The Effect of Board Size and Board Composition on Firms Corporate Environmental Disclosure: A Study of Selected Firms in Nigeria

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Abstract: Environmental problems have become major headlines due to the negative effects they bring to the stability of the ecosystem. Thus, the increased awareness of social responsibility or, specifically, environmental concern is now a challenge facing the corporate world. Hence this study tests whether board size and board composition have any association with the level of firms' corporate environmental disclosure in annual reports. To achieve the objective of this study, a total of 40 listed firms on the floor of the Nigerian stock exchange market were used. Also, the study critically developed and utilized the Kinder Lydenberg Domini (KLD rating scheme to analyze the level of corporate environmental disclosure made by firms in their annual reports for the period 2006-2010. In addition, the simple regression analysis was used to test the research propositions as stated in the study. However, empirical findings from the study reveal that while board size has a significant negative relationship with the level of corporate environmental disclosure; board composition on the other hand has a significant positive relationship with the level of firms' corporate environmental disclosure in the annual report.

Keywords: environmental disclosure; stakeholder theory; agency theory; resource dependency theory

1. Introduction

Corporate environmental disclosures has become more salient to board members as thinking at the top of organizations shifts toward more broadly defined performance than just the bottom line. Environmental issues are an important aspect of corporate social responsibility, especially for companies that are responsible for high carbon dioxide and chlorofluorocarbons emissions. Hence,

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corporate decision makers are increasingly called upon to consider the broader environmental impact of their business decisions. Boards may be moved to address corporate environmental issues for political reasons (Bendell & Kearins, 2005), in response to environmental legislation, or to preempt environmental litigation.

Although there has been an interest in the relationship between board composition and corporate social responsibility, less is known about how board composition affects corporate environmental disclosures (Ibrahim, Howard & Angelidis, 2003). With the growing competition of globalization, strategic decision makers have been faced with the competing interests of external and internal stakeholders such as greater diversity in corporate governance, undertaking more investments in corporate social responsibility and maximizing financial performance. As a result, strategic decision makers today must not only increase their financial performance, but also satisfy the increasing expectations of customers, suppliers and society as a whole. Since these developments have made strategic decision making process more complex, it is necessary to gain a better understanding of how companies can improve their effectiveness to serve both of these goals.

The concept of corporate environmental reporting was introduced in the early 1990s and since then it has rapidly gained acceptance as the means of communicating and demonstrating a company's commitment to improving corporate environmental performance to its stakeholders (ACCA 2004). According to Gray, Javad, Power & Sinclair (2001), the annual report have provided a plate form for a growing number of companies in combining their environmental efforts with their economic efforts in demonstrating their accountability for environmental stewardship. In developed countries like Netherlands, Japan, United States, United Kingdom and France concerns on the environment has been voiced out by the government and companies operating in these are encouraged to provide information on the impact of their economic activities on the environment in their annual reports. However, this is not the same in most developing countries where there have been series of social unrest and cases of kidnap arising from the youth of the host communities where most of these multinational corporations are domiciled due to their negative environmental impacts on the environment. To this end therefore, this study will attempt to examine the effects of board size and board composition on the level of corporate environmental disclosures among listed firms in Nigeria. In the light of the aforementioned objective, the remaining part of this study is organized as follows: following the introductory section of this study is the literature review and research hypotheses. This is closely followed by the research methodology and the empirical findings.

Scope of Study

This study basically investigates the effects of board size and board composition on the level of corporate environmental disclosures among listed firms in Nigeria. To achieve this objective, the corporate annual reports for the period 2006-2010 were analyzed. In addition, the study considered a total of 40 listed firms in the Nigerian stock exchange market. The choice of these industries arises based on their direct or indirect contribution to environmental pollution.

