

The Value Relevance of Environmental Responsibility Information Disclosure in Nigeria

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Abstract: Nigeria firms are facing the challenge of discharging sound environmental practices and disclosing environmental information in order to meet up with public concerns regarding these issues. This study basically investigates the association between environmental responsibility information disclosure and financial performance. To achieve the objective of this study, eighteen listed firms were randomly selected from four environmentally sensitive industries for the year 2005 – 2009. Using the ordinary least square and logistic regression to test the research proposition, the study observed that there is a positive significant association between environmental responsibility and financial performance and vice versa. Additionally, foreign directors were found to play significant roles in these interactions. The paper therefore calls for an embrace of sound environmental policies and disclosure practices by Nigerian firms and also recommends further research into associated explanatory factors and disclosure practices.

Keywords: social responsibility; environmental impact; sustainability; firms

JEL Classification: M14; Q5; Q2; L1

1. Introduction

Corporate Social Responsibility (CSR) is a burning issue in the Nigerian society. It is a contemporary issue with several complexities and heated concerns from stakeholders comprising government, corporate organizations and the public. Corporations in Nigeria are struggling with a new role which is meeting the needs of the present generation without compromising the ability of the future generation to meet their own needs. Organizations are being called upon to take responsibility for the ways their operations impact societies and the natural environment. According to Van Marrewijk and Werre (2003), corporations globally are being asked to demonstrate the inclusion of environmental concerns in business operations and in interactions with stakeholders. Firms can no longer ignore the problems of the society in which they operate. This has thus instituted a social

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contract between organizations and the environment thereby making environmental responsibility a corporate dictate. Management is therefore saddled with the responsibility of incorporating the effects of operational activities on the environment in decision making. The environmental aspect of social responsibility has engendered considerable interest in recent years. However, while environmental performance and its consequent reporting have been mainstreamed into business management in the developed world, such progress is less visible in Nigeria as in other countries in Africa (Adekoya and Ekpenyong, 2009). A conscious effort is required to make Nigerian firms more responsive to environmental responsibility issues. Regardless of the efforts made in the country since the 1992 Rio conference to address environmental issues, environmental degradation has remained the greatest problems in Nigeria (Uwuigbe, 2011). Oil spills, emissions, pollutions, etc. have been the trademark of most firms operating therein without recourse to alleviating the damaging effects of such discharges. This could probably be due to the associated financial demand of such environmentally responsible actions. However, the environment is becoming a much more urgent social and economic problem. The accountant as the prime custodian of economic growth can no longer shut his eyes to the effect of environmental issues on accounting, business management, disclosure systems and ultimately bottom line (financial) effects. Accordingly, environmental reporting has been considered as an important issue to accountants. The goal of environmental reporting is, on one hand, to inform stakeholders of the environmental impacts an organization's activities have and of any initiatives that have been undertaken to mitigate the impacts (Gray et al, 1996) and on the other hand to maintain a socially responsible image (Lindblom, 1993). Assuming such reduction of stakeholder's information asymmetry and development of socially responsible image are attained through environmental reporting; the question then arises: Do these outcomes have a ripple effect on the bottom line? In other words, does the substantial reporting of environmental responsibilities and impacts have a tangible effect on the financial performance of reporting firms? This study is thus poised to providing answers.

2. Theoretical Underpinnings and Hypotheses Development

This study draws heavily from the legitimacy theory in assessing the impact of environmental reporting on the financial performance of Nigerian firms. Lindblom (1993) defines legitimacy as a 'condition or a status which exists when an entity's value system is congruent with the value system of the larger social system of which the entity is a part. Legitimacy is not conferred upon an organization simply based on the number of successful economic transactions secured or whether its practices/ activities are legal (Dowling and Pfeffer, 1975; Lindblom, 1993). Instead it is determined by the values prevalent in a society which are largely time and place dependent (Suchman, 1995). It is the most widely used theory in explaining

corporate environmental disclosure (Deegan, 2002; Owen, 2008). The study is anchored on the techno centric and ecocentric theories of environment. O' Riordan (1997), a pioneer of the technocentric theory emphasizes the need for environmentally friendly products and technology. On the other hand, the ecocentric theory by Pepper (1986) and Dobson (1990) stresses the need for organizations to produce a balanced report that includes reporting on the environmental impacts of business' activities. Such balanced report would include environmental management, environmental impact, and recycling, waste reduction strategies, to mention a few. These theories are enveloped in the principle of sustainable development which seeks to achieve environmental equity while pursuing economic gain. The idea is that if a firm must achieve its economic objective, it must not ignore the environmental aspect of the goal of sustainable development. At this point it is thus reasonable to hypothesize in null form that:-

H₁- Environmental responsibility information disclosure has no significant positive impact on financial performance.

