

Impact of Monitoring Mechanisms on Environmental Disclosure Quality in Nigeria

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Abstract: Environmental information can be a key element of corporate disclosure. It can alarm stakeholders due to various problems as well as low data quality and infrequent reporting, in Nigeria. In order to address these problems, this study examines the impact of monitoring mechanisms on environmental disclosure quality in Nigeria. The data in this study is drawn from annual reports and content analysis of 46 listed environmentally sensitive firms over seven years (2012–2018) obtained from the Nigerian Stock Exchange. The authors analyzed the data using panel corrected standard error (PCSE) regression analysis. The findings show a significant positive correlation between board independence, the presence of an environmental committee, environmental audit, and environmental disclosure quality. However, institutional ownership has an insignificant relationship to environmental disclosure quality. In conclusion, the overall results reinforce the study's general argument of monitoring the how companies respond to the needs and interests of various stakeholder groups and consequently, determining the quality of environmental disclosures made by those same companies. Based on the results that show lower rates of environmental reporting, this study provides a way forward for the government and policy makers to address environmental issues in Nigeria.

Keywords: environmental audit, environmental disclosure quality, environmental sensitive firms, monitoring mechanisms, Nigeria.

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INTRODUCTION

Environmental issues have become matters of great concern in today's world. Globally, there is a growing concern regarding environmental responsibility among firms due to the negative impacts of their activities on the environment. The exponential growth of industries has led to an increase in economic advancement, but at the same time has led to a rise in environmental problems around the world. Nigeria, among others, has been identified as one of the countries with a high degree of environmental pollution that contributes significantly to global environmental problems. Nigeria is currently considered the 10th most polluted country in the world (Airvisual, 2018) and the seventh country with the largest gas flaring in the world (World Bank, 2020), thus it is expected that companies operating under their control bear environmental responsibility.



Despite the negative effects of companies operating in Nigeria, they pay less attention to environmental issues. Thus, so many agitations were raised by stakeholders against the companies. In addition, stakeholders encourage and pressurize businesses to be more responsible for environmental issues that have a negative impact on business and the environment as a whole (Braam et al., 2016). In response to these pressures, companies around the world disclose their environmental impacts and the intervention role in reducing the adverse impact of their operations on the environment, which are reported to have grown in recent years (KPMG, 2020).

The 2020 KPMG Survey of Sustainability Reporting shows that nearly 96% of the top 250 firms worldwide disclose their sustainability activities and impacts (KPMG, 2020). However, disclosure of environmental information is still evolving and weak in developing countries, and many developing countries are putting in place regulations to promote the practice. Although Nigeria is among the leading countries polluting the environment, information on environmental issues among responsible companies is still very low (Okpala, 2019).

In response to the demand from stakeholders, the Securities and Exchange Commission (SEC) in Nigeria released its Sustainability Reporting Guidelines in early 2019, mandating all companies on the stock exchange to report on their environmental activities. Nonetheless, despite the growth and evolvement of the company's environmental disclosure practices, its ability to satisfy the information needs of stakeholders remains questionable as it has been criticized for its lack of credibility and relevance (CFA Institute, 2015). Similarly, a PricewaterhouseCoopers (PWC) survey conducted in 2016 revealed that the majority of investors are dissatisfied with current environmental reporting practices and are looking for improved sustainability disclosures. As a result, companies have a pressing need to provide more reliable information about their environmental performance to satisfy stakeholders' needs (D'Aquila, 2019).

The quality of environmental information is essential to enable stakeholders to make accurate and reasonable assessments of performance and take appropriate action (Global Reporting Initiative (GRI), 2013). Concern for the disclosure of quality environmental information makes it important to identify the factors that influence managers' decisions on the issue of disclosure and then use these factors to predict disclosure levels and improve its quality. The management decision to disclose environmental information is likely related to multi-stakeholder influences, which considers various monitoring mechanisms put in place to urge management to act in the best interests of stakeholders and the community (Rupley et al., 2012). Thus, this study extends the link between decisions regarding environmental disclosure and corporate governance by integrating multi-stakeholder governance.

