{CVA}_{it} = \text{Cash Value Added of firm } i \text{ in period } t \]
\[ \text{FSZ}_{it} = \text{Firm Size of firm } i \text{ in period } t \]
\[ \text{LEV}_{it} = \text{Leverage of firm } i \text{ in period } t \]
\[ \mu_{it} = \text{Error Term of firm } i \text{ in period } t \]

Data Presentation and Analysis

Table 2 Pearson Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>CVA</th>
<th>ENVR</th>
<th>SOCR</th>
<th>ECOR</th>
<th>LEV</th>
<th>FSZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVA</td>
<td>1.000</td>
<td>0.383</td>
<td>0.187</td>
<td>0.228</td>
<td>-0.280</td>
<td>0.665</td>
</tr>
<tr>
<td>ENVR</td>
<td>0.383</td>
<td>1.000</td>
<td>-0.065</td>
<td>-0.472</td>
<td>0.693</td>
<td>0.367</td>
</tr>
<tr>
<td>SOCR</td>
<td>0.187</td>
<td>-0.065</td>
<td>1.000</td>
<td>0.080</td>
<td>-0.131</td>
<td>-0.399</td>
</tr>
<tr>
<td>ECOR</td>
<td>0.228</td>
<td>-0.472</td>
<td>0.080</td>
<td>1.000</td>
<td>-0.588</td>
<td>-0.361</td>
</tr>
<tr>
<td>LEV</td>
<td>-0.280</td>
<td>0.693</td>
<td>-0.131</td>
<td>-0.588</td>
<td>1.000</td>
<td>0.534</td>
</tr>
<tr>
<td>FSZ</td>
<td>0.665</td>
<td>0.367</td>
<td>-0.399</td>
<td>-0.361</td>
<td>0.534</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Source: E-Views 9.0 Output, 2021

Interpretation on Correlation Matrix

The result of the correlation analysis in table 2 reveals that CVA associates positively with ENVR, SOCR, ECOR and FSZ at a coefficient factor of 0.383, 0.187, 0.228 and 0.665 respectively, but relates negatively with LEV at -0.280.

Test of Hypotheses

Test of Hypothesis 1

\[ \text{H}_0: \text{Environmental Reporting has no significant effect on Cash Value Added of quoted industrial goods companies in Nigeria.} \]
\[ \text{H}_1: \text{Environmental Reporting has significant effect on Cash Value Added of quoted industrial goods companies in Nigeria.} \]

Table 3 Panel Least Square Regression Analysis between Environmental Reporting and CVA

Dependent Variable: CVA
Method: Panel Least Squares
Date: 05/25/21   Time: 05:41
Sample: 2008 2019
Periods included: 12
Cross-sections included: 11
Total panel (balanced) observations: 132

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>2.321563</td>
<td>0.628645</td>
<td>3.692965</td>
<td>0.0003</td>
</tr>
<tr>
<td>ENVR</td>
<td>0.199135</td>
<td>0.257127</td>
<td>4.774463</td>
<td>0.0000</td>
</tr>
</tbody>
</table>
Interpretation of Regression Result

Table 3 shows the regression result of environmental reporting index CVA:

CVA = 2.321563 + 0.199135ENVR

It shows that, given one unit increase in environmental reporting while holding other factors constant, CVA will increase by 19.9%. The adjusted R-Squared shows that variation in CVA is explained by environmental reporting by 54%, while 46% is explained by other factors other than environmental reporting index. Table 4.3 revealed that the explanatory variable (ENVR) and the control variables (LEV and FSZ) used in this study are statistically significant at the 5% level of significance using their t-values which are 4.774463, -4.175172 and -2.029737 respectively for environmental, leverage and firm size. The result shows that there is a significant positive relationship between ENVR ($\beta_1 = 0.199135; \text{Prob}=0.0000$); FSZ ($\beta_3 = 0.118911; \text{Prob}=0.0447$) and CVA; while a significant negative relationship exist between LEV ($\beta_2 = -4.175172; \text{Prob}=0.0000$) and CVA. The Prob(F-statistic) =0.000000 suggests that ENVR, LEV and FSZ have combined to exert significant effect on CVA at 5% level.

Table 4 Hausman Test Comparing FEM and REM between ENVR and CVA

<table>
<thead>
<tr>
<th>Test Summary</th>
<th>Chi-Sq. Statistic</th>
<th>Chi-Sq. d.f.</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-section random</td>
<td>14.778280</td>
<td>3</td>
<td>0.0035</td>
</tr>
</tbody>
</table>

Source: E-Views 9.0 Hausman Output, 2021

The rule for Hausman test is as follows:

- If the $p\ value > \alpha = 0.05$ then the variable does not have a significant effect (Accept Ho).
- If the $p\ value < \alpha = 0.05$ then the variable has a significant effect (Accept H1)

Interpretation of Post Regression Analysis

From the Hausman test result in table 4, the p-value is 0.0035, this is statistically significant at the conventional level of 0.05. Thus, the Fixed Effect Model (FEM) is more appropriate than the Random Effect Model (REM) in analysing the effect of environmental reporting on cash value added of quoted industrial goods firms in Nigeria at 5% significant level.
Test of Hypotheses II

$H_0$: Social Reporting has no significant effect on Cash Value Added of quoted industrial goods companies in Nigeria.

