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ENVIRONMENTAL ACCOUNTING DISCLOSURE AND SUSTAINABLE FINANCIAL PERFORMANCE OF QUOTED BASIC MATERIALS COMPANIES IN NIGERIA

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ABSTRACT

Concerns for climate change is increasing agitation for disclosure of environmental accounting practices. This study investigated the impact of environmental accounting disclosure on sustainable financial performance of listed basic material goods in Nigeria. Specifically, the study investigated the impact of environmental disclosure index on the return on capital employed and return on assets. With the use of total enumeration sampling technique, data were drawn from the 12 companies listed under basic material on the Nigeria stock exchange over a ten-year period from 2010 to2019. Data were analyzed using both descriptive and inferential statistics. Inferential statistics in this study are correlation and multiple regression analysis. The descriptive statistics results revealed that there is relatively low disclosure of environmental accounting information in the financial statement of the listed basic material companies in Nigeria. The regression result shows that about 62% of the variation in the dependent variable (ROCE) is explained by the combined effects of environmental accounting disclosure while about 59% of the variation in return on equity was also associated with the combined effect of environmental accounting disclosure. The study therefore concludes that environmental accounting disclosure have significant impact on financial performance of listed basic materials companies in Nigeria. The paper draws the attention of management of listed basic materials in Nigeria to the need to make adequate disclosure on environmental accounting practices in the financial statement. The paper also draws the attention of Nigeria stock exchange and other regulatory authorities on the need for regulation that will make environmental accounting disclosure a regulatory disclosure rather than voluntary disclosure which is the current practice. The study also documents that environmental compliance policy, environmental conservative disclosure and environmental donation disclosure have statistically significant influence on financial performance.

Keywords: Accounting Environmental disclosure, Firm Performance, Environmental disclosure index, Return on Capital Employed, Return on Assets

INTRODUCTION

In the twenty-first century, there has been persistent increase in the debate on environmental accounting practices in the emerging economy. This is borne out of the fact that only few companies are aware of the impact of their activities on the environment. Generally, manufacturing, and the oil and gas operation is characterized with huge emission of hydrocarbon. The amount of this toxic gases released to the atmosphere by the manufacturing companies increases the environmental damages. Such activities of manufacturing industries degrade the ecosystem through pollution and degradation of natural environment (Kayode, 2011). To compensate for this, companies are being requested to make adequate provision for environmental protection in their financial statements. This environmental accounting practices has developed to the extent that it has been incorporated in the reporting process of some developed nations. Norway has also done this incorporation in 1970, Philippines in 1990, Namibia in 1994 and Indonesia in 2003 (Kundra, 2013).

The global risks report 2020 revealed that the top five global risks in terms of likelihood are all environmental (Mahenna et al, 2004). Sufficient evidence exists to establish that children are more vulnerable to the effects of exposure to chemicals and cannot protect their rights to live in a safe environment (Mcultrams & Siegel, 2012). Globally, 54% of the burden of disease attributable to environmental exposures, expressed in disability-adjusted life-years (DALYs), is borne by children under the age of 15 years. In 2012, Nigeria was estimated to have emitted more than 34.38 million metric tons of the methane accompanied by carbon dioxide and the other major greenhouse gas, accounting for about 50% of all industrial emissions in the country and 30% of the total CO2 emissions (Oyerogba et al, 2016). While flaring in the western has been minimized, it has grown proportionally in Nigeria with oil production.

Considering the magnitude of environmental pollution from manufacturing activities around the world, it is not surprising that stakeholders (community members, advocacy groups, government agencies, landowners, local users of natural resources and investors) have expressed a strong desire for improvement in the commitment of firm's management to protection of environment where they conduct their activities (Charles, John & Umeoduagu, 2017). This factor, together with many other reasons led the Environment Research Group (ERG) of the institute of Chartered Accountants in England and Wales (ICAEW) to recommend that as part of the annual reporting cycle, company should publish details of the company's environmental policy, detail of director's overall responsibility for environmental issues and the company's environmental objectives which should be expressed in a way that enables performance against such to be measured as well as information on actions taken to preserve the environment (Agrawal & Chadha, 2015).

