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## **ENVIRONMENTAL ACCOUNTING DISCLOSURE PRACTICES AND FINANCIAL PERFORMANCE OF LISTED CEMENT COMPANIES IN NIGERIA**

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### **Abstract**

*This study examined the impact of environmental accounting disclosure on financial performance of listed cement companies in Nigeria. The study employed expo facto research design. Data were sourced from three annual report and accounts of three cements companies listed on the Nigerian Stock Exchange from 2011 to 2019. Descriptive statistics and estimated panel regression methods were employed. The results of the study revealed that environmental accounting disclosure has positive and significant impact on firm financial performance of the listed cement companies in Nigeria. The study concluded that there was a significant positive impact of environmental accounting on return on equity and return on assets respectively. This study therefore recommends that relevant stakeholders including government agencies and regulatory agencies such as financial reporting council among others should put in place workable monitoring mechanism to ensure that firms in Nigerian cement industry engage in better environmental accounting disclosure since it plays key role on their performance and long run survival by extension.*

**Keywords:** Accounting Disclosure, Cement Companies, Environmental Accounting, Financial performance

### **1. Introduction**

There are several problems with increasing concern about environmental degradation and resources depletion which is a source of worry. Environmental problems discussed today are of global concern and have possible influences that far surpass what could be imagined fifty years ago. Cements companies in Nigeria are usually faced with youth restiveness as a result of unemployment, and non-availability of social amenities. This has led to series of vandalization of valuable companies' properties. The above problem could be ameliorated if the cements companies did not manage their social and environmental cost efficiently and effectively (Folayan, 2016)

Returns or profit of cement companies in Nigeria can be grossly affected if the environment is neglected or inadequately taken care of. Ordinarily, any rational entity cannot afford to spoil or be carefree with a profitable or potentially profitable venture and expect huge returns. In other words, cement companies in Nigeria ought to naturally account for the pollution, emissions and degradations arising as a result of their economic activities in to the environment. Returns should never be the only report shareholders would be eager to applaud. Reports of damages to the

environment, pollution of various forms, emissions into the air etc must be accounted for, rectification procedures, compensations where necessary and preventative measures to put in place are some of the items that should feature in annual reports of organizations (Osemene, Kasum & Yahaya, 2012)

The limited awareness of environmental costing principles and methodology has become a paramount issue to be addressed. If environmental issues and activities that are vital are not disclosed, financial statement cannot be said to reveal state of a 'true and fair view of affairs'. Lack of proper use of International Accounting Standards in affected countries of which Nigeria is a part hinders "transparency in the financial statements of corporate body (Folayan, 2016)

Epstein (2004) established that standard-setters also attempt to create a standard set of disclosures and performance metrics to compare the performance of corporate social environment across sectors in an effort to make unified standards operational. However, this attempt of unified standards creation was confronted with some challenges. These challenges were complicated by variations in company size, geographical diversity, complexity and social effect of goods and activities. In spite of the afore-mentioned, both internal and external stakeholders will greatly benefit from a comprehensive range of policies that incorporates social, environmental and economic impacts successfully. Many organisations such as New Economic foundation and Pricewatercooper, have developed social metrics to be used in the proposed external sustainability reporting standards, consequent upon a call for input from the Global Reporting Initiative (GRI).

Many studies have shown that environmental disclosures in developed countries of the world, such as the US, UK, and Australia have increased over the years (Adam, Hills & Robert, 1998; Frost & Wilmhurst, 2000; Walden, 1993). This notwithstanding, environmental disclosures remain voluntary initiative in some developing countries, like Nigeria. Not many works are known to the researchers on environmental disclosure and financial performance bordering on cement companies specifically in Nigeria. Globally, cement industry is one of the largest industrial sectors emitting carbon. The cement manufacturing process is not only a source of CO<sub>2</sub> emissions related to combustion, but also a large source of Co<sub>2</sub> emissions related industrial process (Milkulck, Vujanovic, Markowska, & Filkoski, 2013)).

Large amount of various greenhouse gases particularly CO<sub>2</sub> are emitted during the cement production process. The cement industry alone accounts for around 41% of the EU and approximately 5% of the world anthropogenic CO<sub>2</sub> emissions (Milkucic et.al, 2013).