To address low reporting as well as the quality of environmental disclosure, Badrul & Nava (2015), Iatridis (2013), and Rupley et al. (2012) argued that, corporate monitoring mechanisms, which include board independence, environmental committees, institutional ownership, and environmental audit, could play a major role in enforcing management to meet the information needs of stakeholders. Therefore, according to the above argument, more research is needed in this area as it will effectively address the needs of various stakeholders on environmental issues.

Studies on environmental disclosure quality have global attention with less consideration in developing nations like Nigeria. Most previous studies have focused on the extent and quantity of environmental disclosure (e.g Akbas, 2016; Rabi, 2019; & Djajadikerta, 2016), while little attention has been devoted to the quality of the disclosure (e.g Iatridis, 2013; Rupley et al., 2012). It is vital to investigate the relationship between monitoring mechanisms and environmental disclosure in an effort to improve its quality. Even though very limited studies

have been conducted in this area, most are in advanced countries (see Baalouch et al., 2019; Iatridis, 2013; Ismail et al., 2018; Rupley et al., 2012).

In addition, some of the monitoring mechanisms which influence the quality of environmental information disclosed, such as the existence of an environmental committee and environmental audit, have not been given adequate attention in the literature (Badrul & Nava, 2015; Iatridis, 2013; Rupley et al., 2012). Furthermore, in terms of sector, there are few researchers that have examined environmental disclosure practices in environmentally sensitive industries (see Iatridis, 2013). The emphasis of previous studies in Nigeria seems to be placed more on the oil and gas sector. Whereas there are other sectors that are daily involved in waste production and environmental pollution. The study differs from most Nigerian studies in that it provides evidence from all the environmentally sensitive sectors as against others. In addition, the study used the newly released NSE Sustainability Disclosure Guidelines for measuring the disclosure quality. Furthermore, this is one of the pioneer studies conducted in Nigeria using its provisions.

Our study contributes to the literature on environmental disclosure as it is one of the few studies that provide evidence on the quality of environmental disclosures from an emerging nation's perspective and how it can be influenced by monitoring mechanism. Therefore, in an attempt to fill the existing gaps and overcome the limitations of the literature, this study examined the impact of monitoring mechanisms on environmental disclosure quality of environmentally sensitive firms in Nigeria. This study is motivated by the dearth of studies on the quality of environmental disclosure in Nigeria, even though the country is among the countries with serious environmental problems. This is important given the fact that the Securities and Exchange (SEC) in Nigeria recently authorized all companies on the stock exchange to report on their social and environmental activities.

METHODS

This study used descriptive and correlational research design to investigate the relationship between the monitoring mechanism and the quality of environmental disclosure. The population of this study includes all listed environmentally sensitive companies in Nigeria as at December 31st, 2018. This study focuses on companies in environmentally sensitive industries because their operational activities are potentially more environmentally damaging and are perceived to pose the greatest potential threat to the natural environment (Deegan & Gordon, 1996), are more likely to engage in environmental disclosure and are more exposed to public pressure than non-ESIs (Cho & Patten, 2007). As of 31st December, 2018, the population of the listed environmental sensitive firms on the Nigeria Stock Exchange (NSE) was 81 companies. Out of the 81 mentioned, only 46 have complete annual reports available from 2012 to 2018. Therefore, this study utilized 46 companies with complete data at the time of conducting the research. Data was extracted from their annual financial reports for seven years (from 2012 to 2018 inclusive). The period chosen was the time of stakeholder's agitation over the environmental risk as reported by the Nigerian Minister of Environment.

Content analysis was applied to examine disclosed information in the annual reports. The content analysis method has been widely used to analyze the extent of disclosures (Permatasari et al., 2020; Yusoff et al., 2018). The Nigeria Stock Exchange (NSE) sustainability disclosure guideline, developed in collaboration with GRI, was used to assess the quality of environmental disclosure. The quality of environmental disclosure in this study refers to the significance and utility of the information (Cormier et al., 2005). As GRI was developed to improve the quality, accuracy, and usefulness of corporate social and environmental reporting (Frost et al., 2005), the

use of NSE-GRI guidelines addresses the usefulness of the information to stakeholders. It also addresses the significance of the information as these guidelines provide value propositions for sustainability specific to the Nigeria Environment.

