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ENVIRONMENTAL SUSTAINABILITY INFORMATION REPORTING AND FIRM FINANCIAL PERFORMANCE

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Abstract

The key objective of this study is to critically examine the relationship between environmental sustainability information reporting and firm financial performance in Nigeria. Specifically, this study is poised towards accessing vital measures of environmental sustainability reporting by taking samples (12 oil and gas firms) listed on the floor of the Nigerian stock exchange market for the period between 2007 and 2018. Proxies employed to represent environmental sustainability reporting which were also considered as independent variables are; bio-diversity and water disclosure and environmental sustainability protection expenditure disclosure while firm performance employed as dependent variable is proxied with accounting performance measure of return on total asset wit firm leverage as a control variable. In this study, ordinary least square regression analyses technique is been employed to evaluate the data set that were collated from annual financial reports of the sampled oil and gas listed firms. Result from the regression analyses suggest that environmental sustainability protection expenditure disclosure is negatively related with firm performance which implies that if firm allows environmental expenditure to crowd out other productive investments for innovation and efficiency improvement, it reduces the firm's potential to earn profit. Therefore, it is recommended that policies that will enhance research and development capabilities should be adopted. Adoption of such policies will enable the firm find efficient ways of utilizing raw materials thus reduce costs associated with raw materials and waste disposal. Such efforts can further lead the firm to find more productive ways to convert waste into saleable products for increased performance.

Introduction

Current global attention has been drawn to environmental protection and ecological values. Consumers in today's world are more aware and wider awake when it comes to their society and environments prosperity and how it is being treated by corporations operating in their environment (Khuntia, 2014). Thus, it is a huge responsibility for corporations to carry out their operations in a socially responsible manner as it does not only affect the society's but also the consumers opinion concerning the products of such organizations (Wu, 2014), suggesting the deep importance of environmental reporting. According to Lindgreen, Kotler, Vanhamme and Maon, (2012) when firms are unable to provide the community with information for proper assessment of the

measures that they are taking towards preventing the destruction of the environment they work in, it is likely for the society to lower their demand for the firms' products and services; which results in lower firm productivity and profitability (Zhu, Liu & Lai, 2016). Therefore, in the current competitive business world, it is highly important for firms to draw environmental reports, not only to keep track of their social performance, but also to attract more customers and survive in the market (Battaglia, Testa, Bianchi, Iraldo & Frey, 2014; Madueno, Jorge, Conesa & Martinez-Martinez, 2015).

In order to assess how firm performance is affected by environmental reporting, several theoretical models and frameworks have been built to show that firms energy usage and production processes, especially in the industrial sector result in emissions of significant quantities of greenhouse gasses. (Nishitani, Kaneko, Komatsu & Fujii, 2011; Bradford & Fraser, 2008). In assessing a firms' performance, return on asset has been widely used, while bio-diversity and water, waste reduction, and greenhouse emission control are some of the variables used to assess environmental reporting (Dozier, 2016). Listing rules require companies to disclose/report on their environmental footprints, health and safety strategies aimed at abating or mitigating employee work related accidents, waste management procedures/processes adopted to control or manage companies waste in order to reduce its impact on the environment and produce effort geared towards elevating the standard of living of its host communities through provision of infrastructural facilities and other basic amenities. These requirements are not met and as a result, the business environment becomes volatile and unconducive as these firms are perceived as environmentally unfriendly which impedes corporate image and adversely affects financial performance (Haninun, Lindrianasari & Denziana 2018). In Nigeria, environmental issues of which oil and gas firms tend to have a profound impact call for examination.

According to Adekanmi, Adedoyin and Adewole (2015), environmental information, though not mandatory, is regarded as best practice such that any deviation may give a bad signal to the society and the market as well. Environmental disclosure covers the preparation and provision of information for use of multiple stakeholders (both internal and external) on the environmental status and performance of their company (Jariya, 2015). Oil and gas companies' activities have culminated in altering environmental and biological makeup, leading to ecological damage, emissions, pollution and landscape destruction (Oti & Mbu-Ogar, 2018). Occupational health and safety of the employees is at stake due to interference with toxic substances. The environment is not spared of waste as a result of oil and gas companies' operations thereby hampering environmental sustainability. The host communities where companies' operations are carried out remain undeveloped leading to youth restiveness and militancy (Oti & Mbu-Ogar, 2018).

