Board size, board meetings, and environmental reporting among environmentally sensitive industries in Nigeria

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ABSTRACT

This study concentrated on environmentally sensitive industry to confirm whether the meetings as well as the size of the board play a role in determining reporting of environmental issues in Nigeria. This is because those environmentally sensitive industries are the main polluters of environment in Nigeria especially in Niger Delta. To meet up with the said target therefore, the study used 37 firms that are considered sensitive to environment for the financial year of 2014. The study measured environmental reporting in terms Global Reporting Initiatives indicators as the companies disclose or not. A cross sectional regression is employed to test the hypothesis. The study found out that board size is significant in explaining changes in environmental reporting while board meetings is not and jointly they are significant in explaining changes in environmental reporting of those environmentally sensitive industries in Nigeria.

Keywords:
Board size, Board meetings, Environmental reporting, Environmentally sensitive industries

1. Introduction

Environmental issues which is one aspect of corporate social responsibility [29] are major concerned globally where Nigeria is not in isolation as it also considered a major contributor to environmental pollution for example the case of Ogoni land in Rivers state. The pollution could be in the form of air pollution; soil degradation; water pollution; crude oil pollution; fast deforestation; desertification among others [36]. These can be attributed to air and water in addition to the soil that resulted into harm to the environment directly or otherwise [13]. One of the way this environmental problems occurs is via the activities of the highly industrialized companies that operates in Nigeria where in the process of their production they emit carbon, spills oil; damage land with no decommissioning and spillage of chemical substances among others [13]. Their activities therefore, caused predicted and avoidable damages to the immediate environment and the world at large in

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the form change of climate, environmental pollution and global warming among so many unpredicted factors that could damage environment directly or otherwise.

In terms of gas emission which is environmental hazard, Nigeria is termed among the six countries that pollutes the environment as a result of the said emission and is regarded as such simply because, among the top six countries globally, Nigeria is the second where it flares gas (carbon) especially through the oil industries that operates specifically in the Niger Delta [36]. This said environmental pollution that is attributed to oil production industries can also be attributed to others like cement industry and beverages. Others are the manufacturing industries and to some extent banking industries [11]. However, this study concentrated on those industries that are highly sensitive to environment.

Many scholars argued that Nigerian problems on environment varies from different aspect of companies where carbon could be attributed to heavy duty industrialized companies and material wastages concerned manufacturing industries and were found to be some of the challenges facing environmental issues in Nigeria especially the most industrialized states [42]. Among the issues raised above could be the source of stakeholder’s agitations in southern part of the country especially Niger Delta where militancy persists and that triggered some conflicts between the stakeholders and the industries situated in those regions.

For that reason, this study concludes that companies in Nigeria are directly or indirectly involved in environmental pollution in terms of air or water. This is in addition to desertification and the spillage of crude oil, gas flaring where it pollutes either air or land and finally water related activities.

According to [54], the expectations from all companies globally is to be transparent regarding the disclosure of environmental issues of their companies and the stakeholders’ involvement in their activities as it affects the said stakeholders thereby reducing the yearnings of the agitators in the environment. This could enhance the relationship between the operators of the firm and the stakeholders thus, improving the closeness among the individuals and group who pressurised the firms often about the environmental pollution and its related consequences.

Many scholars report a negative comment regarding the environmental issues in Africa particular Nigeria about less concern environmentally on their report even though the environmental issues is seen by some as a typical science base issues, others seen it as management issues which include accounting and finance. For example [4] described CED as a good source of or element of accounting, finance as well as management activities globally especially in an advance country, yet very few in other parts of the world like African continent especially in Nigeria paid attention to that [3, 8, 9, 10, 39, 49]. The reason for this assertion is because, in those advance countries they usually have separate report on environmental issues where they operated annually however, in Nigeria the report, if there is any, is embedded in the annual financial reporting of the individual firms with less details about the environmental issues, thus the disclosure of environmentally related things become less important in the eyes of the firms even though, those firms suffered many set back in the environment they operated from their stakeholders e.g. Niger Delta agitations against the environmental pollution which result to kidnaping and other social injustice in the country.