2. Literature Review

Corporate Governance and Corporate Environmental Disclosure

The scandals of high profile companies such as Enron, WorldCom, Tyco and some other firms in developed economies, have raised the question of the effectiveness of monitoring mechanisms in organizations (Raphaelson & Wahlen, 2004). It is therefore believed that the focus should now be more on improving the internal mechanism, which includes boards, particularly to increase shareholder's insight and influence on corporate behaviour in organizations (Kolk, 2006). Apart from the traditional approach to accountability in the context of corporate governance, corporate environmental reporting has also emerged, even though it is mostly on a voluntary basis concerning the societal and environmental implications (Kolk, 2006). Disclosure on environmental issues has the potential to increase shareholder's wealth and can be regarded as one of the elements of good corporate governance (Kassinis & Vafeas, 2002). Nonetheless, the effectiveness of regulation on environmental risk, which emphasizes awareness and empowerment of shareholders, essentially depends on the quality of the corporate environmental disclosure (Sinclair-Desgané & Gozlan, 2002). Consequently, the proper reporting of corporate environmental performance is now gaining significant interest in the business community and is being debated within the accounting profession and authoritative bodies (Rezaee, Szendi & Aggarwal 1995). Environmental costs and obligations will continue to grow in line with the consciousness of society, government regulation and corporations towards environmental concerns (Rezaee et. al, 1995). Therefore, as the scope of potential users may cover both internal and external stakeholders, there must be an assurance on the transparency and reliability of the information disclosed. Sustainability, specifically, the environmental concern and corporate governance need to be converged for better reporting. This situation has also been closely linked to the recognition that good corporate governance requires consideration of the impact a corporation has on the wider community and the environment (Andrew, 2003). More specifically, when considering the broader conception of corporate governance, it is clear that good governance entails responsibility and due regard to the wishes of all key stakeholders and ensuring companies are answerable to all stakeholders (Dunlop,

1998). There is thus a clear overlap between this conception of corporate governance and the stakeholder conception of corporate environmental disclosure that considers business as responsible vis-à-vis a complex web of interrelated stakeholders that sustain and add value to the firm (Freeman, 1984). Conversely, various corporate environmental disclosure scholars emphasize the need to uphold the highest standards of governance internally, particularly in discussions of the internal dimension of corporate environmental disclosure (Perrini, Pogutz & Tencati, 2006). However, despite the importance of corporate governance and its potential influence on companies to engage in environmental reporting, research in this area most especially in developing economies are still lacking.

Theories of Corporate Governance

Theories of Corporate Governance go back to as early as 1970's where Adam Smith in his land mark work Wealth of Nations incorporated some distinction about management and ownership. Since then certain theories were developed, Agency theory, Stewardship theory, Stakeholder theory and Resource dependency theory are some of those. According to agency theory, when there is separation of management and ownership, the manager seeks to act in self interest which is not always in the best interests of the owner and departs from those required to maximize the shareholder returns. This agency problem can be set out in two different forms known as adverse selection and moral hazard (Eisenhardt, 1989). Adverse selection can occur if the agent misrepresents his ability to perform the functions assigned and gets chosen as an agent. Moral hazard occurs if the chosen agent shirks the responsibilities or underperforms due to lack of sufficient dedication to the assigned duties. Such underperformance by an agent, even if acting in the best interest of the principal, will lead to a residual cost to the principal (Jensen & Meckling, 1976). These costs resulting from sub-optimal performance by agents are termed as agency costs. Other theoretical perspectives such as stewardship, resource dependency and stakeholder theories also enhance our understanding of the role of boards (Hillman & Dalziel, 2003). Stewardship theory views agents as stewards who manage their firm responsibly to improve the performance of the firm (Muth & Donaldson, 1998). Resource dependency theory considers agents as a resource since they would provide social and business networks and influence the environment in favour of their firm (Pearce & Zahra 1992). The resource dependence theory further suggests that the selection of outside board members will provide more resources, information, and legitimacy to the board (Johnson, Daily & Ellstrand, 1996). The stakeholder theory on the other hand expects boards to take into account the needs of an increasing number of different stakeholder groups, including interest groups linked to social, environmental and ethical considerations (Freeman, 1984; Freeman, Wicks, &

Parmar 2004). Appreciation of different theoretical perspectives will give insights into the contribution of boards to corporate environmental performance.

Prior Studies and Development of Hypothesis

The earliest literature on board size is by (Lipton & Lorch, 1992 and Jensen, 1993). Jensen (1993) argued that the preference for smaller board size stems from technological and organizational change which ultimately leads to cost cutting and downsizing. Hermalin & Weisbach (2003) argued the possibility that larger boards can be less effective than small boards. When boards consist of too many members agency problems may increase, as some directors may tag along as free-riders. Chaganti, Mahajan, Sharma (1985) also claimed that smaller boards are manageable and more often play a role as a controlling function whereas larger boards may not be able to function effectively as the board leaves the management relatively free. On the other hand, very small boards lack the advantage of having the spread of expert advice and opinion around the table that is found in larger boards. Furthermore, larger boards are more likely to be associated with an increase in board diversity in terms of experience, skills, gender and nationality (Dalton & Dalton, 2005). A larger board size may bring a greater number of directors with experience that may represent a multitude of values on the board (Halme & Huse, 1997).