Beyond these forgoing issues, it is also imperative to mention that, within the Nigerian context, there is dearth of research studies that have shed in-depth light on issues relating to the nexus between environmental sustainability disclosure and corporate financial performance. Some prior studies that investigated environmental disclosure/firm performance nexus can be seen in the studies of Nguyen, Tran, Nguyen

and Le (2017); Bani-khalid, Kouhy and Hassan, (2017); Soyinka, Sunday and Adedeji, (2017); Juhmani (2014); Makori and Jagongo, (2013); Naser, Al-Hussaini, Al-Kwari and Nuseibeh (2006). However, none of these extant studies investigated environmental disclosures and corporate financial performance in Nigeria listed companies with the inclusion of environmental sustainability proxies of bio-diversity and water disclosure as well as environmental sustainability protection expenditure disclosure. This creates a vacuum in knowledge between what people perceive to be the true relationship between environmental sustainability disclosure and financial performance of listed oil and gas companies in Nigeria.

Although there are references that explore the relationship between environmental sustainability disclosure and firm performance, most of them employed subjective or qualitative approaches such as case studies. On the contrary, the study tests the hypotheses objectively and systematically by collecting and analyzing data obtained from oil and gas companies in Nigeria following one of the world's best environmental measurement standards; Global Reporting Initiative (GRI). Further, related prior studies mainly come from countries with relatively well-regulated markets, such as Italy, France, Sweden, the United States, and Australia. Hence, we contribute to exiting literature by providing evidence from relatively low regulated stock markets in the world.

Literature Review

Environmental Sustainability Disclosure

Companies are expected to prepare annual reports which disclose both qualitative and quantitative information about their operations and performance (economic, financial, social or otherwise) to be presented to their stakeholders (owners or shareholders, government, employees, etc.). The informational content requirements of these stakeholders are diverse and as such firms must not only disclose information about their financial performance but prepare other reports such as environmental accounting reports, sustainability report, human resources accounting report, good corporate governance report etc., (Jerry, Teru & Musa, 2015). Disclosing environmental information is of interest to the public and to the financial community. The overriding purpose of corporate environmental disclosure is to discharge accountability to all relevant stakeholder groups who might be affected by organizational activities (Uwuigbe & Olamide 2012).

According to Tackie, Agyenim-Boateng and Arthur (2017), environmental accounting sits within the three dimensions of sustainability namely economic sustainability, ecological (or environmental) sustainability and social sustainability. Environmental accounting calls for recycling, reuse and reduction of waste products. Environmental factors and actors are indicated by eco-friendly, capacity of the planet to absorb waste and support life, zero pollution and waste, waste recycling, renewable energy, water, greenhouse gases emission, conservation, restoration and safe environment (Agyenim-Boateng, 2014). Environmental accounting measures the use of the environment in terms of natural resource inputs and outputs of waste and emissions (Edens, 2013).

Firm Financial Performance

Financial performance assesses the fulfillment of a firm's economic goal and this relates to various subjective measure of how

well a firm can use its given assets from primary mode of operation to generate profit (Joshua, Efiong & Imong, (2019). Odusanya, Yinusa and Ilo (2018) opined that companies with high level financial performance create value, hire people, tend to be more innovative, more socially responsible and are beneficial to the entire economy through payment of taxes, income generation and overall development of an economy. Specifically, corporate financial performance as a performance mechanism is hard to measure. Extant approaches primarily differ on whether to border on the financial prosperity or market performance of the firm. Financial prosperity refers to corporate financial performance that demonstrates a company's overall efficiency and performance and it can be expressed using different methods and ratios. Most studies including those of Osuji & Odita, (2012); Uwalomwa & Uadile, (2012); and Frezewd, (2016) preferred the use of Return on Assets as an accounting performance proxy and Tobin Q as a market performance ratio. Hence this study follows suit to employ both return on asset measure of performance and Tobin Q market performance