However, prior research has demonstrated that there exists a reverse causality concern between environmental and firm performance (Mc Guire et al, 1989; Cho and Pucik, 2005). That is, a firm's financial performance contributes to its social environmental responsibility involvement. To assess this reverse- causality bias, the hypothesis is re-examined as follows:

H₂. Financial performance has no significant impact on environmental responsibility information disclosure.

Extant literature offers an existing relationship between board demographic diversity and performance (Zahra and Pearce, 1989; Finkelstein and Hambrick, 1996; and Petersen, 2000). This study focuses on nationality diversity and thus examines its impact on both financial and environmental performance. Thus we hypothesize that:

H₃. Foreign directors have no impact on either financial or environmental performance.

2.1. Prior Research

Prior research has been contradictory on the relationship between financial and environmental performance. There are both theoretical and empirical reasons for this lack of consensus. Complying with environmental regulation is costly (Cohen at all, 1997) and might hurt a firm's bottom line. On the other hand a firm that is efficient at pollution control and environmental strategies might also be efficient at production. Moreover, a firm that does well financially can afford to spend more of its resources on cleaner technologies (Vance, 1975). According to Schmidheiny

(1992), “The degree to which a company is viewed as being a positive or negative participant in solving sustainability issues will determine to a very great degree their long term business visibility”.

Results from earlier studies have been mixed, see Vance (1975), Bowman and Haire (1975), Cochran and Wood (1984), and McGuire, Sundgren and Schneewis (1981). White (1991) tracked the performance of a group of six mutual funds that employ environmental responsibility screening criteria and found that for the one year period ending, 1991, the funds slightly underperformed the S&P 500 index on both a nominal and risk adjusted basis. However, this is not evidence if firms which are socially and environmentally responsible underperform financially.

Bragdon and Marlin (1972) and Spicer (1978) found significant correlations between corporate environmental performance measures in the pulp and paper industry and firm financial performance. However, Chen and Metcalf (1980) using the same data argued that environmental performance was not related to financial performance when differences in firm size were not taken into account. Erfle and Fratantuono (1992) analyzed corporate environmental performance’s reputation indices of environmental performance which classified forty nine (49) companies as high, medium or low environmental performers based on information about regulatory compliance or environmental programs such as recycling or waste reduction programs. They concluded that environmental performance for these firms is positive and significantly correlated with return on assets, return on equity and return on sales. Lars and Henrik (2005) investigated the effect of environmental information on the market value of listed companies in Sweden using a residual income valuation model. The results show that environmental responsibility as disclosed by sampled companies has value relevance, since it is expected to affect the future earnings of the listed companies. Their finding has implications for firms that pollute the environment. Their future solvency may be eroded with gradual depletion in earnings. Clause and Pall (2008) studies the effect of environment investment on investment decisions. The results suggest that environmental information disclosure influences investment allocation decisions. This finding implies that firms that ignore their environmental responsibility might experience eventual crashes on their stock price if their investors are rational in considering the future value of the firm based on its current state of environmental responsibility. Lankoski (2002) in his doctoral dissertation demonstrates that a correlation exists between environmental performance and economic performance at the firm level. On the other hand, Mackinlay (1997) finds no strong relationship between economic performance and corporate social and environmental investment. Meanwhile, Ngwakwe (2009) in his study of sixty Nigerian manufacturing firms observed that investment in social and environmental responsibilities are related to improved return on total assets.

3. Methodology

This study uses time series cross-sectional data in explaining the possible convergence between environmental responsibility reporting and financial performance.

