

# Environmental Management Reporting and Corporate Performance: Evidence from Natural Resources, Agriculture, Oil and Gas Firms in Nigeria

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## ABSTRACT

The study examine the extent of disclosure of environmental management practices of quoted firms in Nigeria and how it affects their corporate performance. The study was conducted using all the twenty one Agriculture, Natural Resources, and oil and gas firms quoted on the floor of the Nigerian stock market. Firm size, profitability, and return on assets were used to measure firm corporate performance. Twenty four (20) content category items within four (4) testable dimensions of corporate environmental disclosure was developed for coding environmental management disclosures. The data obtained were analysed using the ordinary least square (OLS) regression analysis. It was found that environmental management disclosure does not significantly affect firm's profitability and ROA while firm size was found to increase with the level of environmental management disclosure. The study recommended that quoted firms should consider the gains of disclosing their environmental practices online to facilitate accessibility and ensure that stakeholders are aware of their efforts towards environmental sustainability.

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**KEYWORDS:** Environmental management disclosures, profitability, firm size, Return on Asset

## INTRODUCTION

Environmental Management Reporting is a part of the broader concept of accounting and an approach of corporate environmental information management which covers a set of accounting tools and practices to support company-internal management decision making on environmental and economic performance.

The conventional accounting systems do not fully reflect the costs of managing the environment and the associated benefits rather; the environmental costs are lumped into the general overhead accounts. In other words, they tend to track environmental costs inadequately. Consequently, the environmental costs are hidden and business managers (decision makers) have little or no information on the costs and no incentive to manage and reduce them (Okafor, Okaro & Egbunike, 2013). The need for environmental management reporting was conceived in recognition of some of the limitations of the conventional management accounting approaches for management activities and decisions involving significant environmental costs and impacts.

Environmental Management Reporting is broadly defined to be the identification, collection, estimation, analysis, internal reporting, and use of physical flow information (i.e., materials, water, and energy flows), environmental cost information, and other monetary information for both conventional and environmental decision-making within an organization (United Nations, 2001). According to the Institute of Management Accountants (1996), Environmental Reporting involves the identification, measurement and allocation of environmental costs, and the integration of these costs into business and encompasses the way of

communicating such information to companies' stakeholders. In this sense, it is a comprehensive approach to ensure good corporate governance that includes transparency in its societal activities. Several firms have not taken environmental accounting into consideration, hence making performance below expectation (Bassey, Effiok & Eton, 2013). This is because environmental reporting helps the firm to record all environmental costs incurred by the business thereby finding a way of reducing the cost (environmental expenses) so that the business can increase profit. Also environmental reporting help firms to disclose to the outside world their ability to be environmental friendly.

The environmental impacts of the activities of manufacturing firms especially in the oil and gas sector has never been so felt in the history of oil exploration in Nigeria. This has also been lend credence by the notorious environmental incidents in Nigeria, such as, an attempt in 1997 by a foreign company, acting through an agent, to dump toxic waste in the Niger Delta region (Adekanmi, Adedoyin. & Adewole, 2015). Considering the increasingly hazardous impacts of operation of oil and gas firms, one should expect that they should be adequately disclosed in their annual reports their environmental activities and its effects and to sensitize stakeholders on steps taken to ameliorate the harmful effects of such activities (Eltayeb, Zailani & Jayaraman 2010).