Unfortunately, no such regulation exists in Nigeria. Environmental accounting disclosure is only treated as voluntary disclosure, indicating that disclosure is at the board and management discretion. Perhaps, because of conflicting results on the relationship between environmental accounting disclosure and financial performance in the existing literature. Studying the role of environmental accounting on financial performance, Makori and Jagongo, (2013) reported that it improves performance by strengthening the relationship of company with different stakeholders thereby ensuring minimum conflicts and maximum loyalty from all stakeholders of the corporation. In contrast, Mohammad, Fakhrul and Rezaur (2016) evidence shows that environmental accounting practices require a huge investment which potentially depletes the profit of the organization. Hence, most companies treat environmental accounting practices as mere corporate social responsibility (Skouloudis, et al. 2014).

This study raises two important research questions. First, what is the level of environmental accounting disclosure in the listed manufacturing companies in Nigeria? Although, there is fast array of literature on environmental accounting practices, little has been said about how it should be reported in the annual financial statements of the listed companies in Nigeria. Second, does the environmental accounting disclosure have significant impact on the financial performance (proxied with return on capital employed and return on equity)? To address the two research questions, an environmental accounting disclosure index was constructed using information in the audited financial statements of the selected companies. We drew inspiration from Skouloudis, et al. (2014) in constructing the disclosure index. The disclosure index was made up of 20 items of voluntary and mandatory disclosure. This information was categorized into 5 categories such as environmental compliance policy, environmental sensitive policy, environmental conservative disclosure, environmental donation disclosure and energy consuming disclosure.

For data analysis, the study employed descriptive statistics of mean, standard deviation, minimum, median and maximum value and inferential statistics such as correlation and multiple regression analysis. For the first research question, we document that there is relatively low disclosure of environmental accounting information in the financial statement of the listed basic material companies in Nigeria. For the second research question, regression result shows that about 62% of the variation in the dependent variable (ROCE) is explained by the combined effects of environmental accounting disclosure while about 59% of the variation in return on equity was also associated with the combined effect of environmental accounting disclosure.

This paper offers several important contributions to the literature in environmental accounting. First, we developed an index for measurement of environmental accounting disclosure in emerging economy. The environmental accounting disclosure index developed is significantly different from the existing indexes (Sudarat, 2006; Makori &Jagongo, 2013) since it captured both voluntary and mandatory disclosure. Second, in most of the existing literature, environmental accounting was treated as a single variable (Dhinasirek, 2003; Klapper & Inessa, 2004; Mitton, 2002). This approach came under heavy criticism because it does not report organization's specific efforts to element of environmental accounting (Eisenhardt & Schronhoven, 2010; Srivastava, 2014; Krugman & Obstfeld, 2016). To address this gap, in this study, we decomposed environmental accounting into environmental compliance policy, environmental sensitive policy, environmental conservative disclosure, environmental donation disclosure and energy consuming disclosure.

The paper proceeds as follow. A brief review of literature was done in section 2. Section 3 describes the methodology employed in this study. The results and findings of the study were presented in detail in section 4 while section 5 was devoted to conclusion and recommendations.

LITERATURE REVIEW

Environmental accounting disclosure

The practice of preparation, presentation of financial statement by the quoted companies is ultimate in a reliable and economy decision making by all the stakeholders as well as environmental disclosure practices, many studies have been carried out discussing the vital roles of environmental disclosure in business practices. (Nilanri et al, 2008). However, there are not enough research on environmental discourse in Nigeria. It is worthy to note that environmental disclosure assists firms in carryout their environmental responsibilities in regard of regulatory requires and adequate disclosure to stakeholders and safeguarding environmental damages that could result to potential liabilities due to pollution of the environment.

Hossian and Andrew (2006) concluded that environmental disclosures are mainly non-financial in nature which is part of social responsibility. Measuring environmental disclosure poses some challenges because of its complexity this is merely because there is no standard measure that could be used as those of financial disclosure. It is interesting to note that a lot of guidelines are now put in place. The challenges encountered in measuring environmental performance data and accounting research are now solved by often used content analysis to appraise financial reports (Hackston and Milne, 1996). Content analysis is a systematic approach of converting large amount of information into data useful for scientific research.