The objective of this paper is to examine the influence of environmental disclosure practices on financial performance of cement companies in Nigeria.

## **2. Literature Review**

### **2.1.1 Environmental Disclosure**

The Association of Chartered and Certified Accountants (ACCA), described environmental disclosures as a mixture of narratives, including objectives, explanations and numerical data, such as the amount of pollution, resources consumed for a specific accounting period on the environmental effect of a company. Environmental Disclosure is a formal statement that defines the environmental burden and efforts of an organization, including the objectives of the company, environmental policies and impacts regularly reported and released to the public (Ong, Tho, Goh, Thai, & Theh, 2016).

Ong, Tho, Goh, Thai, and Theh, (2016), further pointed out two primary form of environmental disclosures. These are: Mandatory and Voluntary Disclosures. However, environmental disclosure is still voluntarily reported without any regulatory or legislative requirement in many countries including Nigeria. This differentiates it from Corporate Social Responsibility (CSR). Environmental accounting, in terms of moral, economic, legal, ethical and discretionary standards is best defined as the achievement or perception of the achievement of the desired ends of society (Murray, & Montanani, 1996, as quoted by Riahi-Belkaoui, 2004). Riahi-Belkaoui (2004), emphasised further that environmental performance is an asset that produces future rewards. It is the product of a competitive mechanism through which businesses signal to constituents their main characteristics with regards to their social standing.

Karpic and Belkaoui (1998), reiterated that environmental accounting disclosure rankings are significant indicators of the organisational effectiveness of the company, signalling to the public the viability and social responsiveness of the company, creating a favourable economic, social and political situation for businesses, creating a better reputation, improving access to capital markets and attracting investors. Favourable environmental accounting disclosure is essentially a signal that affects the behaviour of the corporate audiences and /or stakeholders of the same company and the expectations of the importance of earnings to the determination of stock returns (Riahi-Belkaoui, 1999).

### **2.1.2 Financial performance**

According to Solomon (2020), financial performance in broader sense refers to the degree in which financial objectives have been accomplished. It measures how well a company has fared in monetary terms and its overall financial health for a particular period.

Financial performance is a subjective measure of how well a firm utilizes its assets from its business operation to generate profit (Okafor, 2018). However, financial performance is used to predict the financial well-being of a company, over a period of time. This can be measured in different ways such as: Return on Capital Employed (ROCE), Return on Asset (ROA), Return on Equity (ROE) and Markets Share Growth (Solomon, 2020).

### **2.2 Theoretical Review**

This study is guided by stakeholders' theory that was introduced by Edward Freeman (1984), according to Watts and Zimmerman (1998), as referenced by Ezeagba, John-Akamelu, and Umeoduagu (2017). It states that an organization's disclosure of social and environmental information is due to pressure from stakeholders. The basic premise of this is that a company's performance is determined by successful management of all the relationships that a company has with its stakeholders. This theory upon which this work is anchored concludes that environmental performance and social responsibilities are ways to project a positive image to stakeholders in order to increase long term profitability by retaining and attracting new customers.

Nor, Bahari, Adnan, Kamal and Ali (2016) examined the effects of environmental disclosure on financial performance of top 10 companies in Malaysia in the year 2011 using content analysis to manually collect the data. The data were analysed using multiple linear regression and ANOVA. The results of the studys that environmental accounting has no significant impact on firm performance measured with ROE, ROA AND EPS.

Abubakar, Simon and Mohamad (2017), assessed the impact of environmental disclosures on performance of cement and Brewery companies in Nigeria, using ordinary least square regression techniques in the data analysis. Content analysis was used to measure environmental disclosure, ROA, ROE and EPS were used as proxies to measure performance. The results showed that environmental disclosure has a positive insignificant relationship with ROA and EPS, and a negative insignificant impact on ROA as well as ROE. Similarly, Ezeagba, John-Akamelu, and Umeoduagu (2017), investigated the relationship between environmental disclosures and financial performance of food and beverage companies in Nigeria. The study revealed that there is a significant relationship between environmental accounting disclosures and Return on Capital Employed (ROCE), of food and beverage companies of Nigeria.

