Web Based Environmental Disclosure and Firm Value: Empirical Evidence on Listed Manufacturing Firms in Nigeria

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DOI 10.56201/ijebm.v9.no2.2023.pg12.25

Abstract
The relationship between web based environmental disclosure and value of listed manufacturing firms in Nigeria was empirically examined. To determine the relationship between web based environmental disclosure (WED) and firm value, web based environment disclosure was measured using a dichotomous procedure adopted from GRI while firm value on the hand was proxy using price to book value (PBV). The study adopted Ex Post Facto Design and data were collected from the annual reports and accounts of listed manufacturing firms in Nigeria for the period ended; 2014-2021. The study used panel least square model as a statistical test tool. The findings of the study show that web based environmental disclosure (WED) has significant and positive effect on value (PBV) of listed manufacturing firms in Nigeria at 1% significant level. Thus, the study concludes that web based environmental disclosure ensures firms' value in Nigeria. Based on this, the study recommended that corporate environmental resource recycling cost should be decreased for better environmental protection which ensures firms value.

Keyword: *Web Based Environmental Disclosure; Firm Value; Price to Book Value*

1.0 Introduction

Climate change and Global warming is considered as an environmental challenge in the face of the world. This challenge is mostly caused by companies' operations. Emission from companies' operation is a major source of global warming and climate change. Companies do incur cost for environmental management and abatement of these challenges. Hence, the need for companies to account for environmental expenditure received great attention years ago. The laws of the Federal Republic of Nigeria 1992 Decree No.82 on Environmental Impact Assessment require that companies before embarking on any activity that has effect on environment, to submit Environmental Impact Assessment Report. The policy includes among others the following information; the description of the activities, description of the potentially affected environment, assessment of potential environmental impacts on proposed activity (Mishra and Siddiqui, 2014).

The response of firms to environmental practices has brought about the reconfiguration of corporate performance indices in a larger context under the subtle influence of environmental and social factors, in order to develop a holistic panorama of an entity's performance. This has led to a growing demand from various stakeholders for measurement of a company's environmental practices and subsequent public disclosure of this information. As a result, a new area of accounting has emerged regarding environmental accounting disclosures.

From the a priori expectations, there are limited empirical studies in Nigeria that have examined the relationship between corporate environmental reporting practices and firm value. Also, a number of the studies were focused on corporate performance. For example, Ifurueze, Lyndon and Bingilar (2013); Bassey, Effiok and Eton (2013) and Okafor (2018) examined the impact of environmental performance on corporate performance among oil companies in the Niger Delta States of Nigeria. Omaliko and Okpala (2020) examined the effect of environmental disclosures on dividend payout of firms in Nigeria. Also, Nnamani, Onyekwelu and Ugwu (2017) examined the relationship between environmental disclosure and financial performance in the brewery industry in Nigeria. Others include Agbiogwu, Ihendinihu, and Okafor (2016) and Utile, Tarbo and Ikya (2017) studies were limited to 10 firms. Onyinyechi and Ihendinihu (2016) used t-test while the study by Ezeagba, John-Akamelu, and Umeoduagu (2017) is limited to the food and beverage industry in Nigeria with emphasis on corporate performance. Most of these studies emphasized on corporate environmental reporting practices other than web based environmental disclosure which goes beyond mere disclosure of environmental activities of a corporate organization in their financial reporting. Also, none of these studies limited corporate environmental practices to firm value. Hence the need for the present study to examine the relationship which exists between web based environmental disclosure and value of manufacturing firms in Nigeria using firms quoted under consumer goods sector of Nigerian Exchange Group (NGX) as a reference point.

To achieve this purpose, the following hypotheses were formulated:

H_{01}: Web Based Environmental Disclosure has no significant relationship with Value of Quoted Manufacturing Firms in Nigeria

2.0 Review of Related Literature

2.1.1 Web Based Environmental Disclosure

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

Web based environmental disclosure is a disclosure on the control of emissions and effluents into environment. It constitutes the use of materials, processes, or practices to reduce, minimize, or eliminate the creation of pollutants or wastes through a corporate website.