Published studies that linked board size and voluntary disclosure of corporate environmental information are rather lacking. Besides Halme & Huse (1997), which found no significant association between the number of board members and the tendency for companies to report on the environment, and Cheng & Courtenay (2004), which found a similar result for voluntary disclosure (in which environmental information is a part of it); to the authors best knowledge, there is a complete dearth of literature in this area of accounting especially in developing countries. To this end therefore, this study intends to fill this gap in literature by examining the effects of board size and board composition on the level of corporate environmental disclosure among listed firms in Nigeria.

3. Research Hypothesis

With the dearth of literature in this area of accounting, the following hypotheses are stated below in the null form.

H_1: *there is no significant relationship between board size and the level of corporate environmental disclosure among listed firms in Nigerian.*

H_2: *there is no significant relationship between board composition and the level of corporate environmental disclosure among listed firms in Nigerian.*

4. Research Methodology

To achieve the objectives of this research, the study has adopted the use of corporate annual reports of listed firms as our main source of data. This is due to the fact that annual reports are readily available and accessible. Moreso, Gray, Kouhy, & Lavers (1995) opined that annual reports should be used in determing the level of environmental disclosures because such information is produced regularly and will be in the public domain. The annual reports for period 2006-2010 were used due to the increased level of awareness and pressure from stakeholders within these periods. The population for this study is comprised of all firms listed on the floor of the Nigerian Stock Exchange as at 31 December 2010. However, the selected sample size for this study includes listed firms both in the financial and non-financial sectors of the economy which sums up to a total of 40 firms. This represents 20% percent of the total population and, thus, is consistent with the minimum sample size as suggested by either the conventional sample size table proposed by Krejcie & Morgan (1970) or the modern online sample size calculator by Raosoft, Inc. In addition, the study further adopts the use of content analysis method of data collection in eliciting data from the annual report. This is due to the fact that the content analysis method is the most commonly used method of measuring corporate environmental disclosure in annual reports (Milne & Adler, 1999). Also, it allows corporate environmental information to be systematically classified and compared. However, this study attempts to measure the environmental disclosure in terms of themes and evidence, using Hackston & Milne's (1996) operational definitions and framework for corporate environmental disclosure index. Theme is measured in the categories of environment, energy, product, community, and employee health. Evidence is measured in the categories of monetary quantitative and non-monetary quantitative disclosures. The corporate environmental disclosure framework contained 28 attributes. Consequently, a firm could score a maximum of 28 points and a minimum of 0. The formula for calculating the reporting scores by using the environmental disclosure index (attributes) is expressed in a functional form:

$$RS = \sum_{i=1}^{28} d_i$$

Where:

RS = Reporting Score

d_i = 1 if the item is reported and 0 if the item is not reported

i = 1, 2, 3... 28.

Also, in order to measure the relationships between the independent (board size and board composition) and the dependent (corporate environmental disclosure) variables; the ordinary least square regression model was adopted. Furthermore, while the board size in this study was proxied by the total number of members on the board of directors (BDSIZE); board composition on the other hand was proxied by the proportion on non-executive directors (NED).

Model Specification

$CED_t = f(BDSIZE_t, NED_t, U_t$ ..... (1)

This can be written in explicit form as:

$CED_t = \beta_0 + \beta_1 BDSIZE_t + \beta_2 NED_t + U_t$ ..... (2)

Where:

CED = Corporate environmental disclosure.

BDSIZE = total number of members on the board of directors.

NED = the proportion on non-executive directors on the board.

U = Stochastic or disturbance term.

t = Time dimension of the Variables

β_0 = Constant or Intercept.

β_{1-2} = Coefficients to be estimated or the Coefficients of slope parameters.

Table 1. Proxies and Predicted Signs for Explanatory Variables

Variable	Predicted Sign	Type	Data Type	Scale
BDSIZE	-	Independent	Continuous	Number of board members (n)
NED	+	Independent	Continuous	Proportion of non-executive directors on the board.