Yahaya, (2018), investigated the effect of environmental disclosure practices on financial performance of listed environmentally-sensitive firms in Nigeria. Return on asset was used to proxy firm financial performance, while environmental disclosure was measured by green reporting index. The correlation result showed that environmental reporting practices and financial performance have positive and significant relationship.

Solomon (2020) reviewed literature on effects of environmental disclosure on financial performance of listed oil and gas companies in Nigeria, he discovered that disclosure of environmental information has positive effect on financial performance of oil and gas companies in Nigeria.

From the foregoing, a number of studies have empirically investigated the link between environmental accounting disclosure and financial performance. From the review, it is clear that there is no consensus on how environmental disclosure affect financial performance as some find positive impact, another group reported negative impact while others reported no significant impact. Since no study is known to the researcher to focus on the cement industry in Nigeria, this study fills the gap by examining the impact of environmental accounting on financial performance of listed cement companies in Nigeria.

### **3. Methodology and Model Specification**

#### **3.1 Data and Technique of Analysis**

This study adopted expo facto research design. The population of the study consists of the three listed firms in the Cement industry listed on the Nigeria Stock Exchange as at 31st December 2020. The data used in this study were manually collected from the annual reports of the three (3) listed cement producing firms for the period covering 2011 and 2019 using content analysis.

The data was analysed using descriptive statistical tools including mean, standard deviation, range and correlation for preliminary analysis, and inferential statistical tool of panel regression. The three variants of basic panel model were estimated and the most appropriate one was selected using two different specification tests namely; F-test and Hausman test. The data of the study were analysed using STATA 14.0 statistical software.

The model specification for this study is presented as:

$$ROA = f(EADI, FS, LEV) \quad - \quad - \quad - \quad (3.2.1)$$

$$ROA_{it} = \tau + \omega LEV_{it} + \vartheta EADI_{it} + \phi FS + \mu_{it} \quad - \quad - \quad - \quad (3.2.2)$$

$$ROE = f(EADI, FS, LEV) \quad - \quad - \quad - \quad (3.2.3)$$

$$ROE_{it} = \tau + \omega LEV_{it} + \vartheta EADI_{it} + \phi FS + \mu_{it} \quad - \quad - \quad - \quad (3.2.4)$$

Where:

ROA is return on Asset

ROE is return on Equity  
 EAD is environmental accounting disclosure per share  
 FS is firm size  
 LEV is financial leverage

Where:

$$\mu_{it} = \rho_i + \varepsilon_{it} \quad - \quad - \quad - \quad (3.2.5)$$

If (3.2.5) is not true, then (3.2.5) could be estimated using OLS (Pooled OLS). If it is however true, OLS cannot be used and (3.2) becomes

$$SP_{it} = \tau + \vartheta EADI_{it} + \varphi FS + \omega LEV_{it} + \rho_i + \varepsilon_{it} \quad - \quad - \quad 3.2.6$$

**3.3 Measurement of Variables**

The dependent variable of this study is firm performance proxied as return on asset (ROA) and return on equity (ROE). The study follows previous empirical studies of firm performance (Abubakar et al., 2017) by measuring the firm financial performance using return on asset. The main independent variable of the study is environmental accounting disclosure (EAD) while firm size and leverage are used as the control variables.

The study measured EAD using disclosure index obtained from checklist of ten items (see appendix section). Several other studies create and use an index in measuring EAD (Ortas, Alvarez, & Garayar, 2015; Umoren, Isiauwe & Atolagbe, 2016; Niresh & Silva, 2017). The framework for quantifying EAD was adopted from the work of Ortas, Alvarez, & Garayar (2015) and Umoren, Isiauwe & Atolagbe (2016). The framework consists of 10 items. These items were scored using a dichotomous approach. In line with dichotomous approach, an item scores ‘1’ if reported and Zero ‘0’ if not reported. This is termed an un-weighted approach (see Umoren, Isiauwe & Atolagbe, 2016). The formula for calculating the un-weighted disclosure index using the environmental disclosure framework is expressed as:

$$EADI = \sum_{i=1}^{10} d_i / d \quad \text{-----} \quad (3.3.1)$$

Where:

EADI is Environmental Accounting Disclosure index.  
 d = 1 if item ‘di’ is reported or 0 if item ‘di’ is not reported  
 d = maximum number of items (i.e 10)

The value of EAD is the ratio of the value of the value of computed total disclosures score obtained by each firm to the maximum number obtainable points.