According to UK Environmental Agency (2006), environmental accounting is the collection, analysis and assessment of environmental and financial performance data obtained from business management and financial accounting system. Environmental Accounting is the incorporation of environmental costs and information into a variety of accounting practices.

2.1.2 Firm Value

Firm value is one of the concepts that have been developed for accounting the real value of the firms more realistically considering the concept of market value. Firm value is a concept demonstrating the value of the firm purified from the cash and cash equivalents and financial debts as regards to the concept of market value (Ilgaz 2010). This is expressed as thus;

Firm Value = Market value – Total Financial Debts - (Liquid assets + Marketable Securities)

Firm value is the perception of the investor to the success of a company. It is reflected in the share price of the company. The increase of the share price shows the trust of the investors to the company which they are willing to pay more with aiming for a higher return. The firm value is the total assets owned. It consists of the market value of share and liabilities (Damarchi, Amiri & Rezvani, 2012). The ratio of market price to book value ratio can also be used to measure firm value. Firm value is the perception of investors to companies that are often associated with stocks prices. High stock prices make the firm value also high. Firm value is also referred to as the takeover value. It is the amount of money required for an acquirer to buy a company at current market price, inclusive of cash, debt, and other items associated with a business.

For the purpose of this study, price to book value was used a measurement for firm value. This is expressed mathematically as stock market prices measured by book value of shares.

i.e $\frac{\text{Stock Market of Shares}}{\text{Book Value of Shares}}$

2.2 Theoretical Framework

2.2.1 The Legitimacy Theory

This study employs legitimacy theory as a theoretical framework. This theory was propounded by Donavan in the year 1984. The legitimacy theory presents two basic ideas whereby corporate organizations need to legitimize their activities and this legitimacy process provides benefits to the organization. Disclosing quality environmental Information is a way for companies to legitimize their activities. The benefit from the legitimacy process is represented by firm's profitability. Legitimacy theory presumed that a corporation will act to ensure that its activities and actions were congruent with whom it believed has the necessary attributes to affect the corporation's image and ultimately, existence (Donavan, 1984).

Suchman (1995) described legitimacy theory as a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs and definitions. Using the legitimacy perspective, firms voluntarily disclose environmental information to show that they are conforming to the expectations and values of the society within which they operate. According to Guthrie and Parker (2009), they argue that if the legitimacy explanation holds true, the corporate disclosure policies will react to major social and environmental events.

On the other hand, the theory suggests that social expectations no longer rests upon mere generation of profit but has broadened to include local communities as well as concern for the natural environment. Therefore, firms need to provide environmental information to meet the broad expectations of society relating to the treatment of the natural environment. Hence the study is anchored on Legitimacy theory.

2.3 Empirical Review

Omaliko, Onyeogubalu and Akwuobi (2021) examined the effect of carbon emission disclosures on sustainability of oil and gas Firms in Nigeria. Two hypotheses were used in the study to guide the investigation and the statistical test of parameter estimates was conducted using OLS Regression Model. The research design used was Ex Post Facto design and data for the study were obtained from the NSE Factbook, Annual Reports & Accounts and Sustainability Reports of oil and gas firms in Nigeria spanning from 2015-2020. The findings of the study generally indicate that carbon emission disclosures have significant and positive effect on firms sustainability in Nigeria at 1% level of significance. Based on the findings of the study, it was recommended that corporate organizations should be social responsible and environmental friendly since environmental friendly and social responsible firms are more sustainable. Also sustainability of a company's current life is largely determined by the company's ability to manage social and environmental performance.

Bassey, Sunday and Okon (2013) on the other hand used Pearson's product moment correlation analysis of oil and gas companies in the Niger Delta region of Nigeria. They observed that environmental cost has satisfied relationship with firm's profitability. Adediran and Alade (2013) used multiple regression analysis of 14 randomly selected companies quoted on the Nigerian Stock Exchange 2010. Their findings show that environmental accounting has a positive relationship with net profit margin, dividend per share and a negative relationship with return on capital employed and earnings per share.

Ordu and Amah (2021) investigated the relationship between sustainability accounting and performance of selected quoted oil and gas companies in within the period of 2012-2017.