Firm Performance

Peloza (2009) asserted that accounting-based measure and stock market-based measure reflect past and future performance of the firm respectively. While Mcultrams and Siegel (2012) researched that stock prices and environmental disclose relate to financial stakeholders and impacts non-financial stakeholders respectively. Return on assets and return on equity are used as a measure for profitability, but they are prone to bias because of useage of account profitability and methods by the management Freedman and Jaggi (1992). This biasness can be removed by collecting data over a long period and average financial data. Most scientific studies have used total assets, sales growth asset growth, operating income growth, Earning Per Share (EPS) return on assets (ROA), return on investment (ROI), return on equity (ROE), dividend per share (DPS), earnings before interest, tax, depreciation and amortization (EBITDA) (Oeyono et al, 2011; Makori and Jagongo, 2013; Skouloudis et al, 2014).

Empirical Literature on Environmental Accounting and Financial Performance

Charles, John and Umeoduagu (2017) researched on environmental accounting disclosure and financial performance in food and beverage firms in Nigeria, using secondary data. Pearson's correlation technique and multiple regression analysis were used with the aid of SPSS version, 20.00. It was shown that there is a significant relationship between environmental accounting disclosures and return on equity. It also shown a negative relationship among environmental accounting disclosures and return on capital employed couple with net profit margin. The study suggests adoption of uniform disclosure standard and uniform system of reporting. This will improve tremendously the control and performance measurement. In addition, the study advised that environmental practices disclosure should be reflected in the firm's annual report for their betterment which would subsequently, lead to better corporate performance.

Oyedokun, Egbenoyinem and Tonademukaila (2017) asserted that non-financial indicators have a positive significant effect on firm value while financial indicators have no significant effect on firm value and performance indicators have a negative effect on firm value of industrial goods. Companies in Nigeria Mohammad, Fakhrul and Rezaur (2016) researched that there is a significant positive relation between firm profitability and (EARDI) Environmental Accounting Reporting Disclosure Index. Return on Asset (ROA) is used as dependent variable for company profitability context analysis and statistical techniques. Such as ANNOVA, Bi varieties regression model analysis was used during the research Plumlee, Brown, Hayes and Marshall (2015) researched on relationship between environmental disclosure quality and firm performance. A positive relationship was established between voluntary disclosure and firm performance, whereby cost of capital and cash flow were used. Nyirenda, Ngwakwe and Ambe (2013) establish that there is no significant relationship between return on equity and firm environmental management practices. Oba Fodio and Soje (2012), quality of environmental responsibility disclosures and foreign directors has positive significant effect on financial performance. It means information disclosure, practices and environmental policies have a great influence on firms' performance.

METHODOLOGY

The study targeted the 12 companies listed under basic material on the Nigeria stock exchange over a ten-year period of 10 years from 2010 to2019. Data were extracted from a variety of sources ranging from audited annual reports of the companies in the sample, Nigerian security and exchange commission fact books and statistical bulletin. There were only 12 companies listed under basic materials sub-sector of the manufacturing companies. Hence, the study used total enumeration as a sampling technique in which the sample size equals the population for the study.

Inspired by the work of Kundra (2013), environmental accounting disclosure index was constructed. Basically, there are two main approaches to developing a scoring scheme to capture the levels of environmental accounting disclosure. One approach is to use a dichotomous procedure in which an item scores one if it is disclosed and zero if it is not disclosed (Abdullah & Fuong, 2010; Ezeabasiliso, 2009). The alternative approach is used when the list of items is directed at a specific user group. This approach is to assign weights to each item to reflect their relative importance to the user group. Each item disclosed is weighted by its mean importance rating or zero otherwise (Hassan & Hakan, 2012). In either approach the total disclosure score for a company is additive. Thus, this study adopted the first approach.

The disclosure index was made up of 20 items of voluntary and mandatory disclosure. This information was categorized into 5 categories such as environmental compliance policy, environmental sensitive policy, environmental conservative disclosure, environmental donation disclosure and energy consuming disclosure. Scores were given to each of the environmental accounting disclosed in the financial statement. The n scores of each item are weighted for the period. The disclosure index score for a company is the sum of all the 20 items weighted scores.

