# CORPORATE ENVIRONMENTAL REPORTING AND THE FINANCIAL PERFORMANCE OF LISTED MANUFACTURING FIRMS IN NIGERIA

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## Abstract

*The environment is an integral part of human development that must be guided jealously to enhance productivity. It is based on this background that this study investigates the effect of environmental reporting on the financial performance of listed manufacturing companies in Nigeria. The study aims at determining the effect of erosion control reporting (ECI), waste management reporting (WMI) and air pollution reporting (API) on the financial performance of listed manufacturing firms in Nigeria. The study adopted an ex-post facto research design using the random effect regression analysis as the major technique for data analyses. The sample of the study was drawn from ten manufacturing firms listed on the Nigerian Stock Exchange. It was found that both erosion control reporting and air pollution reporting has significant effect (0.002) and (0.026) respectively with firm financial performance while waste management reporting has negative but significant effect (0.000) on firm financial performance of companies under investigation. The major conclusion reached by this study is that environmental reporting has significant effect on firm financial performance. The study recommends that the Environmental Regulation Agency should collaborate with the Financial Regulation Council of Nigeria to make environmental reporting a necessity in annual reports of listed firms in Nigeria.*
***Keywords:*** *Environmental Reporting, Waste Management, Erosion Control and Air Pollution.*

## 1.      Introduction

The demand for companies to be environmentally responsible has continually received global attention over the years (Akinlo & Iredele, 2014). This may be because stakeholders and intending investors are interested not just in the financial performance of the firm alone but are also considering the non-financial performance aspects of the business organization (Utile, 2016). The superior opinion today is that the era where a firm's performance was considered based on its financial performance alone is obsolete, in recent times, patrons are interested in finding out the relationship between companies and their host communities to enable them make informed investment decisions (Adekanmi, 2015). It is widely believed that companies that have imbibe the culture of environmental reporting are environmentally responsible and enjoy relative peace within their society of domicile (Utile, 2016). Fodio and Uba (2012) opine that companies who embark on environmental development and report on same are likely to perform well as they are seen to be globally competitive and economically viable.  Ali (2015) also assert that companies who report on their environmental performance have things they have done to report on against those who have done nothing environmentally to help the society. Such companies who do not report nor carry out environmental responsibilities are likely to be surrounded with demonstrations and protests which may hinder a free work environment which may consequently affect performance (Arfin, 2012).  Environmental reporting provides a strategic framework for re-appraisal of corporate performance (Ndukwe & Onwuchekwa, 2015).  Utile (2016) affirms that the opponents of environmental reporting hinge their arguments on the following: First, it is not clear that environmental reporting would enhance firm financial performance as purported by allies of environmental reporting. Secondly, to ensure that all companies imbibe the culture of environmental reporting is time consuming and costly as organizations would have to employ experts and spend more on training at the expense of diversifying into other productive ventures that would maximize shareholders wealth.

In spite of the arguments for or against environmental reporting, only a few researches have been conducted in this area in Nigeria, the researchers that have done justice in this area include Ndukwe and Onwuchekwa (2015), Fodio and Uba (2012), Collins (200), Norhasimah, Norhabibi, Nor, Sheh, Qamarul & Inaliah (2015) and Beredugo (2012). However, these researchers did not look at erosion control as an aspect of environmental reporting which this research intends to cover. In addition, the few Nigerian studies on environmental reporting are mostly in relation to the Oil and Gas companies against the companies of manufacturing nature.  This study focuses on the manufacturing companies to gauge the extent to which environmental reporting can be established in Nigeria for these reasons. One, manufacturing is key to national growth and development as a result this area needs close attention to ensure that it does not deviate from best practices. Two, manufacturing companies by their nature make use of a lot of environmental resources making them vantage for investigation to determine their level of compliance with environmental reporting. Three, at this moment where Nigeria is experiencing economic recession, all and sundry are encouraged to produce in order to curb economic recession thus

the production sector cannot be left unmonitored. Four, the manufacturing companies are of paramount importance because they provide high employment capacity to the teeming Nigerian youth and should be guided jealously because anything that affects these companies negatively shall have a negative multiplier effect on many Nigerians.