Specifically it examined the relationship between environmental accounting and return on assets of quoted oil and gas companies in Nigeria. Explanatory and correlational design was adopted for the study while secondary data was utilized for the study. Data was gathered from annual reports and accounts of the companies available on their websites and from Nigerian Stock Exchange (various years). The data collected was from the period 2012 – 2017. The Annual reports includes annual financial statements, annual sustainability reports of the quoted oil firms, annual returns submitted at Nigerian Stock Exchange for the years under study. Regression was used for data analysis and testing of the hypothesis. The result of the study showed that there is no significant relationship between environmental accounting and return on assets of the oil and gas companies in Nigeria under study. The study therefore recommends that amongst others that the management of the oil and gas companies should channel efforts towards engaging in adequate environmental accounting disclosure as a way of increasing stakeholders trust and showing more transparency in their operations. This could in turn lead to achieving better financial performance.

Omaliko, Uzodimma and Ogbuagu (2018) examined the comparative analysis of environmental disclosure in oil and gas industries in Nigeria. The study compared the environmental disclosure requirements of Global Reporting Initiatives (GRI) with the environmental information disclosed in the annual report of five Listed Oil and Gas firms in Nigeria for the period of five years (2012-2016). The Content Analysis research design was adopted. Secondary data for the study were obtained from the published audited financial statements of the five Listed Oil and Gas firms in Nigerian for the period under review from which disclosure compliance index was developed. The statistical tools employed were the compliance index and the Friedman Analysis of Variance (ANOVA). The findings of the study indicate that there is a significant and positive relationship between the firms' compliance and Global Reporting Initiative (GRI) disclosure requirements among the sampled oil and gas firms in Nigeria. The study however recommends among others that the accounting standard setters (IFRS) should draft a more comprehensive framework for reporting environmental concerns, specifically for the oil and gas industries because of their high propensity to environmental degradation and pollution, and also the high impact of their industrial activities on the environment.

Ezeagba, Racheal and Chiamaka (2017) examined the relationship between environmental accounting disclosures and return on capital employed of food and beverage companies in Nigeria, among others. Four hypotheses were formulated and tested in line with the objectives of the study. Data for the study were collected through secondary sources and analyzed using Pearson's correlation statistical technique and multiple regression, with the aid of SPSS version 20.00. The study revealed that there is a significant relationship between environmental accounting disclosures and return on equity of selected companies. It also revealed a negative relationship between environmental accounting disclosures and return on capital employed and net profit margin of selected companies.

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

3.0 Methodology

The population of the study consists of the entire manufacturing firms quoted under consumer goods sector, industrial goods sector, oil & gas sector, ICT sector, healthcare sector and conglomerate sector of Nigerian Exchange Group (NGX) as at 2023 business list covering from 2014-2021. *Ex-Post Facto Design* was adopted since the data used is secondary which already exists and cannot be manipulated or controlled. A total of 21 firms formed our sample size with 168 observations. The data for the study were obtained from the annual reports and accounts of the sampled firms. Panel least square model was employed to examine the relationship between web based environmental disclosure and firm value in Nigeria with the aid of E-view 12.

The dependent variable in this study is firm value and it was measured using Net Assets Per Share. Web Based Environmental Disclosure (WED) on the other hand was measured using a dichotomous procedure by (GRI) in scoring the items whereby specifically, a "1-point" score was awarded for each item that is disclosed in the annual report and otherwise, a "0-point".

3.1 Model Specification and Justification

The study adapted and modified the model of Arumona, Lambe and Ogunmakinde (2020) in examining the relationship which exists between web based environmental disclosures and value of quoted manufacturing firms in Nigeria as shown below;

Arumona, Lambe and Ogunmakinde (2020): $\mathbf{NPM = \beta_0 + \beta_1 ERD + \varepsilon}$

The modified model for the study is shown as thus

$$\mathbf{PBV = \beta_0 + \beta_1 WED + \varepsilon}$$

Where:

PBV = Price to Book Value

WEB = Web Based Environmental Disclosure

ε = error term

4.0: Data Analysis and Results

Table 4.1: Descriptive Statistics

	PBV	WED
Mean	0.767835	1.098735
Maximum	8.098432	1.000000
Minimum	0.000000	0.000000
Std. Dev.	0.972348	0.397823
Skewness	5.098342	1.679636
Kurtosis	46.97283	1.045732
Jarque-Bera	29784.93	10.98736
Probability	0.000000*	0.000000*
Sum	397.0938	987.6980
Sum Sq. Dev.	1909.098	200.0938
Observations	**168**	**168**

Note: *1%, **5% Level of Significance.