5. Discussion of Findings

Empirical findings from the Pearson correlation analysis on the relationship between board size (proxied as the number of board members) and level of environmental disclosure as depicted in table (2) shows that there is a negative correlation between board size and the level of corporate environmental disclosure among the selected firms; and it is significant at 0.01 level. In addition, results from table (2) further indicate that there is a positive correlation between board composition and the level of corporate environmental disclosure; and it is significant at 0.01 level.

Table 2. Pearson Correlations for Selected Firms in Nigeria

		CED	BDSIZE	NED
CED	Pearson Correlation	1	-.592(**)	-.511(**)
	Sig. (2-tailed)		.000	.001
	N	40	40	40
BDSIZE	Pearson Correlation	-.592(**)	1	-.454(**)
	Sig. (2-tailed)	.000		.003
	N	40	40	40
NED	Pearson Correlation	.511(**)	-.454(**)	1
	Sig. (2-tailed)	.001	.003	
	N	40	40	40

*** Correlation is significant at the 0.01 level (2-tailed).*

** Correlation is significant at the 0.05 level (2-tailed).*

Table 3. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F change	df1	df 2	Sig F Change
1	.651[a]	.424	.393	5.10076	.424	13.631	2	37	.000

a. Predictors: (Constant), NED, BDSIZE

Table 4. ANOVA[b]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	709.322	2	354.661	13.631	.000[a]
	Residual	962.657	37	26.018		
	Total	1671.979	39			

a. Predictors: (Constant), NED, BDSIZE

b. *Dependent Variable: CED*

Table 5. Coefficients[b]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	20.099	8.064		2.492	.017
BDSIZE	-1.372	.424	-.453	-3.233	.003
NED	14.877		.306	2.183	.035

a. Dependent Variable: CED

Furthermore, results for the goodness of fit test as shown in table (3) present an adjusted R^2 value of about 39%. This in a nutshell means that the value of the dependent variable can be explained by 39% of the independent variables. This

value can be considered sufficient because a firm's behaviour towards corporate environmental issues is also influenced by other factors beside board size and board composition. Nevertheless, while the result for the F- test with a p-value that is less than 0.05 (i.e. p-value < 0.05) as reflected in table (4) suggests clearly that simultaneously the explanatory variable (i.e. board size and board composition) are significantly associated with the dependent variable (corporate environmental disclosure); on the other hand, the regression analysis results as presented in table (5) indicates that consistent with our a priori expectation (i.e. $b_1 < 0$), a significant negative association does exist between board size (proxied by the number of board members) and level of corporate environmental disclosure among the selected firms. This result implies that the more the number of board members, the lower the level of corporate environmental disclosure. That is to say that there is an inverse relationship between board size and the level of environmental performance; since larger boards may be less effective in monitoring a firms negative environmental impact on the society due to problems such as social loafing and higher co-ordination costs. Accordingly, this result is in line with the suggestions of the agency theory, which holds that large boards in an organisation would result in communication and coordination problems and also decrease the managerial ability of the board. This result corroborates the findings in provided (Lipton & Lorsch, 1992; Jensen, 1993; Kassinis & Vafeas, 2002) were they found out that firms prosecuted for environmental violations have larger boards. Nevertheless, these findings contradict the views of Dalton et al. (1999) were they opined that larger boards potentially bring more experience and knowledge and offer better advice. They suggested that larger boards are more likely to include experts on specific issues such as environmental performance. In addition, further empirical findings from the regression analysis result for the second hypothesis which states that there is no significant relationship between board composition and level of corporate environmental disclosure; indicates clearly that consistent with our a priori expectation ($b_2 > 0$), a significant positive relationship does exist between board composition and level of corporate environmental disclosure. This result invariably implies that the board composition in an organisation have a very significant positive role to play in the level of firms' corporate environmental performance. That is, the higher the proportion of the non-executive directors on the board; the more likely they will be able to take decisions that are environmentally friendly. More so, outside board members are more effective in providing corporate social perspectives since they are more conscious about the environmental dynamics and the different demands of various stakeholders than insider members who are assumed to be more preoccupied with economic utilities. Interestingly, empirical evidence provided in this study supports the findings provided by (Dunn & Sainty, 2009; Coffey & Wang, 1998:159; Ibrahim & Angelidis, 1995; Ibrahim, Howard & Angelidis, 2003) were they found out that outside directors are more conscious about philanthropic components of corporate

social responsibility than insiders. This is also consistent with the resource dependency theory, which holds that outside board members (i.e. non-executive director) can be more effective in terms of enhancing corporate image and ensuring shareholders' interests. Similarly, this result is also consistent with the findings of Webb (2004) who also suggested that socially responsible firms tend to utilize more outsiders in their boards. However, this result contradicts the findings provided in McKendall, Sánchez & Sicilian (1999).