The summary description of variables used in this study as well as their source is presented in the table below:

**Table 1: Variables definition and Sources**

Variables	Description	Source
Firm Financial Performance	Measured as the return on asset and return on equity which is respectively expressed as the ratio of net profit to asset and net profit to equity.	Abubakar, Simon & Mohammad (2017)
	Measured as environmental	

Environmental Accounting Disclosure	accounting checklist	Ortas, Alvarez, & Garayar (2015) and Umoren, Isiavwe & Atolagbe (2016)
Firm size (Fsiz)	Measured as log of total assets	Ahmadi et al. (2018)
Leverage (Lev)	This is measured as debt as ratio of total equities	Foerster (2013)

**Source: Authors' Compilation, 2021**

## 4. Results and Discussions

### 4.1 Descriptive Analysis

The summary statistics of the variables used in the study are presented in Table 4.1. The results indicate that the average return on asset within the period is 0.114 with minimum share price of -0.131 and maximum of 0.318. The standard deviation of 0.101 reveal a relatively low variation in the return on asset among the firms and over the period. The results further reveal that the average return on equity is 0.283 with minimum and maximum value of -0.22 and 1.636 respectively. Its corresponding standard deviation of 0.346 show considerably high variation in the return on equity among the firms and over the period considered. In addition, the results reveal that the average environmental accounting disclosure is 0.304 implying that the environmental accounting disclosure practices among the firms in the industry is relatively low since it is below the average. The minimum and maximum environmental disclosure is found to be 0 and 0.7 respectively.

**Table 2: Descriptive Statistics of the Variables**

Variable	Obs	Mean	Std.Dev.	Min	Max
ROA	27	.114	.101	-.131	.318
ROE	27	.283	.346	-.22	1.636
EAD	27	.304	.179	0	.7
LEV	27	.304	.302	.003	1.281
FS	27	19.403	1.576	16.347	21.278

**Source: Authors' Computation, 2021**

Also, the study estimated the correlation among the variables and the results are presented in Table 2. The results show that return on asset has high positive impact on environmental accounting disclosure among the firms with estimated correlation coefficient of 0.690. An estimated correlation coefficient of -0.241 indicates that weak inverse relationship exists between leverage and firm financial performance and the estimated correlation coefficient of 0.149 shows that firm size has weak positive relationship with return on asset. The relationship among the regressors is relatively moderate as the highest correlation coefficient of 0.372 among them is below threshold of 0.9 for multicollinearity to occur. Thus, presence of multicollinearity among the regressors is not expected. Multicollinearity problem is checked further using variance inflation factor in the subsequent section.

**Table 3: Matrix of correlations**

Variables	ROA	ROE	EADI	LEV	FS
ROA	1.000				
ROE	0.425	1.000			
EADI	0.690	0.120	1.000		
LEV	-0.241	-0.201	-0.126	1.000	

FS	0.149	-0.011	0.372	-0.223	1.000
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Source: Authors’ Computation, 2021

#### 4.2 Panel Regression Results

The estimated panel regression results for the study is presented and discussed in this subsection. The results obtained are presented in Table 3. The study tested for the presence of firm effect using F-test and the results revealed the existence of firm effect making the use of estimated panel regression. To select between fixed and random effect, the study conducted Hausman test and the estimated Hausman p value of 0.0027 shows that the fixed effect model is more consistent. Thus, the study employed fixed panel regression for the estimation of the model. In addition, the maximum variance inflation factor of 1.21 which is far below the threshold of 10 indicate that there is no multicollinearity among the explanatory variables.