This study is motivated by the fact that; first, it is often alleged that listed companies in emerging nations do not comply with environmental reporting requirements because it is not mandatory. Second, the government regulatory bodies and the accountancy profession of emerging nations suffer from structural weaknesses and often take a lenient attitude towards default of accounting regulations (Ali, Ahmed & Henry, 2004). Consequently, the study assesses the association between environmental reporting and firm financial performance using erosion control reporting, waste management reporting and air pollution reporting as the predictor variables. The study hypothesized as follows:

$H_1$     Erosion control reporting has no significant relationship with firm financial Performance

$H_2$     There is no significant relationship between waste management reporting and firm financial performance

$H_3$     There is no significant relationship between air pollution control and firm financial performance,
.

This study is anchored on two theories namely; the stakeholder's theory and the legitimacy theory which provide justification for environmental reporting. The argument advocated by the stakeholder's theory is that all stakeholders have the right to be treated reasonably by the organization and to have information on the performance of the companies within their location (Freeman, 1984). On the other hand, the legitimacy theory opines that organizations exist within a society; such organizations are morally bounded by the culture of such societies, but legitimacy means conforming to the law or rule of the land (Ayong & Kama 2001). The assertion behind the legitimacy theory is that, organisations are engaged in a social contract concord between them and the society within which they are located. It is therefore expected that organizations will operate according to the norms of such societies and reveal vital information to the society about the use of the environment (Utile, 2016).

## 2.     Review of Empirical Literature
Collins, (2008) examined environmental responsibility and firm performance in Nigeria with the objective of establishing whether a possible relationship exist between sustainable business practices and firm financial performance. Collins adopted a field survey method with a randomly selected size of sixty manufacturing companies in Nigeria these firms were categorized into environmentally responsible and environmentally irresponsible. He undertook an investigation into the relationship between firm performance and three sustainable business practices: employee health and safety, waste management and

community development. Multiple regression analysis was used to analyze the date gotten from the annual reports of the sixty companies from 1997-2006. The dependent variable for the work was return on total assets (ROTA). Data was collected from the financial statements and a questionnaire was designed to capture vital areas that were not reflected on the face of the financial statement. Findings revealed that sustainable practice of the responsible practice firms are significantly related with firm financial performance. Also, that sustainable practice is inversely related to fines and penalties.

Collins used questionnaire as a means for collection of part of his data but results obtained from respondents are mere perceptions of the respondents which may not be a true reflection of the actual situation. It is necessary therefore to conduct another study in this area that may be devoid of questionnaire as a means of data collection to ascertain or prove the otherwise of the findings.

Beredugo, (2012) evaluated the relationship between environmental accounting and reporting and sustainable development in Nigeria with the aim of determining the effect of sustainability disclosure on firm's performance. The researcher used the survey research design. Data was collected from a sample of 400 respondents out of a population of three million (3000,000) people. Pearson's correlation coefficient, student t-test and the ordinary least square methods were used for the analysis of data.

Findings revealed that environmental accounting and reporting is positively related to sustainable development and firm financial performance and that they are consequences to non-compliance. He also discovered that stakeholders increasingly require companies to manufacture goods efficiently and at competitive prices without harming the environment.
This study used primary method of data collection which is inseparable from bias in addition; information on sustainability reports gotten from respondents cannot be reliable as findings are only based on the awareness of the respondents. Therefore, a further study that is devoid of a biased method of data collection is required to further confirm the effect of these independent variables on the dependent variable.

Norhasimah, Norhabibi, Nor, Sheh, Qamarul & Inaliah, (2015) investigated the effect of environmental disclosure on financial performance in Malaysia using the Malaysian Public Limited Companies. Non probabilistic sampling (purposive sampling) was used to arrive at a sample of 100 companies of market capitalization for the year 2011. Norhasimah et al selected these companies because they were relatively large and believed to have more activities that impacted on the society as reflected in their financial statements. Data was collected from financial reports of these companies for the year 2011. An environmental index was developed, 10% of the total sample was selected to conduct a pilot test of ten (10) companies. ROA, EPS and ROE were used to measure performance. To analyze the data, spearman's correlation and multiple regressions were used. Findings revealed that there is a significant relationship between total environmental disclosure and financial performance.