Theoretical Framework

Legitimacy Theory

Legitimacy Theory propounded by Dowling & Pfeiffer (1975) states that a firm can exist when its value system is consistent with the value system of the larger social system in which it is located. Environmental disclosure is a motivation for businesses to legitimize their activities. Legitimacy theory has also been regarded as a conceptual framework which is based on the existence of social and exchangeable relationships between a company and the community. This framework aims to explain why companies may engage in environmental disclosure practices; how they do that, as well as, what impact environmental disclosure has on the public and community. The theory is hinged on the assumption that accounting for sustainable development and the associated role of management accounting in sustainable development is used as a communication mechanism to inform and/or manipulate the perception of the entity's actions (Mistry, Sharma & Low, 2014). The researcher finds Legitimacy theory relevant in this study since it describes the relationships between a company and the community; explains companies' motivations for social and environmental disclosures; presents how companies can employ legitimacy strategies; determine the impacts of social and environmental disclosures on the public and society which can be readily applied to the Nigerian situation, given that environmental degradation disputes in Ogoni land of Rivers State have provided changes in environmental legislation vis a vis increased civil and criminal penalties, forcing financial stakeholders to consider environmental issues in their risk/ return assessments.

Review Empirical Studies

Omaliko, Nweze and Nwadialor (2020) empirically investigated the effect of social and environmental disclosures on performance of non-financial firms in Nigeria, using proxy variables like corporate social responsibility disclosure and environmental disclosure. The panel regression model was used on data 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.

Falope, Offor and Ofurum (2019) determined the effect of environmental disclosure and performance of quoted Nigerian construction firms. The study adopted *Ex Post Facto* research design, tested Hypotheses using linear regression analysis and found that environmental pollution prevention cost, environmental protection cost and environmental recycling disclosure have effects on return on assets of quoted construction firms in Nigeria.

Iheduru and Okoro (2019) examined the effect of sustainable reporting on the profitability indicators of Nigeria quoted firms between 2008-2017. Data was sourced from financial statement of twenty firms selected from quoted firms in Nigeria. The test, using the Hausman test, found that economic and social disclosure have positive but insignificant effect on return on equity, while environmental and corporate governance disclosure have negative and insignificant effect on return on equity.

Zamil and Hassan (2019) examined the impact of environmental reporting on the financial performance of Fortune 500 firms from 2013 to 2017. It appraised financial performance by measuring three independent variables: reduction in greenhouse gas emissions, reduction in waste, and reduction in water consumption. The collected data were analyzed using descriptive statistics, correlation, and regression analysis. Findings indicated that reduction in nominated variables such as greenhouse gas emissions and water consumption had a positive and significant impact on financial performance, whereas that in another variable, i.e., waste, had a negative and significant impact on financial performance.

Onyali and Okafor (2018) examined the effect of firm characteristics on corporate environmental performance of quoted industrial goods firms in Nigeria. Specifically, the study examined the effect of firm size, profitability and firm age on waste management cost of the industrial goods firms. The study had a sample size of eleven industrial goods firms quoted on the Nigerian stock exchange as at the year, 2017; utilizing secondary data sourced from annual reports and accounts of the sampled firms for the study period, 2008 – 2017. Data analysis was done using Pearson correlation coefficient and Multivariate regression analysis. Findings of the study revealed that firm attributes (firm size, profitability and firm age) have a significant and positive effect on environmental performance (measured by waste management cost) at 5% significant level.

Umoren, Akpan and Okafor (2018) examined the nature of relationship existing between environmental accounting reporting and Oil companies' performance in Nigeria. Eleven (11) quoted oil companies were randomly selected from the Nigerian Stock Exchange. The statistics used in testing the hypothesis is multiple linear regression. The results of the analysis showed insignificant relationships between environmental accounting reporting and performance variables, that is, return on capital employed, net profit margin, earnings per share and dividend per share.

Amiolemen, Uwuigbe, Uwuigbe, Osiregbemhe and Opeyemi (2018) investigated corporate social environmental reporting and its association with stock prices (using market price per share as at the financial year end) among listed firms in Nigeria. The study used a sample of 50 publicly listed companies across various sectors for the period of five years (2011 –

2015). The study made use of the one-way analysis of variance and found that the association between corporate social and environmental expenditure and the market price of the firm (when considered in aggregate) is not significant. The result from the Analysis of Variance (ANOVA) showed that the market price per share is significantly different across the industries.