**Table 4: Estimated Panel regression results**

VARIABLES	Apriori Expectation	(1) ROA	(2) ROE
EA	+	0.439** (0.0493)	0.845** (0.0277)
LEV	+	0.0497 (0.467)	0.131 (0.476)
FS	+	-0.0176 (0.280)	0.0521 (0.450)
Constant		0.308 (0.368)	-1.024 (0.468)
Observations		27	27
Firm Effect		Yes	Yes
Hausman P val		0.0027	0.0169
R-squared		0.642	0.210
Maximum VIF		1.21	1.21
Number of fid		3	3

Pval in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: Authors’ Computation (2021)

The results of the panel regression for the baseline model of the study are presented in column 1 of Table 4. From the results, respective estimated coefficient and p value of 0.439 and 0.0493 indicate that environmental accounting has positive impact on financial performance of the sampled firms over the period considered and the positive impact is significant at 5 percent level of significant. The implication of the findings here is that the higher the level of environmental disclosure practice among the firm, the better the performance of the firms listed in the industry. The finding may be explained by the result obtained here for environmental accounting and firm financial performance nexus aligns with the expectation of the study and the findings in extant empirical literature including Ong et al. (2016) who reported significant positive impact of environmental disclosure on performance of listed firms in Malaysia. The result however contradicts the finding of Abubakar et al. (2017) who reported insignificant positive impact of environmental disclosure on return on asset of listed cement and brewery firms in Nigeria between 2011 and 2015, Jia et al. (2010) who reported significant negative impact of

environmental disclosure on firm performance.

The results revealed that none of the control variables has significant impact on financial performance at any conventional level of significance since each has p value that is greater than the threshold of 0.1 for 10 percent level of significance. While firm size has insignificant negative impact given its respective coefficient and p value of -0.0176 and 0.280, leverage has insignificant positive impact given its estimated coefficient and p value of 0.0497 and 0.467 respectively.

In addition, the study conducted robustness analysis by using return on equity to proxy financial performance as a way to know if the finding for the baseline model is consistently robust to alternative proxy for financial performance. The results of the robustness analysis is presented in column 2 of Table 4. From the results, the estimated respective coefficient and p value of 0.845 and 0.0277 indicate that environmental accounting disclosure has significant positive impact on firm financial disclosure implying that the result is robust to alternative proxy for the firm performance.

The results of the post estimation diagnostic test are presented in Table 4. The estimated p value of 0.1913 indicates that model is well specified, estimated Breusch-Pagan/Cook-Weisberg p value of 0.1601 reveals no presence of heteroskedasticity while the Wooldridge test estimated p value of 0.6947 implies absence of autocorrelation.

**Table 5: Regression Diagnostic Tests**

Test	Type	P value	Conclusion
<b>ROA</b>			
Omitted Variables	Ramsey RESET	0.1913	No specification error
Heteroskedasticity	Breusch-Pagan/Cook-Weisberg	0.1601	There is no heteroskedasticity
Autocorrelation	Wooldridge Test	0.6947	No autocorrelation
<b>ROE</b>			
Omitted Variables	Ramsey RESET	0.9701	No specification error
Heteroskedasticity	Breusch-Pagan/Cook-Weisberg	0.9023	There is no presence of heteroskedasticity
Autocorrelation	Wooldridge Test	0.0033	Presence of autocorrelation

**Source: Authors' computation, 2021**

## **5. Conclusion and Recommendations**

The aim of this study was to perform empirical investigation into the impact of environmental accounting on financial performance among listed firms in the Nigeria cement industry for a period covering 2011 to 2019. The results of the baseline model of the study which was analysed using fixed effect regression revealed existence of positive and significant impact of environmental accounting on financial performance of the listed firms in the cement industry of Nigeria. Further analysis in the previous section using fixed effect indicate that the result is robust to different proxy of financial performance as the result show significant positive impact of environmental accounting on return on equity. The implication of the finding here is that more environmental disclosure practice is associated with higher firm financial performance in the Nigeria cement industry. In line with the findings above therefore, the study recommends that relevant stakeholders including government agencies and accounting bodies such as Institute of Chartered Accountant of Nigeria (ICAN) among others should put in place workable monitoring mechanism to ensure that firms in the Nigerian cement industry engage in better environmental

accounting since it plays key role in their performance and long run survival by extension. The regulators can promote disclosure practice by rewarding firms that engage more in environmental accounting as a way to encourage the practice. The management of the firms in the industry should as a matter of necessity prioritize the disclosure of environmental information in their annual report as one of the strategies to improve their financial performance in the industry.

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