Despite the importance and benefits of environmental management accounting, the level of adoption and implementation of environmental management accounting practice is still weak in firms in many countries, especially in developing countries, like Nigeria. Most managers do not realize the benefits of improving environmental performance and reducing environmental impacts (International Federation of Accountants, 2005). Hence, many opportunities to reduce environmental costs are lost (Chang, 2007). This is due to low environmental awareness, lack of effective role of professional bodies, lack of stakeholders' pressure, as well as weak environmental legislation and difficulties faced by firms (Burrit, 2004). Stakeholders in host communities in a developing or emerging economy like Nigeria now demand for a better disclosure and reporting of various environmental activities that affects the economic, social and environmental state of the economy. This motive and environmental awareness from stakeholders has made companies to be more responsible for environmental matters. Many recent studies have established a positive significant relationship between Environmental management reporting and financial performance (Magara, Aming'a and Momanyi, 2015; Saeidi and Sofian, 2014; Olanrewaju, and Johnson-Rokosu, 2016; Toluwa, Okun and Ikhenade, 2016; Ofoegbu, and Megbuluba, 2016; Uwuigbe and Uadiale, 2011). On the other hand, most of these studies were limited by scope and not all the sectors listed on the Nigerian stock Exchange has been fully studied. Some researcher, based on their proxy for environmental reporting tends to use either Global Reporting Index or Environmental Expenditure. This proxy has provided variety of results that tends not to be aligning with previous research. It is on these backdrops that this study tends to look into three major sectors that have not been fully studied (Natural Resources sector, Agriculture sector and oil and Gas sector).

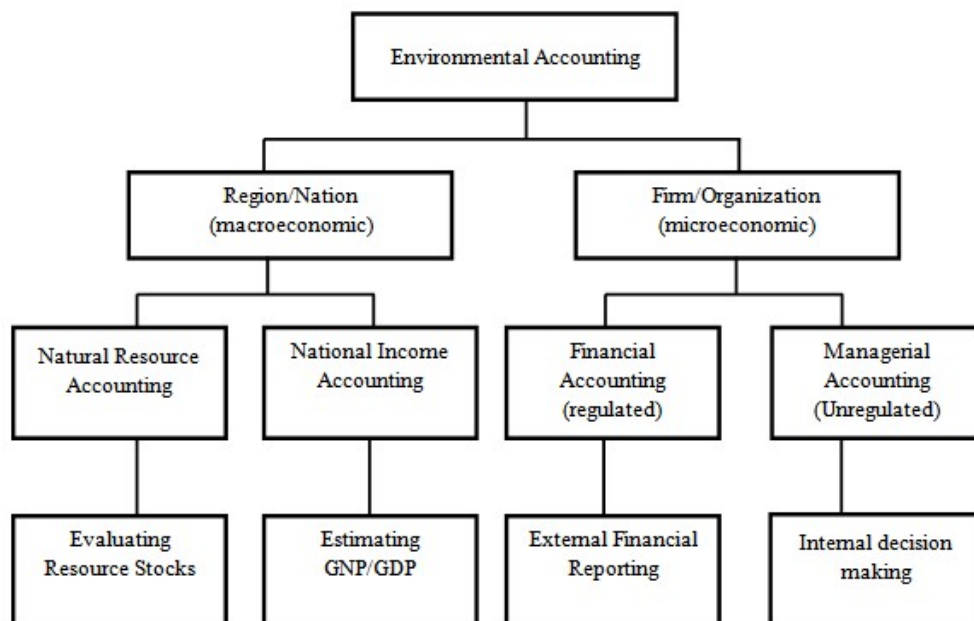
Based on the foregoing argument, this study seeks to examine the extent of disclosure of environmental management reporting of firms in Nigeria and how it affects their corporate performance. Other specific related objectives are to examine;

1. The effect of environmental management disclosure on size of the firms
2. The effect of environmental management disclosure on profitability of the firms.
3. The effect of environmental management disclosure on return of asset of the firms.

**Literature Review and Theoretical Framework**

The concept of Environmental Management Reporting/Accounting has received varying definitions from prior environmental accounting literatures. EMA is broadly defined to be the identification, collection, estimation, analysis, internal reporting, and use of physical flow information (i.e., materials, water, and energy flows), environmental cost information, and other monetary information for both conventional and environmental decision-making within an organization (United Nations, 2001). Thus EMA incorporates and integrates two of the three building blocks of sustainable development – environment and economics – as they relate to an organization's internal decision-making. According to the Institute of Management Accountants (1996), Environmental Reporting involves the identification, measurement and allocation of environmental costs, and the integration of these costs into business and encompasses the way of communicating such information to companies' stakeholders. Jasch (2003) views EMA as a process that converts mass balances, financial and cost accounting data into information useful for making decisions to increase material efficiency, to minimize environmental effects and risks, and to reduce environmental protection costs.