Methodology

The design for this study is ex-post facto. Ex post facto research uses data already collected, but not necessarily amassed for research purposes. In this study, the population is made up of all oil and gas companies that are listed on the floor of the Nigerian stock exchange market for the period between 2007 and 2018. As of 31st December 2018, the total number of listed oil and gas companies was thirteen (13). However, in order to arrive at a *homogenous sample size* (i.e., sample size that reveals all the information required for conducting the analysis) we deselected one (1) company to arrive at a sample of twelve (12) quoted oil and gas companies. In this study we employed secondary data sourced from the Nigerian Stock Exchange Fact books and related companies' annual financial reports for the period 2007 to 2018. We employed Least Square Regression Analysis to test the hypotheses since the diagnostic test revealed that the model exhibited the absence of heteroscedasticity and Multicollinearity. In determining the effect of environmental sustainability disclosure on firm performance, we modified the models of Laskar (2020), He, Tang and Wang (2016), Hardivansah & Agustini (2020) and Ermawati (2020) and specify it as;

Model Specification

$$ROA_{it} = \beta_0 + \beta_1 BIOWAT_{it} + \beta_2 PROEXP_{it} + \beta_3 LEV_{it} + e_{it}$$

Where:

ROA = Return on Asset
BIOWAT = Biodiversity and water
PROEXP = Protection expenditure and investment
LEV = Firm Leverage

Results and Discussion

This study evaluated the effect of environmental sustainability disclosure on financial performance of listed companies in Nigeria by drawing samples from the oil and gas sub sector. In line with this objective, Return on Asset is employed as an accounting measure of financial performance. Based on one of the foremost environmental reporting standards in the globe, Global Reporting Initiative (GRI) Standard (2020), environmental sustainability disclosure measures such as Biodiversity and Water together with the variable of Environmental Sustainability Protection Expenditure were employed. Furthermore, we control for the possible effects of firm leverage. Our data set span through the periods 2007 and 2018. However, in evaluating the possible effect of environmental disclosure on firm financial performance of oil and gas firms in Nigeria, first, we conducted descriptive statistics.

Table 1 Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
roa	108	2.979907	8.75352	-43.2	26.2
biodiversi~r	119	.3457383	1.293292	0	5.142857
protection~e	119	.092437	.2908665	0	1
leverage	108	77.39037	69.7322	17.8	778.2

Authors Computation 2021

From the descriptive statistics table provided above we find that the maximum value for the variable of return on asset is 26.2 with a minimum value of -42.2 but on average it showed a positive return on asset value of 2.98 for all the oil and gas firms employed in the study. Also, it is observed issues relating to the variable of biodiversity and water disclosure are 35%. Clearly, issues bordering on the variable of protection expenditure (0.092) is seen to be least disclosed during the period under investigation.

Regression Analysis

Table 2: Return on Asset Model

Variables	Biodiversity & Water	Protection Expenditure	Leverage
Panel Least Square Model			
Coefficient	4.650	-17.429	0.022
t_ Statistics	(4.40)	(-3.71)	(1.98)
Probability_t	{0.000} *	{0.000}	{0.050}**
F_ Stat = 7.83, Prob_ F = 0.0001, R^2 = 0.1842, Het = 0.2832, VIF = 2.60			

Note: t & z -statistics and respective probabilities are represented in () and {}
Where: ** represents 5% & * represent 10% level of significance
Source: Authors' Computations (2021)

The table above show results obtained from the ordinary least square regression model employed to test the effect of environmental sustainability disclosure on performance of listed oil and gas firms in Nigeria. In this study like in most other related studies, the researcher employs the variance inflation factor (VIF) technique to diagnose the presence or absence of multicollinearity in the return on asset model. The result as depicted from the table above showed that VIF is less than five (5) for all independent variables of interest. The Breusch-Pagan test as seen in the table above reveals a probability value of (P-value: 0.2832) indicating that the assumption of homoscedasticity has not been violated. The result above reveals an R^2 value of 0.1842 which indicates that about 18% of the variation in the dependent variable is being explained by the independent and control variable in the model. This also means that about 82% of the variation in the dependent variable is left unexplained but have been captured in the error term. The model goodness of fit as captured by the Fisher statistics (7.83) with the corresponding probability value 0.0001 which shows a 5% statistically significant level indicates that the entire model is fit and can be employed for discussion and policy recommendation.