## 3.        Research Methods

This study investigated the effect of environmental reporting on the financial performance of some listed manufacturing companies in Nigeria. This section discusses the research design used for the study, the population of the study, the sample size and its determination, the definition of variables, specification of the model used for the study, sources of data, techniques of data processing and analysis.

A research design specifies the procedures for collecting and analysing data necessary to help solve a problem (Ardvisson, 2011). This research adopts an ex-post facto research design which is undertaken after the events have taken place and the data are already in existence (Asaolu, Agboola, Ayoola, & Salawu, 2011). An ex-post factor design is used in a systematic empirical study in which the researchers do not in any way control or manipulate the variables because the situation necessitating the study already exist or has taken place (Ogundare 2013). It mostly adopts the use of secondary data (financial statements) and is regarded as being reliable because the financial statements are already audited. The data used for this study was collected from the published annual reports and financial statements of the manufacturing firms that make up the sample size between years 2011 to 2015. The population of this study is made up of all the 87 companies in Nigeria that are of manufacturing nature and are listed on the Nigerian Stock Exchange (NSE).

A sample size of a population is a representative fraction of the population whose characteristics are similar to that of the population itself (Ogundare 2013). Twelve (12) manufacturing companies were selected as sample for the study this was because only twelve companies out of the total population had consistent annual reports that included environmental reporting within the study period.   The secondary type of data was used in this study, it refers to data gathered by earlier researchers but adopted by a researcher for use (Akpa, 2011). The data for the dependent variable earnings per share (EPS) was collected as the ratio of earnings to the total shares of the companies using annual reports of the companies under investigation; that of the independent variables was collected from the same annual reports using content analysis, the data from the sampled companies which is of panel nature covers a period of five (5) years 2011 to 2015.

Multiple regression analysis was considered as the major technique for data analysis. This technique is used because of its ability to predict the relationship between environmental reporting and financial performance of listed companies in Nigeria. However, multiple regression has many techniques that are available under it but the choice of the most appropriate technique to use depends on the nature of the data available for analyses (Athanasoglou, 2008) consequently, Ordinary Least Square (OLS) multiple regression analysis was used first, but in view of the fact that the dataset is of diagonal nature,   the Random Effect (RE) regression analysis was deemed the most appropriate multiple regression technique   because the Lagranian Multiplier test conducted show a significant figure (0.003) which implies that there is a panel effect with the data set  (Oscar, 2007). However, the Hausman specification test gave an insignificant result (0.677) and the table of

estimates; all did not favour the use of the fixed effect technique as a result, the RE multiple regression technique was selected for data analysis.

To ensure the reliability of findings using multiple regression technique, some normality tests were conducted, these tests include Variance Inflation Factor (VIF), Tolerance Value (TV), and Heteroskedasticity test.  To test the hypotheses formulated earlier the student t-test statistics was used at 5% level of significance. The Statistics/Data Analysis package (STATA) version 13 was used to assist in the analyses of data.  Different environmental reporting and performance variables have been used by researchers but in this study the independent variables for this study are the erosion control reporting index (ECI), waste management  reporting index (WMI) and the air pollution reporting  index (API) while the dependent variable is the performance variable which is earnings per share (EPS).