An approach to measuring corporate social responsibility initiatives is to rely on the amount of responsibility investment and concerns disclosed in financial annual reports to shareholders (Oba, 2009). More so, annual report is the principal way in which shareholders and other keep themselves informed in the activities of the company (Holmes et al, 2004). In this light, we assess environmental responsibility to the extent of its disclosure in annual reports for the study period 2005 – 2009.

Population and Sample

The population of the study is made of quoted firms in environmentally sensitive industries: - Chemical and paints, construction, conglomerates and building materials. These industries have been selected because of their environmental sensitivity, high and direct contribution to environmental pollution and degradation (Halme and Huse, 1997; Haslinda et al, 2004). A sample of eighteen firms has been randomly selected from these four industries.

Measurement of Variables

Content analysis is adopted to measure the quality of environmental information disclosure and then separate environmentally responsible firms from environmentally irresponsible firms. A corporate environmental disclosure index of twelve (12) established environmental checklist instruments is developed. We employ a dichotomous rating system of assigning ‘1’ if item is disclosed and ‘0’ if it is not disclosed. A firm could score a maximum of 12 points and a minimum of 0. Firms that score a minimum of fifty percent of the maximum environmental scores are considered as “environmentally responsible” while those that score less than fifty percent are regarded as “environmentally irresponsible”. We use the absolute number of foreign directors in the board as a measure for foreign directors while financial performance is measured as the return on capital employed. This measure is employed because of the popularity it has enjoyed over the years and because of the way it has evolved considerably over the years.

Models Specification

To test for the first hypothesis, the model using the ordinary least squares regression is specified as follows: -

$$\text{Perf} = B_0 + B_1 \text{ENVR} + B_2 \text{FOREIGN} + \text{Uit} \quad (1)$$

Where:

Perf = Financial performance as measured by return on capital employed

ENVR = Environmental Responsibility Disclosure Score

FOREIGN = Absolute number of foreign directors on the board

To test for the second hypothesis, the model using logistic regression is specified as follows:

$$\text{Log} (P/1-P) = B_0 + B_1 \text{ Perf} + B_2 \text{ Foreign} + \text{Uit} \quad (2)$$

Where:

P = Probabilities that companies are environmentally responsible

1-P = Probabilities that companies are environmentally irresponsible.

Perf = Financial Performance

Foreign= Number of foreign directors in the board.

4. Results and Discussions

Model 1

A normality test was performed to determine that the dependent variable was normally distributed. The Kolmogorov–Smirnov and Shapiro-wilk test of normality was conducted. However, emphasis was placed on the Shapiro-wilk test since the sample is not asymptotic.

Table 1. Test of Normality

	Kolmogorov – Smirnov			Shapiro-Wilk		
	Statistic	df	Sig	Statistic	df	Sig
Perf	0.250	90	0.000	0.528	90	0.000

a. Lilliefors significance correction

The above named test of normality revealed that the financial performance variable was not normally distributed with the significant values less than 0.05.

In general, significant values less than 0.05 is considered as good evidence that the data set is not normally distributed. A violation of the assumption of normality invalidates many other statistics like the t-tests results and related statistics (Brown, 1997). To treat such non-normality, a logarithmic (base 10) transformation was performed.

$$\text{Perf} = \text{Log}_{10} \text{ Perf}$$

Table 2. Tests of Normality after logarithmic transformation

	Kolmogorov – Smirnov			Shapiro-Wilk		
	Statistic	df	Sig	Statistic	df	Sig
Perf	.097	78	.069	.978	78	.196

a. Lilliefors significance correction

The normality test above revealed that the transformed measures produce normal distribution with significant values well above 0.05

Table 3. Correlations

	ENVR	Foreign	Perf
ENVR Pearson Correlation	1	-0.200*	0.247*
Sig (1-tailed)		0.029	0.015
N	90	90	90
Foreign Pearson Correlation	-0.200*	1	0.242*
Sig. (1-tailed)	0.029		0.016
N	90	90	78
Perf Pearson Correlation	0.247*	0.242*	1
Sig (1-tailed)	0.015	0.016	
N	78	78	78

*Correlation is significant as the 0.05 level (1-tailed)