For data analysis, we used both descriptive and inferential statistics. The descriptive statistics are the mean, standard deviation, minimum, median and maximum value for the data. Inferential statistics in this study are correlation and multiple regression analysis. The study adopts the multiple regression analysis to test the influence of environmental accounting disclosure on the financial performance of listed basic material companies in Nigeria. The model for the multiple regressions is as follows:

$$ROCE = \beta_0 + \beta_1 ECP_{it} + \beta_2 ESP_{it} + \beta_3 ECD_t + \beta_4 EDD_{it} + \beta_5 ECA_{it} + \varepsilon$$
$$ROE = \beta_0 + \beta_1 ECP_{it} + \beta_2 ESP_{it} + \beta_3 ECD_t + \beta_4 EDD_{it} + \beta_5 ECA_{it} + \varepsilon$$

Where:
ROCE – Return on capital employed
ROE – Return on equity
ECP –Environmental compliance policy
ESP – Environmental sensitive products
ECD – Environmental conservative disclosure
EDD – Environmental donation disclosure
ECA – Energy consuming assets

RESULTS AND DISCUSSION
Descriptive Statistics

Table 1 presents the result of descriptive statistics for all the variables in this study. The descriptive statistics includes the arithmetic mean, median, mode, standard deviation, kurtosis, and skewness. In table 1, the average return on capital employed was about 6.28% with a standard deviation of 1.63%, suggesting a moderate variation across the companies in the sample. The average score for return on equity was about 2.54, indicating that managements were perceived to be efficient by generating about N2.50 on a unit of ordinary share capital of the company. The dependent variables including disclosure on environmental compliance policy, environmental sensitive products, environmental conservative, environmental donation, and energy consuming assets produced an average score of 12.64, 6.72, 11.54, 9.89 and 11.15 respectively. Out of the 5 variables, the result was marginally above the industry average for 3 (environmental compliance policy 12.64, environmental conservative 11.54 and energy consuming assets 11.5) items while the companies score below average in the other environmental accounting disclosure. It is evident that there is relatively low disclosure of environmental accounting information in the financial statement of the listed basic material companies in Nigeria. In terms of the shape of the probability density of each variable measured by Jarque-Bera statistic, all the variables are found to follow normal distribution given the probability values of the Jarque-Bera statistic.

Table 1: Descriptive Statistics

	ROCE	ROE	ECP	ESP	ECD	EDD	ECA
Mean	6.28	2.54	12.64	6.72	11.54	9.89	11.15
Median	4.96	3.14	11	9	13	11	10
Mode	NA	NA	10	7	13	9	12
Std. Dev	1.63	0.37	1.25	0.98	0.22	1.82	1.55
Minimum	1.55	1.03	10	5	12	6	10
Maximum	10.81	8.96	16	14	18	14	16
Count	120	120	120	120	120	120	120
Kurtosis	1.18	2.57	1.19	2.39	1.51	1.51	0.98
Jarque-Bera	0.006	0.077	1.63	0.87	1.38	1.03	1.59

Inferential Statistics

The results of the regression model for return on capital employed and environmental accounting disclosure was presented in table 2. While the coefficient estimates of all the explanatory variables are positively correlated with the dependent variable as expected, only threeof the five explanatory variables (environmental compliance policy, environmental conservative disclosure, and environmental donation disclosure) are statistically significant. This result suggests that major determinants of return on capital employed of basic material companies in Nigeria are these three environmental accounting disclosure indexes.

With this empirical evidence, it can be inferred that a 1% increase in the disclosure on environmental compliance policy there may be about 19% increase in the return on capital employed of basic material company in Nigeria ceteris paribus. Similarly, a unit increase in the environmental compliance disclosure of the company will produce about 59% rise in the company's return on capital employed ceteris paribus. Again, a unit increase in environmental donation may be responsible for about 54% increase in return on capital employed. Although the impacts of other explanatory variables (environmental sensitive products and disclosure of energy consuming assets) are statistically non-significant, the model is well-behaved given its coefficient of determination. Essentially, about 62% of the variation in the dependent variable (ROCE) is explained by the combined effects of environmental accounting disclosure.