Thus, the need for more studies on environmental issues in relation to the firms operated in Nigeria and Africa at large especially those firm that have high tendency of polluting environment called environmentally sensitive industries. This could address the shortcomings of other researchers and could make more firms to pay more attention to the environmental issues due to this type of studies thus, curtailing stakeholders’ agitations and complain where the negative consequences could be reduced.

There is wider argument that those corporate organisations that have good corporate governance are more transparent [1], have more disclosure which include environmental reporting
and this is attributed to the effectiveness of the reporting in which many agreed that the size of the board and the meetings of the same board could play an important role in determining the reporting behaviour of environmental issues [18, 45, 47]. Even though many studies were in existence on the disclosure of environmental issues in relation to the governance structure of corporations, few study paid attention to internal corporate characteristics where this study considered important [34]. To this end, this study project an important internal factor is as board size and the meetings of the board as agreed by [35]. This is because the size of the board can be said to impact the reporting system as the higher the size the higher the reporting whereas the board meetings which is seen as the frequencies of the meetings by board members annually could also increase the reporting if the frequency is increasing thus the reporting of environmental issues will increase.

There are many arguments by scholars where they assert that internal governance factors such as board size and board meetings improved transparency and accountability thus, credible information on disclosure be it environmental and otherwise [33]. This is also supported by stakeholders’ theory that the more the disclosure as a result good corporate governance, the better the address of the concerned of stakeholders since the reporting could be used as exhibit in any conflicts that may arise between the company and the stakeholders [27, 38, 43, 44, 50, 57]. Thus, stakeholders’ theory is seen appropriate in explaining the relationship between the internal factors of corporate governance and the environmental reporting.

Based on the above argument therefore, this study will pay attention currently on determining an empirical evidence of existing relationship between the size of the board and environmental reporting; and board meetings and environmental reporting in Nigeria as projected by stakeholder’s theory.

This study utilised data of all environmentally sensitive listed industries in Nigeria for the financial period of 2014 this is because the said industries are more harm in terms of polluting the environment compare non-environmentally sensitive ones. Secondly, the concerned of the stakeholders in Niger Delta increase rapidly in that year and the ministry of environment in Nigeria complained bitterly about the behaviour of the companies in respect of environment in the same year [26]. The time frame is at the time when Nigerian government is facing economic challenges thus changes in the economy could be address. This study will address the inadequacy of academic literature for environmental reporting and internal factors of corporate governance especially in Nigeria in specific and Africa at large. Some of the advantages of this study include the inadequacy of the environmental study; the concerned of the stakeholders in Nigeria in regard to reporting issues; recommendation on the said reporting to Securities and Exchange Commission of Nigeria as regulator on reporting issue by listed firms and improvement of the insignificant studies conducted so far.

This paper is consisting of four sections. Preceding the current section therefore, is section two which is the literature on the variables, next section is methodology used by this the study, section four is result as well as the analysis of the data and finally, section five is conclusion of the study.

2. Literature

Previous studies on environmental reporting support their studies using several theories which could describe the relationship the study postulate between internal governance factors and environmental reporting even though is short because the diversity among researchers with their heterogeneity in terms of backgrounds caused the theory selection hindrances in addition to the effects by different values and thought of the researchers [48]. The most prominent one is stakeholder theory and to the theory, reporting on environmental issues gives way for companies
and stakeholders communications where by the activities of the environment in terms of size, the products type, and the services to be rendered or already rendered. Thus, environmental reporting is therefore considered as a part of the dialogue between the companies in operations and its immediate stakeholders [31].

2.1 Theories Established on the Association between BS, BM and ER

Environmental reporting can be seen as disclosure of environmental issues through some techniques for implementation by a company in other to fulfil the environmental objectives of diverse stakeholders where the company exist. Environmental reporting or also seen as disclosure of environmental issues is then considered as part of the reconciliations between the company and its stakeholders through a dialogue [31].

In the same vein, internal factors of corporate governance have been seen as a crucial apparatus of transparency and accountability regarding the reporting aspect of financial and non-financial transactions in a giving annual report of the said company [5, 21]. For that reason, the board of directors play an important role where they served as a medium of expression between the company and its stakeholders for the settlement of disputes among them. Therefore, board of directors could be seen as an indicator for appreciated resources of accountability and transparency [23].