Table 4. Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the estimate	Durbin Watson
1	0.402 ^a	0.162	0.139	0.36171	1.316

a. Predictors: (Constant, Foreign, ENVR)

b. Dependent Variable: Perf

Table 5. ANOVA^b

Model	Sum of Squares	Df	Mean Square	F	Sig
Regression	1.892	2	0.946	7.231	0.001a
Residence	9.812	75	0.131		
Total	11.705	77			

a. Predictors (Constant, Foreign, ENVR)

b. Dependent Variable: Perf

Table 6. Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig
	B	Std.error	Beta		
(Constant)	-1.136	0.108		-10.483	0.000
ENVR	.048	0.016	0.333	3.037	0.003
Foreign	.056	0.019	0.328	2.999	0.004

*Correlation is significant as the 0.05 level (1-tailed)

Empirical findings from the Pearson correlation analysis shows that multicollinearity does not pose a concern. According to Cooper and Schindler (2003), serious multicollinearity problems exist when the bivariate correlation score is 0.80 or greater. Although there are significant relationships between the explanatory variables, the highest correlation coefficient at 0.247 indicates that multicollinearity is absent. The model summary in table 4 indicates that adjusted R square stood at 0.139. In other words, 13.9% of the variation in financial performance can be explained by changes in environmental responsibility and number of foreign directors. This score is a low one but is considerable, since there are a plethora of explanatory variables that go to predict performance. The Durbin Watson statistic, a measure of detecting the presence or absence of auto correlation stood at 1.316. Mirza et al (2012) demonstrate that if the value of Durbin Watson is less than 2, there is an indication of the absence of serial correlation in the model. Along this line, our Durbin Watson statistic signals the absence of auto correlation.

In the above table 6, the estimates and ‘p’ values reveal the positive significant impact both explanatory variables have on financial performance. These findings seem to align with results on investigations by previous scholars that the demographic diversity of a board impacts positively on financial performance by increasing decision making capacity (Erhardt et al, 2003). It also lends support to the findings of Ngwakwe (2009) that sustainable business practices are significantly related with firm performance. The F statistics at 7.231 with a P value of 0.001 strongly suggests the overall significance of the model.

Model 2

Model 2 is geared at addressing the second hypothesis. A logistic regression is employed to test the relationship between the dependent variable- environmental responsibility and the independent variables – financial performance and foreign directors. The use of this analysis is considered appropriate for this model since the dependent variable is a dummy variable (Field, 2000; Gujarati and Porter, 2009). ‘1’ is assigned to companies that are ‘environmentally responsible’ while ‘0’ for companies that are not environmentally responsible. The results are as follows: -

Table 7. Correlation Matrix

	Foreign	Perf
Foreign Pearson Correlation	1	0.242*
sig (2 tailed)		0.033
N	90	78
Perf Pearson Correlation	0.242*	1
sig (2 tailed)	0.033	
N	78	78

*Correlation in significant at the 0.05 level (2 tailed)

Table 8. Model Summary

Step	-2log Likelihood	Cox and Snell R Square	Nagelkerke R Square
1	81.005 ^a	.140	.202

a. Estimation terminated at iteration number 5 because parameter estimates changed by less than 0.001.

Table 9. Hosmer and Lemeshow Test

Step	Chi-Square	Df	Sig
1	7.762	8	.457

Table 10. Variables in the equation

	B	S.E	Wald	Df	Sig	Exp (B)
Step 1 ^a Perf	2.240	.825	7.365	1	.007	9.389
Foreign	-.280	.131	4.535	1	.003	.756
Constant	1.336	.751	3.161	1	.075	3.803

An assessment of the correlation matrix shows that multicollinearity does not pose a concern in the data with the highest correlation coefficient at 0.242. According to Tabachnick and Fidell (2001), the normality test is not necessary for logistic regression since the test can be run even when the data is not normally distributed.

In order to test for the validity of the model, the Hosmer Lemeshow goodness of fit test is conducted. The Hosmer Lemeshow goodness of fit statistics is obtained by calculating the Pearson chi square statistics from the 2xg table of observed and expected frequencies. Where g is the number of groups. The statistic is written: -

$$X^2_{HL} = \sum_{i=1}^g \frac{(O_i - N_i \pi_i)^2}{N_i \pi_i (1 - \pi_i)}$$

Where N is the total frequency of subjects in the *i*th group, *o* is the total frequency of event outcomes in the *i*th group, and π_i is the average estimated probability of an event outcome for the *i*th group. Large values of X^2_{HL} (and small p-values) indicate a lack of fit of the model. The results of the goodness of fit test X^2 are shown in table 9.