## 3.1 Model Specification

To determine the relationship between the outcome and the predictor variables, the study developed the model below to capture the variables under investigation.

$$EPS_{it} = \beta_{0it} + \beta_1 WMI_{it} + \beta_2 ECI_{it} + \beta_3 API_{it} + e_{it} \dots\dots\dots\dots\dots i$$

where,
EPS = earnings per share;
WMI = waste management index
ECI = erosion control index
API = air pollution index
$\beta_0$ = the constant;
$\beta_1, \beta_2, \beta_3,$ = the regression coefficients;
e = the error term used in the regression model.
i = entity
t = time

**Table 1:  Study Variables, their Measurement and Expectations**

| Variables | Variable Name | Type | Measurement | Sign |
|---|---|---|---|---|
| EPS | Earnings per share | Dependent | Earnings/no of shares | |
| ECI | Erosion control index | Independent | nature of disclosure divided by total occurrence | + |
| WMI | Waste management index | Independent | nature of disclosure divided by total occurrence | + |
| API | Air pollution index | Independent | nature of disclosure divided by total occurrence | + |

**Source: Author's Compilation 2017**

## 4.      Results and Discussion

This section presents results obtained from the data collected, the results are divided into descriptive statistics, correlation analysis and regression results. The table for the descriptive statistics is shown below.

**Table 2. Descriptive statistics for all variables**

| Variables | Obs | Mean | Std. Div. | Min | Max |
|---|---|---|---|---|---|
| EPS | 60 | 1.356 | 1.802 | -0.51 | 6.59 |
| ECI | 60 | 2.017 | 0.344 | 0 | 2.5 |
| WMI | 60 | 1.737 | 0.894 | 0 | 3 |
| API | 60 | 2.106 | 0.260 | 1 | 2.5 |

**Source: STATA version 13**

The result from table 2 above shows that EPS has a mean value of 1.356 which implies that many firms under investigation failed to report on their environmental performance. The result also shows that the standard deviation of these companies stands at 1.802 which illustrate that more companies have deviated from the culture of environmental reporting this result is consistent with that of Collins (2008); Aondoakaa (2015) who also found a low reporting behavior amongst Non-financial firms in Nigeria. From the results API has the highest level of reporting (2.106) followed by ECI with 2.017. This entail that these firms predominantly reported their ECI and API performance in qualitative form only a few reported in quantitative form. The WMI witnessed the lowest mean value (1.737) indicating that very few firms reported their WMI in qualitative form the others did not report at all.

**Table 3 Correlation and Variance Inflation Factor**

|  | ECI | WMI | API | VIF |
|---|---|---|---|---|
| **ECI** | 1.0000 |  |  | 1.17 |
| **WMI** | 0.0971 | 1.0000 |  | 1.10 |
| **API** | -0.3816 | -0.3042 | 1.0000 | 1.28 |

**Source: STATA Version 13**

From the table above, the highest correlation is between WMI and ECI which is 0.0971 this figure is far below the doorsill that is considered harmful for regression analyses. Researchers like Barako and Tower (2006) have opined that when correlation amongst variables is less that 0.8 the relationship is considered to be devoid of multicollinearity problem. To further confirm the absence of multicollinearity problem among the independent variables, the data set was subjected to the VIF test. The results have shown that the average variable inflation factor is 1.18 which is below two 2 and below 10 that is considered harmful in regression analyses. So these two tests clearly show that the data is devoid of multicollinearity. Having satisfied the conditions for multiple regression, table 4 presents the results of multiple regression carried out on the data to determine the relationship between the predictor and the outcome variable.

**Table 4 regression results**

| EPS | Coef. | T | P-value (2tailed) |
|---|---|---|---|
| $R^2$ | | | 0.3545 |
| Adj $R^2$ | | | 0.3202 |
| Prob. F | | | 0.000 |
| ECI | 1.913 | 3.15 | 0.002 |
| WMI | -0.851 | -3.75 | 0.000 |
| API | 1.879 | 2.22 | 0.026 |

**Source: STATA version 13 output**

The regression results show an F statistics of 0.000 which is significant at 1% implying that our model is fit to determine the relationship between the variables. The result also show an $R^2$ of 0.3545 which shows that 35.45% of the variation in EPS depends on the variation in ECI, WMI and API, this means that about 64.55% of the variation in EPS is accounted for by factors other than the predictor variables. It further shows an Adjusted $R^2$ of 32.02 % which gives a difference of 3.43% indicating that if data from the entire population were sampled for analysis this result would have differed from that of the entire population by 3.43% implying that the sample represents 96.57% of the population which is reasonable enough for generalisation. This result is consistent with that of Akinlo and Iredele (2014) against Pratheepkanth (2011) who found an inconsistent result using the same variables.