The term environmental accounting is often referred to as Green Accounting and these terms are often used in place of sustainability accounting. An important function of environmental accounting is to bring environmental cost to the attention of corporate stakeholders who may be able and motivated to identify ways of reducing or avoiding those costs while at the same time improving environmental quality (US Environmental Protection Agency, 1995). Graff, Reiskin, White & Bidwell (1998) have developed a framework of some of the different contexts in which environmental accounting is used as shown in the figure below;



Source: Graff, Reiskin, White & Bidwell (1998)

From the figure 1 above, environmental accounting is classified into two major groups – environmental accounting at the national level and firm level. At the macroeconomic or national level, environmental accounting is further classified into environmental natural resource accounting and environmental national income accounting. At the microeconomic or firm level which is the level of interest, EA applies to both financial accounting and management accounting. Financial accounting and its environmental requirements need to be standardized to provide consistent and comparable information to investors, regulators and other stakeholders, while management accounting practices will always vary widely from firm to firm (Okafor, Okaro & Egbunike, 2013).

### Environmental Management Reporting and Corporate Performance

The increased interest in environmental, social and governance issues stimulated a dynamic development of econometric and financial literature focusing on the relationship between corporate social performance and firm profitability (Manescu & Starica, 2008). Profitability is often used as a measure to assess the achievements and performance of the company or as the basis of assessment measures, such as earnings per share (Zaki & Othman, 2011). Profitability is an indication of the success of an enterprise, although not all companies make profits as its primary purpose, but it will require effort to maintain profits (Zaki & Othman, 2011). Profitability and value maximization are the operational phenomenon of every profit making organization and constitutes the short and long-run management planning and operating strategies (Ekwueme & Ezelibe, 2017).

The size of a firm is a relative concept usually defined using extant criteria which might differ in respective countries. Size effect is one of the three economic factors that Harris (1998) considered as influencing managers environmental reporting decisions because management is more likely to disclose environmental activities if the operations of the company is big enough to impact its immediate environment. Size is an important variable because according to Kabir & Hartini (2013), there are more opportunities for firms that grow in size to operate in bigger environment. Chipwa (2005) suggests that firms that are more visible in the “public eye” are likely to voluntarily disclose information to enhance their public image and corporate reputation.

Return on Asset (ROA) is the ratio of annual net income to average total assets of a business during a financial year. It measures efficiency of business in using its assets to generate net income (Paulinus & Jones, 2017). It is a profitability ratio that is calculated as:

$$ROA = \frac{\text{Annual Net Income}}{\text{Average Total Assets}}$$

Net income is the after tax income. It can be found on the income statement. Average total assets are calculated by dividing the sum of total assets at the beginning and at the financial year by 2. Total assets at the beginning and at the year can be obtained from year ending statement of financial position of two consecutive financial years. Recent research has found a positive insignificant statistical relationship between EMD and ROA in manufacturing firms (Ofoegbu, and Megbuluba, 2016; Uwuigbe and Uadiale, 2011).

### Theoretical Framework

The theoretical framework for this study is the stakeholder theory. The stakeholder theory advocates that managers in organizations have a network of relationships to serve; this include employees, shareholders, suppliers, business partners and contractors. The theory is developed by Freeman (1984). Stakeholders are “any group or individual that can affect or is affected by the achievement of a corporation’s purpose” (Freeman, 1984). In developing the stakeholder theory, Freeman (1983) incorporates the stakeholders’ concept into two categories first a business planning and policy model, and secondly a corporate social responsibility model of stakeholder management. Stakeholders are those who are burdened or benefited by the firm’s operation that is they have a stake in it. For a large corporation, this definition of stakeholder includes a wide range of entities which can be divided into two categories based on their relative importance. Primary stakeholders are those that are essential to the survival of the firm. They include owners, customers and government and they also include others such as supplies and creditors. Government includes regulatory authorities, legislations together with corporate governance codes. Secondary stakeholders include other groups or individuals not essential to the survival of the firm but which are affected by its operations. They may include interest groups such as environmentalist, the media, intellectual critics and trade association etc.