Hosmer Lemeshow statistic 7.762 (p-value = 0.457). This statistic indicates that the logistic model provides a good fit to the data and that the estimates of the variables' parameters in the model are meaningful. The Pseudo R square (Cox and Snell and Nagelkerke) are attempts to quantify the proportions of explained variation in the dependent variable. The Cox and Snell measures are usually <1.0 while the Nagelkerke's measure ranges from 0 to 1 and values are normally higher than Cox and Snell. This measure is the most reported R^2 for logistic regression (Norusis, 2005). The higher the values, the better the model fit.

The Cox and Snell R square at 0.14 and Nagelkerke R square at 0.20 indicate a moderate relationship between the predictors and the prediction. In other words, 14% and 20% of the variation in the regressand is explained by the logistic model. This is quite an acceptable fit since there are other factors that could explain environmental responsibility other than financial performance and foreign directors as employed in this study.

The Wald criterion demonstrated that both foreign directors and financial performance made significant contribution to prediction with $P = .033$ and $.007$ respectively. In other words, both variables are significant predictors of environmental responsibility. These findings go to corroborate the reverse-causality arguments that environmental performance impacts on financial performance and vice versa. It lends supports to the investigations of Mc Guire et al (1989) and Cho and Pucik (2005) that a firm's financial performance contributes to its social responsibility. The findings go to affirm our initial hypothesis that board demographic diversity to the extent of foreign directors in the board would significantly improve environmental responsibility.

5. Conclusion and Recommendations

The purpose of the current study is to examine the extent to which environmental responsibility and its consequent reporting associates with financial performance and demographic board diversity. The reverse causality bias was also considered. The study found that there is a positive and significant relationship between the

quality of environmental responsibility information disclosure and financial performance and vice versa. The results indicate that foreign directors in the board are also instrumental to improved financial and environment performance/reporting. This certainly has policy implications; within the Nigeria business setting, an adherence to sound environmental policies, practices and information disclosure influences the bottom line of firms, thus providing justification to the objective of this study. Additionally, it is necessary to highlight that the deductions of this paper show the practical significance of having a reasonable mix of foreigners in the board since they go to bring in experience and competitive advantage to the table.

The findings therefore go to inform management of the need to seriously consider the potential advantages of embracing sound environmental policies and disclosure practices and also benefits accruing from the maintenance of a demographically diversified board. The results of this study are also key to academics in their endless pursuits of possible interactions between social, environmental and economic phenomena. A continued research in this line based on these variables and other significant explanatory factors would be essential to offer a generalized picture.

6. References

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Appendix

Appendix 1. Selected Firms and Sectors

S/N	SAMPLE FIRMS	INDUSTRY
1	CAP Nig Plc	Chemical and Paints
2	Berger Paints	Chemical and Paints
3	Cappa D' Alberto	Construction
4	A.G Leventis	Conglomerates
5	Cement Company of Northern Nigeria	Building Materials
6	Chellarams	Conglomerates
7	DN Meyer	Chemical and Paints
8	IPWA	Chemical and Paints
9	John Holt	Conglomerates
10	Nig German Chemicals	Chemical and Paints
11	Nigeria Ropes Plc	Building Materials

12	Premier Paints	Chemical and Paints
13	PZ Cussons	Conglomerates
14	Unilever	Conglomerates
15	UTC	Conglomerates
16	WAPCO	Building Materials
17	Benue Cement	Building Materials
18	UAC	Conglomerates

Appendix 2. Twelve Environmental Checklist Instruments

1. Compliance with environmental laws/regulations.
2. Environmental policies.
3. Environmental audit.
4. Environmental committee in board/department for pollution.
5. Environmental research and development.
6. Environmental performance section in annual report.
7. Recycling waste products, waste management, materials, water and energy conservation.
8. Awards for environmental vision and strategy.
9. Staff diversity of physically disabled, employment of women, and multi-ethnicity.
10. Staff protection-work place safety and security, information on accidents at workplace.
11. Staff training, career development and employees' welfare.
12. Identification of environmental impacts of products/services.