### 4.1    Erosion Control and Firm Financial performance

In line with the earlier anticipation that erosion control  reporting shall give a positive association to  firm financial performance, the result of table 4  reveals that  given the companies under consideration, an increase in ECI by one unit across time (2011-2015) holding other conditions constant shall significantly (0.002) increase EPS by 1.91 units. This result is consistent with that of Yusuf (2011), Oweigbo (2009); Robert, Ionnis and George (2009) who also found significant and positive association between these variables. The increase in EPS caused by erosion control reporting may be linked to the ability of firms under investigation to control and report on erosion issues such as clearing of existing gutters and building same where erosion is likely to occur. Cases of the inability of firms in Nigeria to report on erosion control issues could be likened to the present situation in Niger state where farm lands and buildings owned by corporate bodies are eroded as a result of poor erosion control. This situation if not prevented is capable of causing high negative effect on firm financial performance.

### 4.2    Waste Management and Firm financial performance

On the other hand, contrary to the earlier anticipation that the waste management reporting shall give a positive association to the firm financial performance, the result of table 4 reveals that given the companies under consideration, an increase in WMI by one unit across time (2011-2015) holding other conditions constant will significantly (0.000) reduce EPS by 0.851 units. This result is inconsistent with that of Rizwana (2015) and Shuaib (2011) who found positive association with the predictor and outcome variables. The reduction in EPS

caused by waste management reporting may be linked to the inability of firms under investigation to report on waste management. A practical example of the inability of firms in Nigeria to report on waste management issues could be likened to the present situation in Niger Delta, Nigeria where the people are agitating for a cleanup of the land to reduce water, soil and air pollutants in the area in other to enable them enjoy healthy life and comfortable work environments but the situation is yet to improve.

## 4.3 Air Pollution and Firm Financial Performance

Similar to the earlier expectation, table 4 indicates that an increase in air pollution reporting by one unit across time (2011-2015) keeping other factors constant will significantly (0.026) increase EPS by 1.879 units. This result is similar to that of Toukabri and Jemaa (2012) but differ from that of Norhasimah, Norhabibi, Nor, Sheh, Qamarul, Inaliah (2015) who found a different association between the variables. The positivity of the relationship between the independent and the dependent variable may be because firms under investigation have imbided the culture of environmental reporting, these firms must have been improving their host communities by ways of mitigating, controlling and reporting on issues such as fumes, dusts and smokes that contain high quantity of carbon monoxides that are harmful to man most of which are generated by the same industries. In addition, the companies may have been training their staff on issues of environmental control.

## 5. Conclusion and Recommendations

This study sought to achieve three main objectives, namely (i) ascertaining the effect of erosion control reporting on the financial performance of listed manufacturing companies in Nigeria, (ii) examining the effect of waste management reporting on firm financial performance of listed manufacturing companies in Nigeria, and (iii) determining the effect of air pollution reporting on firm financial performance of listed manufacturing firms in Nigeria. The paper makes the following conclusions based on the findings arising from data analyses Firstly, listed manufacturing companies in Nigeria have achieved an average level of environmental reporting despite arguments in the literature which suggested that Nigeria companies failed to adapt environmental reporting. Secondly erosion control reporting has a significant effect on firm financial performance. Thirdly, air pollution reporting has positive significant effect on firm financial performance. Fourthly, there is a significant but negative relationship between waste management reporting and firm financial performance.

In spite of the average level of environmental reporting currently experienced in Nigeria, the study recommends that one, the environmental regulatory authorities such as the National Environmental Protection Agency should ensure that companies are consistent in reporting on environmental performance. The guidelines for environmental assessment of 2017 should be made to compel companies to accommodate environmental reporting.

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