This research adopts the stakeholders’ theory because of the relevance of the theory to the environment (stakeholders). Companies owes a great deal of responsibility to the environment and community in which they are situated, firms performance will be hampered if the environment is not properly maintained and sustainable efforts are not made to satisfy the varying stakeholders. Also, due to the fact that the stakeholder’s theory proposed an increased level of environmental awareness which creates the need for companies to extend their corporate planning to include the non-traditional stakeholders like the regulatory adversarial groups in order to adapt to changing social demands (Trotman, 1999).

### Methodology

Content analysis research design was adopted for this study. The population of this study comprise of all the twenty one Agriculture, Nature Resources, oil and gas firms listed on the Nigerian Stock Exchange. The required data was obtained from the annual reports of the companies for 2012-2018 available at the Nigerian Stock Exchange (NSE) and the Companies’ websites. Twenty (20) content category items within four (4) testable dimensions of corporate environmental disclosure (see Appendix 1) were developed for coding, from other relevant prior literatures (Milne, & Adler, 1999; Abu-Baker, & Naser, 2000; Hossein & Nahid, 2012; Uwuigbe, 2012). A dichotomous procedure known as the kinder Lydenberg Domini (KLD) environmental performance rating system was used to measure the total reporting score (TRS). A score of one (1) was awarded if an item was reported; otherwise a score of zero (0) was awarded. Consequently, a firm could score a minimum of 0 and a maximum of twenty (20) points. The data obtained was analysed using the ordinary least square (OLS) regression analysis. A model was formulated to establish a relationship among the variables.

The empirical model is specified as follows:

$$EMD_{it} = \beta_0 + \beta_1 FSZ_{it} + e_{it} \quad \dots\dots\dots \text{equation 1}$$

$$EMD_{it} = \beta_0 + \beta_1 PFT_{it} + e_{it} \quad \dots\dots\dots \text{equation 2}$$

$$EMD_{it} = \beta_0 + \beta_1 ROA_{it} + e_{it} \quad \dots\dots\dots \text{equation 3}$$

Where: EMD = Environmental Management Disclosure  
PFT = Profitability.

ROA = Return on Asset

FSZ = Firm Size

e = Error term.

t = Time period.

i = Cross section dimension and ranges from 1 to N

$\beta_0$  = Intercept

$\beta_1$  = Coefficient for independent variables

**Data Analysis**

**Table1: Regression and ANOVA Summary of Data Analysis**

Dependent Variable		Environmental Management Disclosure	R <sup>2</sup>	AR <sup>2</sup>	Durbin-Watson
Firm Size	Coefficient	0.261	0.348	0.356	0.321
	F-statistics (P-value)	36.592 (0.000)			
Profitability	Coefficient	-0.007	0.003	-0.019	1.625
	F-statistics (P-value)	0.102 (0.650)			
ROA	Coefficient	-0.014	0.005	-0.071	1.096
	F-statistics (P-value)	0.330 (0.568)			

Source: Researcher’s Computation using SPSS Version 24

**Testing of Hypotheses**

**Hypothesis I: Environmental management disclosure has no significant effect on firm size.**

The outcomes displayed in table above reveal that environmental management disclosure has a positive and significant impact on firm size (R<sup>2</sup> = 0.348; AR<sup>2</sup> = 0.356; t-value = 6.212; F-stat = 36.592; DW = 0.321; p-value=.000 < 0.05). The R square implies that environmental management disclosure is responsible for 34.8% of increase in firm size. The model is 35.6% predictable as given by the adjusted R square. For every unit change in EMD, firm size increases by 0.261 of a unit. The f statistics is the ratio of an estimated coefficient to its standard error, is used to test the hypothesis that a coefficient is equal to zero.