The dependent variable, environmental disclosure quality, was measured in three steps as follows; i) a structured checklist based on the Nigeria Stock Exchange (NSE) sustainability disclosure guidelines as quality indicators is constructed; ii) a coding system of '0' and '1' is used; iii) finally, the disclosure quality of the environmental information is calculated with a simple un-weighted average formula. Thus, an index is formulated from the above three steps to measure environmental disclosure quality in this study (Clarkson et al., 2008; NSE, 2018; Sunday et al., 2019). This is in line with the NSE Sustainability Guidelines released in collaboration with GRI.

$$EDQ = \sum \frac{EQ}{MX DQ}$$

Where:

EDQ = Environmental Disclosure Quality,

EQ = Environmental Quality Scores,

MX DQ = Maximum disclosure quality scores for this study is 12.

Table 1 Operationalization of the Variables

Proxies	Variables	Measurements	Authors
EDQ	Environmental Disclosure Quality	Based on NSE environmental guidelines, for each checklist, 1 represents disclosure and 0 represents non-disclosure. Then the total item disclosed is divided by total possible items.	Clarkson et al., 2008; Sunday et al., 2019
BIND	Board independence	No of independent non-executive directors divided by total number of Directors	Saha & Kabra (2019)
POEC	Presence of environmental committee	This is measured as a dummy variable with the value of 1 if the company has environmental committee and 0 otherwise	Baalouch et al. (2019)
INSTOWN	Institutional Ownership	Number of shares owned by institutional investors to the total number of outstanding shares of the firm	Habbash (2015)
ENVAUD	Environmental Audit	This is measured as a dummy variable with the value of 1 if the company had environmental audit or assessment and 0 if otherwise	Vogt et al. (2017)
PROF	Profitability	Profit after tax/total equity	Ahmad & Nosakhare (2015)

Based on these variables (Table 1), the empirical results are therefore based on the following regression model.

$$EDQ_{it} = \beta_0 + \beta_1 BIND_{it} + \beta_2 POEC_{it} + \beta_3 INSTOWN_{it} + \beta_4 ENVAUD_{it} + \beta_5 PROF_{it} + \varepsilon_{it}$$

Where:

EDQ = Environmental Disclosure Quality;

β_0 = Intercept.

β_1 to β_4 = Coefficient of the independent variables.

- β_5 = Coefficient of the control variables.
 ϵ = Error term.
 it = Subscript for Panel Data
 $BIND$ = Board Independence.
 $POEC$ = Presence of environmental committee.
 $INSTOWN$ = Institutional Ownership.
 $ENVAUD$ = Environmental audit.
 $PROF$ = Profitability.

RESULTS AND DISCUSSION

Data collected during the study was presented and discussed in this section. The descriptive statistics, correlation matrix and inferential statistics are presented in this section. The hypotheses formulated for the study were tested to institute the effect of monitoring mechanism on environmental disclosure quality.

Table 2 Descriptive Statistics

Variable	Obs.	Mean	Std. Dev.	Min	Max
EDQ	322	0.202	0.198	0	0.833
BIND	322	0.094	0.134	0	0.556
POEC	322	0.149	0.357	0	1
INSTOWN	322	0.593	0.198	0.078	0.88
ENVAUD	322	0.335	0.473	0	1
PROF	322	0.054	0.11	-0.44	0.54

Source: Author's Computation using Stata13 Output

Table 2 presents the descriptive statistics of the explanatory and explained variables for this study. The environmental disclosure quality (EDQ) is a ratio where its value falls between 0 and 1. The mean of environmental disclosure quality is 20.2%, reflecting the fact that the sampled firms' environmental disclosure quality was found to be low during the period covered. In addition, the maximum average disclosure level is 83.3 percent, while the minimum average disclosure quality is 0 per cent, suggesting a wide variance in the quality of environmental disclosure practices among sample firms. This result might be the effect of evaluating a wide variety of firms of different sizes and degrees of environmental sensitivity. The standard deviation of 0.198 implies a small variance among the sampled companies.

The average board independence across the sampled firms is 9.4%, and the standard deviation of 13.4% is like the mean, showing that the independence ratio of the observed companies clusters around each other. Furthermore, the minimum value of 0 indicates that some firms are yet to comply with SEC 2011 Code of Corporate Governance, which stipulates that public firms in Nigeria should at least have one independent non-executive director. On average, 14.9 per cent of the sampled firms established a separate environmental committee of the board, which means that only few proportions of firms set up environmental committees to review their sustainability strategies and practices. The minimum and maximum value of 0 and 1 indicate that some firms have no environmental committee.