$H_1$: Social Reporting has significant effect on Cash Value Added of quoted industrial goods companies in Nigeria.

### Table 5 Panel Least Square Regression Analysis between Social Reporting and CVA

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>1.954648</td>
<td>0.589390</td>
<td>3.316389</td>
<td>0.0012</td>
</tr>
<tr>
<td>SOCR</td>
<td>0.219799</td>
<td>0.489034</td>
<td>4.594570</td>
<td>0.0000</td>
</tr>
<tr>
<td>LEV</td>
<td>-0.015948</td>
<td>0.035647</td>
<td>-2.447379</td>
<td>0.0244</td>
</tr>
<tr>
<td>FSZ</td>
<td>0.107760</td>
<td>0.057285</td>
<td>4.881128</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

| R-squared | 0.654740 | Mean dependent var | 0.974959 |
| Adjusted R-squared | 0.630503 | S.D. dependent var | 0.816215 |
| S.E. of regression | 0.803670 | Akaike info criterion | 2.433244 |
| Sum squared resid | 75.56864 | Schwarz criterion | 2.525666 |
| Log likelihood | -143.2112 | Hannan-Quinn criter. | 2.470780 |
| F-statistic | 22.25849 | Durbin-Watson stat | 1.942705 |
| Prob(F-statistic) | 0.000000 |              |          |

**Source:** E-Views 9.0, Regression Output 2021

**Interpretation of Regression Result**

According to the result of the analyzed data in table 5, the function of linear regressions was built in the model below:

$$\text{CVA} = 1.954648 + 0.219799\text{SOCR} - 0.015948\text{LEV} + 0.107760\text{FSZ}$$

The results of the panel regression exploring the functional relationship and effect thereof, between cash value added and social reporting are presented in table 4.8. The results showed that information on social reporting has a direct/positive relationship with cash value added of industrial goods firms in Nigeria ($\beta_{SOCR} = 0.179799$). That is, movement in CVA is significantly influenced by movement in social reporting ($t$-Statistic $= 4.594570$; $P$-value $= 0.0000<0.05$); LEV ($t$-Statistic $= -2.447379$; $P$-value $= 0.0244<0.05$); FSZ ($t$-Statistic $= 4.881128$; $P$-value $= 0.0000<0.05$). The regression model shows that, given a unit increase in social reporting index, CVA will increase by 21.98%; an increase in FSZ by one unit, holding other factors constant, CVA will increase by 10.78%. On the other hand, a unit increase in leverage while holding other factors constant will reduce CVA by 1.6%. Testing the overall significance of the model, the results confirmed that the model is statistically significant at 5% level of significance with the $\text{Prob}(F$-statistic)$ = 0.000000$. Since there is strong evidence that CVA is affected by social reporting at 5% level of significance, therefore, this research concludes that social reporting has a significant positive effect on cash value added of quoted industrial goods firms in Nigeria for the period of 2008 to 2019 at
5% level of significance.

**Table 6 Hausman Test Comparing FEM and REM between SOCR and CVA**

Correlated Random Effects - Hausman Test  
Equation: Untitled  
Test cross-section random effects

<table>
<thead>
<tr>
<th>Test Summary</th>
<th>Chi-Sq. Statistic</th>
<th>Chi-Sq. d.f.</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-section random</td>
<td>23.459445</td>
<td>3</td>
<td>0.0009</td>
</tr>
</tbody>
</table>

**Source:** E-Views 9.0 Output, 2021

**Interpretation of Post Regression Analysis**

From the Hausman test result in table 6, the p-value is 0.0009, this is statistically significant at the conventional level of 0.05. Thus, the Fixed Effect Model (FEM) is more appropriate than the Random Effect Model (REM) in analysing the effect of social reporting on cash value added of quoted industrial goods firms in Nigeria at 5% significant level.

**Test of Hypotheses III**

**H₀:** Economic Reporting has no significant effect on Cash Value Added of quoted industrial goods companies in Nigeria.