**Decision Rule:** To interpret the f-statistic, the critical f-value is obtained. This value separates the "acceptance" region from the "rejection". The hypothesis that the coefficient is zero is rejected at the 5% significance level if the calculated f-value is greater than the critical f value. In this case f calculated of 36.592 is greater than f-critical 4.00 (df= 1, 65). From this, it can be said that environmental management disclosure affects firm size positively.

**Hypothesis II: Environmental management disclosure does not significantly affect firm’s profitability.**

The regression analyses presented in the table above show that corporate environmental management disclosure has a negative effect on Profitability as indicated by the coefficient of -.007. However, this effect was not found significant at 0.05 level of confidence since p=.650 > .05. The model statistics (R<sup>2</sup> = 0.003; A R<sup>2</sup> = -0.019; F-stat = .102; DW = 1.625; p-value=.750 > 0.05) also revealed no significance. The value of the R square implies that environmental management disclosure is responsible for as little as just 6.5% of decrease in profitability. The negative adjusted R square showed no predictability.

**Decision Rule:** To interpret the f-statistic, the critical f-value is obtained. This value separates the "acceptance" region from the "rejection". The hypothesis that the coefficient is zero is rejected at the 5% significance level if the calculated

f-value is greater than the critical f value. In this case f<sub>calculated</sub> of 0.102 is less than f<sub>critical</sub> 4.00 (df= 1, 65). From this, it can be said that environmental management disclosure does not have a significant effect on profitability.

**Hypothesis III: Environmental management disclosure has no significant effect on Return on Asset.**

From the table above, environmental management disclosure had a negative co-efficient of -.014 and showed no significant effect on the leverage of firms (R<sup>2</sup> = 0.071; AR<sup>2</sup> = -0.010; t-value = -.574; F-stat = .330; DW = 0.358; p-value=.568 > 0.05). The value of the R square implies that environmental management disclosure is responsible for as little as just 7.1% of decrease in leverage. The negative adjusted R square showed no predictability.

**Decision Rule:** To interpret the f-statistic, the critical f-value is obtained. This value separates the "acceptance" region from the "rejection". The hypothesis that the coefficient is zero is rejected at the 5% significance level if the calculated f-value is greater than the critical f value. In this case f-calculated of 0.330 is less than f-critical 4.00 (df= 1, 65). From this, it can be said that environmental management disclosure does not have a significant effect on leverage.

**Conclusion and Recommendations**

This study sought to examine the effect of environmental management reporting on the profitability, firm size and return of asset of quoted natural resources, agriculture and oil and gas firms in Nigeria. The study concludes that environmental management disclosure does not significantly affect profitability and Return on Asset. This showed that other factors external to the study are responsible for significant changes in these performance indicators. However, size of firms was found to increase with the level of environmental management disclosure. Based on the findings, the following recommendations were made:

1. Since there is a positive significant relationship between firm size and EMD, firms should consider the gains of disclosing their environmental practices online to facilitate accessibility and ensure that stakeholders are aware of the efforts of the company towards

environmental sustainability. The disclosure should also include information on environmental expenditure, environmental costs charged to income in the notes to the accounts in their annual reports.

2. To ensure a successful corporate performance, it is imperative that organizations adopt the idea of environmental economic and social agenda into their corporate strategy, objective, mission and Social responsibility.
3. Government agencies should give tax credit to organizations that comply with its environmental laws in Nigeria as this would encourage environmental disclosure.

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#### APPENDIX 1

#### Twenty Testable Environmental Disclosure Index Environment

Environmental pollution  
Conservation of natural resources  
Environmental management  
Recycling plant of waste products  
Air emission information

#### Energy

Companies' energy policies  
Disclosing energy savings  
Reduction in energy consumption  
Received awards or penalties  
Disclosing increased energy efficiency products

#### Research & development

Investment in research on renewal technology  
Environmental education  
Environmental research  
Waste management/reduction and recycling technology  
Research on new method of production

#### Employee health and safety

Disclosing accident statistics  
Reducing or eliminating pollutants, irritants, or hazards in the work environment.  
Promoting employee safety and physical or mental health  
Disclosing benefits from increased health and safety expenditure  
Complying with health and safety standards and regulations