Institutional ownership showed an average of 59.3%, which indicates that institutional investors are the dominant shareholdings. The lowest and highest value of institutional ownership is at 7.82% and 88%. This is an indication of a very wide range of 80.2%. The meaning of environment audit is 0.335, indicating that few of the sampled firms undertake environmental audit of their environmental performance. The minimum and maximum value of 0 and 1 indicate that some firms didn't provide third party verification of their environmental performance. Finally, profitability, as indicated by ROA, has a mean of 5.35% while the standard deviation of 0.109 (10.9%) represents moderate variability of return among the sampled environmental sensitive firms as covered within the period of study. The most profitable sampled firm earns No.5396 income from each N1 of asset invested, and the maximum loss incurred is No.4405 on each N1 of asset invested.

Table 3 Correlation Matrix

Variables	EDQ	BIND	POEC	INSTOWN	ENVAUD	PROF
EDQ	1.000					
BIND	0.305	1.000				
POEC	0.248	0.177	1.000			
INSTOWN	0.012	0.078	0.132	1.000		
ENVAUD	0.547	0.068	0.076	-0.034	1.000	
PROF	0.230	0.175	-0.070	-0.012	0.183	1.000

Source: Author's Computation using Stata13 Output

From the correlation matrix in table 3, all the explanatory variables (BIND, POEC, INSTOWN, ENVAUD, and PROF) are positively correlated with the EDQ of listed environmental sensitive firms in Nigeria. The implication is that the above variables move in the same direction with the quality of environmental disclosure. Table 3 also shows the association among the independent variables themselves. According to Gujarati (2004), a correlation coefficient between two independent variables above 0.80 is considered excessive. From the table above, all the correlation coefficients between independent variables are below 0.80, which suggests the possible absence of harmful multicollinearity. This is further confirmed using the Variance Inflation Factor (VIF).

Before the conduct of the final regression, this study conducted diagnostic analysis to maintain the unbiasedness of the parameters as argued by Wooldridge (2012). To further consider the collinearity issues, this study employed the Variance Inflation Factor (VIF) test to measure their magnitude in our model, where the variance factors for each variable are estimated. The results of the VIF test range from a minimum of 1.02 to a maximum of 1.08, which are all less than 10. To further substantiate this claim, the mean VIF is 1.06, also confirming the absence of multicollinearity among all the independent and control variables of the study (Hair et al., 2014). Among the tests conducted in addition to the multicollinearity test is the Hausman test, which allows a choice between random and fixed effect models. With a P-value of 0.0048, which is statistically significant, the fixed effect model is therefore considered appropriate for this study. This study also conducted a normality test on the residuals of the model using Shapiro-wilk and the study found that the residuals were normally distributed as the p-value was statistically insignificant. While the Wooldridge test for autocorrelation in panel data was significant, indicating the presence of auto correlation. Also, the heteroskedasticity test conducted using Modified Group Wise proved significant with a p-value of 0.000, which indicates the absence of homoscedasticity. The presence of heteroscedasticity violates the homoscedasticity assumption and may lead

to the wrong inference. This study therefore conducted a panel corrected standard error (PCSE) model which overcomes both the heteroskedasticity and auto correlation issues. PCSE preserves observation weighting for autocorrelation, but uses a sandwich estimator to integrate cross-sectional dependence when measuring standard errors (Mantobaye et al., 2017). Thus, this study used the PCSE model based on the recommendation of Gujarati (2004) and finally, the PSCE model is hereby presented and discussed next.