**H₁:** Economic Reporting has significant effect on Cash Value Added of quoted industrial goods companies in Nigeria.

**Table 7 Panel Least Square Regression Analysis between Economic Reporting and CVA**

Dependent Variable: CVA  
Method: Panel Least Squares  
Date: 05/25/21  Time: 06:00  
Sample: 2008 2019  
Periods included: 12  
Cross-sections included: 11  
Total panel (balanced) observations: 132

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>2.110400</td>
<td>0.597082</td>
<td>3.534520</td>
<td>0.0006</td>
</tr>
<tr>
<td>ECOR</td>
<td>0.186074</td>
<td>0.977245</td>
<td>3.292735</td>
<td>0.0042</td>
</tr>
<tr>
<td>LEV</td>
<td>-0.010226</td>
<td>0.035967</td>
<td>-0.284309</td>
<td>0.7767</td>
</tr>
<tr>
<td>FSZ</td>
<td>-0.110907</td>
<td>0.058100</td>
<td>-4.908884</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

R-squared 0.534904  
Adjusted R-squared 0.510158  
S.E. of regression 0.812059  
Sum squared resid 77.15440  
Log likelihood -144.4677  
Mean dependent var 0.974959  
S.D. dependent var 0.816215  
Akaike info criterion 2.454011  
Schwarz criterion 2.546434  
Hannan-Quinn criterion 2.491547
F-statistic 8.410505 Durbin-Watson stat 1.802390
Prob(F-statistic) 0.000004

Source: E-Views 9.0 Regression Output, 2021

Interpretation of Regression Result

Table 7 shows the regression result of environmental reporting index CVA:

CVA = 2.110400 + 0.186074SOCR - 0.010226LEV - 0.110907FSZ

It shows that, given one unit increase in economic reporting while holding other factors constant, CVA will increase by 18.6%. On the other hand, a unit increase in LEV and FSZ will reduce CVA by 1% and 11% respectively. The adjusted R-Squared shows that variation in CVA is explained by social reporting, leverage and firm size by 51%, while 49% is explained by other factors other than social reporting, leverage and firm size. Table 4.13 revealed that the SOCR has a significant positive relationship with CVA as indicated by Beta coefficient and p-values ($\beta_1=0.186074$; P-value = 0.0042<0.05); a non-significant negative relationship exist between leverage and CVA ($\beta_2=-0.010226$; P-value =0.7767), while a significant negative relationship exist between firm size and CVA ($\beta_3=-0.110907$; P-value = 0.0000). The F-statistic =8.410505 and its associated Prob(F-statistic) =0.000004 suggests that the overall significance of the model is statistically significant at 5% level of significance. Since the Prob(F-statistic) = 0.000004 is less than the conventional P-value at 5% (0.05), the null hypothesis is rejected at 5% level of significance implying that, social reporting has a significant negative effect on cash valued added of quoted industrial goods companies at 5% level significance.

Table 8 Hausman Test Comparing FEM and REM between ECOR and CVA

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

<table>
<thead>
<tr>
<th>Test Summary</th>
<th>Chi-Sq. Statistic</th>
<th>Chi-Sq. d.f.</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cross-section random</td>
<td>12.313366</td>
<td>3</td>
<td>0.0041</td>
</tr>
</tbody>
</table>

Source: E-Views 9.0 Output, 2021

Interpretation of Post Regression Analysis

From the Hausman test result in table 8, the p-value is 0.0041, this is statistically significant at the conventional level of 0.05. Thus, the Fixed Effect Model (FEM) is more appropriate than the Random Effect Model (REM) in analysing the effect of economic reporting on cash value added of quoted industrial goods firms in Nigeria at 5% significant level.

Findings, Conclusion and Recommendation

Summary of Findings

From the analysis of the study, it was specifically revealed that;

i. Environmental Reporting has a significant positive effect on cash value added of quoted industrial goods firms in Nigeria at 5% level of significance.

ii. Social Reporting has a significant positive effect on cash value added of quoted industrial goods firms in Nigeria at 5% level of significance.
iii. Economic Reporting has a significant positive effect on cash value added of quoted industrial goods firms in Nigeria at 5% level of significance.

Conclusion

This study was carried out to determine the effect of sustainability reporting on financial performance of quoted industrial goods companies in Nigeria. This study employed both content analysis and ex-post facto research design. The drivers for sustainability reporting are environmental reporting, social reporting and economic reporting, while financial performance was measured with cash value added. The results of the study also support both theoretical and empirical evidence of prior studies that showed significant positive effect of sustainability reporting on financial performance of firms in Nigeria at 5% level of significance.

Recommendations

In line with the analysis and conclusion of this study, the following were recommended:

i. There should be a promotion of environmental policies through direct regulations to encourage energy/resource savings through innovations in technology and management, thereby reducing the cost of environmental measures, in general and also stimulating improvements in value-added.

ii. There should be information-based instruments of environmental policy to encourage information disclosure by firms which would leads to a favourable reception of the firm by other firms, clients and consumers, and raise the market value of its management as a whole.

iii. Government agencies should give tax credit to organisations that comply with the economic laws of the land which will encourage economic reporting and enhancement of performance.

References

Finance and Management Sciences 10(2), 157-170.