Source: E-View 12 Computational Results (2023)

From Table 4.1above, the mean (average), maximum values, minimum values, standard deviation and Jarque-Bera Statistics (Normality Test) were shown. The results provide some insight into the nature of the selected quoted manufacturing firms in Nigeria used in this study. First, it can be observed that on the average, in a 8-year period (2014-2021), the sampled firms were characterized by a positive price to book value (PBV) value of 0.767835. This implies that firms with PBV values of 0.767835 and above have environmental information disclosure in their corporate website.

The average web environmental disclosure (WED) for the sampled firms was 1.098735 with a standard deviation value of .397823. This means that firms with WED values of 1.098735 and above are environmental friendly. There is also a high variation in maximum and minimum values of BG which stood at 1 and 0 respectively. This wide variation in WED values among the sampled firms justifies the need for this study as we assume that firms with higher WED values are environmental friendly and responsive than those firms with lower WED values

Lastly, in table 4.1above, the Jarque-Bera (JB) which test for normality or the existence of outliers or extreme values among the variables shows that all the variables are distributed normally at the 1% level of significance. This implies that any variable with outlier are not likely to distort our conclusion and are therefore reliable for drawing generalization. Hence, panel least square estimations can be used to estimate the regression model.

4.2: Test of Hypothesis

Table 4.2.1: Result on Effect of Web Based Environmental Disclosure on Firms Value in Nigeria.

Dependent Variable: PBV

Method: Panel Least Squares

Date: 04/11/23 Time: 9:08

Sample: 2014 -2021

Periods included: 8

Cross-sections included: 21

Total panel (balanced) observations: 168

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	6.055321	0.200146	30.25452	0.0000
WED	0.139863	0.018743	7.462145	0.0003

R-squared	0.741469	Mean dependent var	7.955674
Adjusted R-squared	0.741411	S.D. dependent var	0.908762
S.E. of regression	0.781946	Akaike info criterion	12.65496
Sum squared resid	529.2893	Schwarz criterion	14.14308
Log likelihood	10.39255	Hannan-Quinn criter.	11.47860
F-statistic	25.32055	Durbin-Watson stat	2.114198
Prob(F-statistic)	0.000000		

Source: Result Output from E-View 12 (2023).

4.3: Discussion of Findings

From the table above, auto correlation test was carried out using Durbin Watson (DW) statistics which gives 2.114198 which is approximately 2. Thus, it agrees with the Durbin Watson rule of thumb which indicates that our data is free from autocorrelation problem and as such fit for the regression result to be interpreted and result relied on. Akika Info Criterion and Schwarz Criterion which are 12.654946 and 14.14308 respectively further strengthen the fitness of our regression result for reliability it confirmed the goodness of fit of the model specified.

The result of the analysis of the study using panel least square model shows that there is a significant and positive relationship between web based environmental disclosure and value of quoted manufacturing firms in Nigeria. With a P-value of 0.0003, the test is considered statistically significant at 1% level. Also, the coefficient of correlation of .139% which indicates that corporate environmental practices ensure corporate value by 13.9%. Based on this, we rejected the null hypothesis and accepted alternate hypothesis which contends that web based environmental disclosure has significant relationship with value of quoted manufacturing firms in Nigeria. This agrees with the a priori expectations of Omaliko and Okpala (2020), Ezeagba, Rachael and Chiamaka (2017) who found significant and positive relationship between environmental disclosures and firms' performance.

5.1 Conclusion and Recommendation

The study concludes that web based environmental disclosures ensures the value of quoted manufacturing firms in Nigeria. Thus, it was recommended that corporate environmental resource recycling cost should be decreased for better environmental protection which ensures firms value.

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