Table 4 Panel Corrected Standard Error Regression

CSR	Coef.	Std. Err.	Z-value	p-value	VIF
BIND	0.325439	0.0710691	4.58	0.000	1.08
POEC	0.1010436	0.0167055	6.05	0.000	1.07
INSTOWN	-0.011369	0.0193629	-0.57	0.569	1.02
ENVAUD	0.2082704	0.0124204	16.77	0.000	1.05
PROF	0.2043879	0.0563406	3.63	0.000	1.08
Constant	0.0822536	0.0116593	7.05	0.000	
R-squared	0.4095		Observation Panels:		Correlated (balanced)
Number of obs.	322		Hettest p-value		0.0000
Chi-square	349.30		Hausman p-value		0.0048
Prob > chi2	0.0000		Mean vif		1.06

Source: Author's Computation using Stata13 Output

The study presents the panel corrected standard error regression result in table 4. The result in table 4 shows the result obtained from the Panel Corrected Standard Error Regression (PSCEs) which was interpreted after conducting all relevant tests. The coefficient of determination R-squared was 0.4095 which indicates that about 40.95% of the total variation in environmental disclosure quality of listed environmental sensitive firms in Nigeria is caused by the explanatory variables used in the study. And the remaining 59.05 percent were due to other factors not included in the equation but measured by the error term. The Wald chi2 of 349.30 for the model shown on table 4.6 is greater than 2 (Gujarati, 2004). Therefore, the model is fit to estimate the relationship between monitoring mechanisms and environmental disclosure quality. In addition, all the independent variables in the model are generally significant going by the probability of the Wald chi2, which is significant at the 1% level of significance.

From the result thus, the model of the study is:

$$EDQ_{it} = -0.082 + 0.325 BIND_{it} + 0.1010 POEC_{it} - 0.011 INSTOWN_{it} + 0.208 ENVAUD_{it} + 0.204 PROF_{it}$$

From table 4, the relationship between board independence and environmental disclosure quality of listed sensitive firms is positive, as indicated by the coefficient of 0.325, which is statistically significant at 1% (from the P-value of 0.000). This indicates board independence has a significant positive relationship with environmental disclosure quality among environmental sensitive firms in Nigeria. This is because independent directors strengthen the board's ability to effectively monitor the actions and decisions of management in meeting the needs and expectations of the stakeholders. They serve as a monitoring device that encourages and pressurizes management to increase the reliability and credibility of environmental information reported. The results of this study were consistent with the results of (Baalouch et al., 2019; Fortunella & Hadiprajitno, 2015; Iatridis, 2013; Rupley et al., 2012) that independent directors provide sufficient pressure to disclose environmental

information, but dissimilar to those of (Ahmad & Nosakhare, 2015; Akbas, 2016; Emmanuel et al., 2018; Rabi, 2019; Trireksani & Djajadikerta, 2016). These results also support the stakeholder's theory. On this basis, we therefore support the alternate hypothesis, which states that board independence has a significant positive impact on environmental disclosure quality of listed environmental sensitive firms in Nigeria.

The result in respect of the presence of the environmental committee, as shown in Table 4, has a Z-value of 6.05, a coefficient value of 0.101 and a p-value of 0.000, which is significant at 1%. This implies that having a committee saddled with environmental responsibility will improve the quality of environmental information disclosed among environmental sensitive firms in Nigeria. This is because environmental committee members would pressurize management to show transparency by ensuring that the company follows well-established environmental monitoring standards and recommendations. Thus, environmental committees are more inclined to improve environmental quality. The findings of this study is supported by the stakeholder theory and in line with those of Liao et al. (2014), Odoemelam & Okafor (2018), and Peters & Romi (2012). However, it contradicts the findings of (Baalouch et al., 2019; Masud et al., 2018; Rupley et al., 2012). On this basis, we therefore support the alternate hypothesis, which states that the presence of an environmental committee has a significant positive impact on the environmental disclosure quality of listed environmental-sensitive firms in Nigeria.

Institutional ownership has a Z-value of -0.57, a coefficient value of -0.011 and a probability value of 0.569, which is insignificant. This shows that institutional ownership has no significant effect on environmental disclosure quality among environmental sensitive firms in Nigeria. The nature of an insignificant relationship may be explained by institutional investors' large shareholding in the sampled firms. As key power players, they have access and can obtain necessary information from alternate channels rather than corporate disclosure. This finding of the study is in line with the studies of (Ismail et al., 2018; Mohamed & Faouzi, 2014). However, the result does not support the stakeholder theory and it is in contrast to the findings of (Chang & Zhang, 2015; Ezhilarasi & Kabra, 2017; Habbash, 2015; Iatridis, 2013; Naseer & Rashid, 2018; Rupley et al., 2012). On this basis, we therefore reject the alternate hypothesis, which states that institutional ownership has a significant positive impact on the environmental disclosure quality of listed environmental-sensitive firms in Nigeria.