6. Conclusions and Recommendations

This study basically looked at board characteristics and corporate environmental disclosure among firms in Nigeria. The study came up with interesting findings that are of salient importance to scholars investigating corporate governance issues in the Nigerian context. In accordance with the first hypotheses, the study observed that lager board size in a firm has a negative impact on the level of an organisations environmental performance. That is, an inverse relationship does exist between board size and the level of environmental performance. This result is however in line with the suggestions of the agency theory. For the second hypothesis, the study however observed that there is a significant positive relationship between board composition and the level of environmental disclosure. That is, increasing the proportion of outside directors on the board will led to better corporate environmental performance. This is consistent with the resource dependence theory, which posits that independent boards enhance corporate image and ensure shareholders' interest. Consequently, this paper concludes that larger representations of a firms' board should be composed of outside directors (i.e. non-executive directors) since they are more conscious about the environmental dynamics and demands of various stakeholders than insider members who are assumed to be more preoccupied with economic utilities. Finally, this paper therefore calls for further longitudinal studies that will provide insights into some reporting patterns among listed firms in the country.

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Appendix (1). Listed Firms of Selected Listed firms in the Nigerian Stock Exchange Market

S/N	List of selected listed Firms	S/N	List of selected listed Firms
1	Chemical & Allied Products Plc	21	Evans Medical Plc
2	D N Meyer Plc	22	G S K Consumer Plc
3	Nigerian - German Chemical Plc	23	May and Baker Nig. Plc
4	Okitipupa Oil Palm Plc	24	Pharma - Deko Plc
5	Presco Plc	25	Guinness Nigeria Plc
6	Okomu Oil Palm Plc	26	Nigerian Breweries Plc
7	Ellah - Lakes Plc	27	Jos International Breweries Plc
8	Livestock Feeds Plc	28	Champion Breweries Plc
9	Ashaka Cement Company Plc	29	International Breweries Plc
10	Benue Cement Company Plc	30	Lafarge West African Portland

	(BCC)		Cement Plc
11	Ecobank Plc	31	Cement Company of Northern (Nigeria) Plc
12	First Bank Plc	32	Ceramic Manufacturers Nigeria Plc
13	Fidelity Bank	33	African Petroleum Plc
14	Access Bank plc	34	Chevron Oil Nigeria Plc
15	First Bank of Nigeria plc	35	Mobile Oil Nigeria Plc
16	First inland bank plc	36	Conoil
17	Guaranty trust bank plc	37	Oando Plc
18	Oceanic bank international plc	38	Total Nigeria Plc
19	Berger Paints Plc	39	BOS Gases Plc
20	BCN Plc	40	African Paints (Nigeria) Plc

Appendix (2). Twenty Eight Testable Environmental Disclosure Items

S/N	Environment	Energy	Research & Development	Employee Health and Safety
1	Environmental pollution	firms energy policies	Investment in research on renewal technology	Disclosing accident statistics.
2	Conservation of natural resources	Disclosing energy savings	Environmental education	Reducing or eliminating pollutants, irritants, or hazards in the work environment.
3	Environmental management	Reduction in energy consumption	Environmental research.	Promoting employee safety and physical or mental health
4	Recycling plant of waste products	Received awards or penalties.	Waste management /reduction and recycling technology	Disclosing benefits from increased health and safety expenditure.
5	Air emission information	Disclosing increased energy efficiency products	Research on new method of production	Complying with health and safety standards and regulations.
6	Environmental policies or company concern for the environment	Conservation of energy in the conduct of business operations	Providing information for conducting safety research on the company's products	Health and Safety Arrangements
7	Installation of effluent treatment plant	Discussion of the company's efforts to reduce energy consumption	Information on research projects set up by the company to improve its product in any way	Establishment of Educational Institution

Source: Hackston & Milne's (1996).