The regression results obtained from return on asset model revealed that the variable of biodiversity and water disclosure has a statistically significant effect on firm performance during the period under investigation. This finding is evident as follows: Biodiversity and water (Coef. = 4.650, t = 4.40 and P -value = 0.000). A closer look at the result above also reveals that the effect is positive and statistically significant at 1%. The results also revealed that the variable of environmental sustainability protection expenditure disclosure has a statistically significant effect on firm financial performance during the period under investigation. This finding is evident as follows: Protection Expenditure (Coef. = -17.429, t = -3.71 and P -value = 0.000). A closer look at the result above also reveals that the effect is negative and statistically significant at 1%. Our findings as it relates to the environmental expenditure on firm performance is in line with the study outcomes of Chen and Cheng, (2017); Cao, You and Liu (2017); Chong, Qin and Ye (2017); Yang, Liu, Sun and Zhang (2017); Dechezleprêtre and Sato (2017); Chong, Qin and Ye (2016). Environmental expenditure includes all expenditures on environmental protection to prevent, reduce, and control environmental aspects, impacts, and hazards, in addition to disposal, treatment, sanitation, and clean-up expenditures. As such, the firm can expect that by increasing its environmental expenditure, it can better respond to government regulations and public requirements.

However, the problem is that increasing environmental expenditure might dampen the firm's profitability which is clearly revealed in this study. There are several explanations for this detrimental consequence. If the firm decides to pass through environmental expenditure to its product price in the competitive market, its sales might go down, as does its profit. Also, if the firm allows the environmental expenditure to crowd out other productive investments for innovation and efficiency improvement, it reduces the firm's potential to earn profit. Hence the outcome of this study is also seen to be consistent with those of Eiadat et al. (2008) who argued that the ever-growing demands on firms to protect the environment could increase capital and labor cost, divert management attention, and crowd out productive investments. Furthermore, we align our findings to that of McGuire (1982) who documents that excessive environmental expenditure could crowd out the firms productive investment in innovation and thus reduce its efficiency to a great extent. Hence the question; is it possible for the firm to overcome the trade-off relationship between the firms environmental expenditure and its profitability?

Conclusion and Recommendation

The issue of environmental reporting is increasingly becoming a serious issue of concern. Hence, environmental disclosure practices have gathered great momentum in recent years (Ullah, Yakub & Hossain, 2013). Little wonder why Olanrewaju and Johnson-Rokosu (2016) posit that before now annual financial and non-financial disclosure of most listed companies disregard multiple dimensions of corporate value. Most companies are concerned about creating wealth and distributing it in form of dividend to shareholders, while neglecting other stakeholders. However, civil society pressure group, non-government organization group, government regulations and corporate governance codes, green consumer pressure and other similar pressure group make it imperative for corporate body that need to

survive and create wealth to consider corporate environmental sustainability disclosure to take care of the needs of various stakeholders. In the light of the forgoing, the empirical result of this study shows that biodiversity and water disclosure as well as environmental sustainability protection expenditure have significant effect on financial performance of oil and gas firms in Nigeria. Following the empirical evidence recorded in this study we carefully recommend that to mitigate the negative effect of environmental sustainability protection expenditure on financial performance managers must develop a strong capability to identify and solve diverse managerial problems through creative ways. This capability does not have to be specifically related with the environmental aspects only, but it can be a broad or general competence to innovate, which is closely linked with the firms overall research and development capability.

Hence, the researcher suggest that research and development capability enable the firm to find efficient ways to use raw materials and thus reduce costs related with raw materials and waste disposal. It can further lead the firm to find more productive ways to convert waste into saleable products and thus increase its profit. It is also possible for the firm to develop new methods to cut pollution emissions without affecting productivity. Compliance should be made mandatory for all companies because standard environmental disclosures are useful information for all stakeholders in decision making. The guidelines for environmental assessment of 2017 should be made to compel companies to accommodate environmental sustainability disclosure practices.

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