With respect to the environmental audit, it has a Z-value of 16.67, a coefficient value of 0.208 and a probability value of 0.000, which is significant. This means that environmental audit has a significant positive impact on the quality of environmental disclosure of environmentally sensitive companies. This means that firms that conduct environmental audits provide their stakeholders with higher-quality environmental information. The result indicates that third-party verification of environmental results has a huge impact on the quality of environmental data. This may be because environmental audit reduces the agency's monitoring costs since the firm follows the environmental standards and recommendations established by the environmental rating agency. This finding supports the proposition of stakeholder theory and the findings of Lee et al. (2017) and Vogt et al. (2017). On this basis, we therefore support the alternate hypothesis, which states that environmental audit has a significant positive impact on environmental disclosure quality of listed environmental sensitive firms in Nigeria.

Finally, the relationship between the control variable, profitability and environmental disclosure quality was also examined. It was discovered that the return on assets as a measure of firm profitability has a significant and positive impact on the quality of environmental disclosure. As a result, the enterprise's interest in environmental disclosure grows in line with the enterprise's rising profitability. This is because firms with high profitability will place more attention on environmental responsibility to attain and preserve the same success in the future.

The growing global concern for the environment, as well as the resulting scholarly engagement in studying corporate environmental practices, has driven the current study's genesis. This study is aimed at establishing the impact of monitoring mechanisms on environmental disclosure quality. This is because there are limited studies in this area globally and specifically in Nigeria. This study argued that the management decision to disclose environmental information is likely related to the multi-stakeholder influencing factors, considering a diverse range of monitoring mechanisms that encourage management to act in the interest of stakeholders. The variables of monitoring mechanisms examined were board independence, the presence of an environmental committee, institutional ownership, and finally environmental audit.

Content analysis was utilized on the annual reports of thirty-nine (46) listed environmental sensitive firms in Nigeria from 2012-2018. Our result provides evidence of a significant relationship between environmental disclosure quality and most monitoring mechanisms. Specifically, a higher quality of environmental disclosure is correlated with a higher percentage of independent non-executive directors on the board, the existence of a board-level environmental committee, and undertaking an environmental audit. While institutional ownership shows a significant association with environmental disclosure quality.

This study contributes to the increasing literature on environmental disclosure quality and gives more understanding of its determinants. To be precise, it contributes to a better comprehension of the potential value of the monitoring mechanisms. Policy implications can also be gleaned from the findings of the study. In this context, governance code regulators should emphasize specific minimum characteristics of governance monitoring mechanisms like board independency and encourage establishment of environmental committees at board level as they aid in enhancing transparency of environmental information disclosed. Moreover, environmental regulators such as the Ministry of Environment should encourage and consider making a policy mandating environmental audits for listed firms in Nigeria.

CONCLUSION

In conclusion, the overall findings reinforce the study's general claim that the governance monitoring mechanism plays a significant role in determining how firms resolve the agency problems and respond to the needs and concerns of the different stakeholder groups and, consequently, in determining the quality of environmental information disclosed in the annual reports. However, the insignificance of some monitoring mechanisms suggests the need for some consideration to be given either in the revision of the principles of the Corporate Governance Code or in their enforcement. Accordingly, this research concludes that the quality of corporate environmental disclosure disclosed to various stakeholders is increased when managers' opportunism is controlled by monitoring mechanisms. The study suffered from some limitations, among which only 46 environmental-sensitive listed companies are considered due to availability of data as at the time of this study. Secondly, this investigation solely focused on the content analysis of the information presented in annual reports. Thus, some firms may participate in some environmental action and disclose it in other ways than annual reports, such as magazines, newspapers, or corporate websites. Future research may consider using these other ways to collect information other than annual reports. Despite these limitations, however, the value of the study can be said to be observed as the study use of rigorous methods of measurement and proper establishment of the findings and adequate observations are considered. Therefore, the study concludes that the limitations could not hinder the validation of this study but can only be improved if those limitations are considered.

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