Table 2: Regression Results for Return on Capital Employed

Variables	Beta	Std. Err.	T	Sig.
ECP	0.189	0.082	2.494	0.000
ESP	0.431	1.128	0.416	0.525
ECD	0.593	0.159	3.779	0.000
EDD	0.535	0.223	2.521	0.000
ECA	0.114	0.519	1.119	0.081
Multiple R	0.818			
R-Square	0.623			
Adjusted R-Square	0.549			

Furthermore, table 3 presents the regression results for return on equity and environmental accounting disclosure. There were no statistically significant difference concerning strategies to improve financial performance in the listed basic material companies in Nigeria. The coefficient of determination was about 59% which implies that about 59% of the variation in return on equity is associated to the combined effect of environmental accounting disclosure. This is higher than the 27% found by Adwally, (2015) for a Singapore sample from manufacturing companies. Again, three independent variables (environmental compliance policy, environmental conservative disclosure, and environmental donation disclosure) were consistently significant, leaving out the two variables that were previously insignificant.

First, the coefficient of environmental sensitive product is positive, but statistically insignificant (Beta = 0.194, t-statistics = 0.202), indicating that disclosure of environmental sensitive product in the financial statement may not necessarily improve the return on equity. This result is consistent with that of Oyerogba et al. (2016) and Cylon, (2014). However, it is inconsistent with that of majority of the studies in other emerging economy such as Attribon (2014), Osamelden (2014) and Sandra (2013). Also, the result does not support the signaling theory argument that that increase in disclosure of sensitive information could promote the stakeholder's confidence in a company and thus increase patronage of their product which may eventually leads to higher performance.

Similarly, the coefficient of energy consuming assets was positive but insignificant at 1% and 5% level of significance (Beta = 0.192, T-statistics = 2.003). This result provides evidence that not all aspect of disclosure in a company directly improves financial performance. The possible cause of this is this relationship may be that consumption of energy represent additional cost to the organization which if not properly control may have negative influence on the profitability of the company.

In relation to the environmental accounting disclosure variables,

Table 3 Regression Results for Return on Equity

Variables	Beta	Std. Err.	T	Sig.
ECP	0.712	0.214	3.327	0.000
ESP	0.194	10.34	0.202	0.082
ECD	0.158	0.066	2.374	0.000
EDD	0.051	0.022	2.217	0.001
ECA	0.192	0.073	2.003	0.059
Multiple R	0.714			
R-Square	0.591			
Adjusted R-Square	0.318			

CONCLUSION

The study investigated the link between the environmental accounting disclosure and financial performance of listed basic material companies in Nigeria. Specifically, the study investigated the impact of environmental compliance policy, environmental conservative disclosure; environmental donation disclosure, environmental sensitive products, and disclosure of energy consuming assets on the return on capital employed and return on assets. With the use of total enumeration sampling technique, data were drawn from the 12 companies listed under basic material on the Nigeria stock exchange over a ten-year period of 10 years from 2010 to209. Data were analyzed, using both descriptive and inferential statistics. The descriptive statistics are the mean, standard deviation, minimum, median and maximum value for the data. Inferential statistics in this study are correlation and multiple regression analysis. The descriptive statistics results revealed that there is relatively low disclosure of environmental accounting information in the financial statement of the listed basic material companies in Nigeria. The regression result shows that about 62% of the variation in the dependent variable (ROCE) is explained by the combined effects of environmental accounting disclosure while about 59% of the variation in return on equity was also associated with the combined effect of environmental accounting disclosure. The study therefore concludes that environmental accounting disclosure have significant impact on financial performance of listed basic materials companies in Nigeria.

The paper draws the attention of management of listed basic materials in Nigeria to the need to make adequate disclosure on environmental accounting practices in the financial statement. The study also draws the attention of Nigeria stock exchange and other regulatory authorities on the need for regulation that will make environmental accounting disclosure a regulatory disclosure rather than voluntary disclosure which is the current practice. The study also documents that environmental compliance policy, environmental conservative disclosure and environmental donation disclosure have statistically significant influence on financial performance. Therefore, special consideration should be given to those variables in policy formulation. This study uses two indicators for measuring financial performance which are return on capital employed and return on equity. It would be recommended to use other indicators to measure financial performance in this Quoted basic materials companies in Nigeria.

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