In short form, internal factors handled the accountability and transparency problems where environmental reporting may have due to the responsibility to stakeholder’s problem in the process of demanding to fulfil the environmental details needs of the said stakeholders. Hence, internal factors of corporate governance (henceforth called CG) are projected to impact on environmental reporting by dealing with various stakeholders.

2.2 Internal Factors

One of the key issue of internal factors of CG is board of directors and its associated meetings of the board where they play an important role in environmental reporting practices of a company [35, 43] where this role could be linked to the organisation directly in regard to the environmental awareness and control [20]. It is observed that the board of directors’ key role is to manages and maintain information of financial and non-financial so disclosed in an annual reports of a company and thus, disclosure of environmental issues could be a function of board of directors or members [35]. This board of directors are part of internal factors of CG and is compose of board size in addition to board meetings which is also considered as board characteristics [19, 30, 12]. These are predictable to influence environmental reporting. The internal factors considered in this study include board size and the number of meetings held by the board annually also called board meetings.

2.2.1 Board Size

The size of the board is very important aspect internal factors of CG. Many scholars argue that the size of the board could determine disclosure where it was asserted that as number board’s members increase the more likely to have more disclosure of information in an annual report of an organisation and the wider the representation of various directors with varieties of discipline and more experience [46]. Some also argue that, these varieties could have a positive impact on the management activities where it entails more attention on corporate environmental reporting [52]. Thus, to be in consistent with stakeholder theory therefore, it is projected that the higher the members on board the more likely the additional progress in relation to the diversity of board
composition. Therefore, the larger the board size in terms of members presence of board the more the enhancement of an organisational capability to comprehend and curtail the variety of numerous stakeholder’s concerned and interests [55], this could means an improve on transparency in addition to accountability where by additional information is earned thus more reporting [7, 33, 35. Furthermore, it permits a sound stability and, hereafter, increases decision making despite the fact that, it increase coordination among the companies’ stakeholders in a given environment [2, 37].

Many studies depict that large and diverse boards have traditionally assist the governance function of the board of firms [7, 22, 55, 56]. Notwithstanding the literature on board size and disclosure in general and environmental in particular, there is still limited empirical studies on an association between board size and environmental reporting in Nigeria. For example, there is study that postulates and found that a positive relationship between board size and environmental disclosure exist, this said relationship is found by [17].

This study therefore, predict its hypothesis on a stakeholder theory concerned, thus, it agreed with some researchers that argue that the more the board members the more the effectiveness of decision making thereby, enhancing information and processing capabilities especially in reporting issues [37]. Hence, the following hypothesis is proposed:

H2 There is a positive relationship between board size and environmental reporting.

2.2.2 Board Meetings

Board meetings are the numbers of times board meet annually. The Securities and Exchange Commission of Nigeria makes it mandatory for board of companies in Nigeria to meet at least one annually. This could have positive impact on the reporting aspect of organisations as some researchers proposed effectiveness of the board of firms is to be associated with the frequencies of meetings held annually by the member’s board. For instance, [14] disclosed that the frequency of board meeting is an indication of excellent monitoring mechanisms for any issues on board be it environmental or otherwise. This indicates more on the activities of the board where the frequency of meetings plays a significant role on board activities thus, the activities of the said board could generally have impact on the ability of the board members to act as an efficient and effective monitoring system in justifying stakeholder’s conflicts [56]. This is because, an increase in monitoring mechanisms gives more room to overcome any conflicts that may arise from various information among stakeholders thereby in the same vein resulting to increase in information and subsequently an increases in reporting behaviour of a firm [15]. Many scholars recommend that, there should be more meetings of the boards annually so that the board could address any unexpected and current issues rose which needs immediate attention of the board [53].

Based on the above argument therefore, this study argued in connection with stakeholder theory proponents, where it entails the more the frequency of the board the better the performance of the board in terms of effectiveness [16]. This is in addition to its capability to address any conflicting interest among the stakeholders and the firm thereby, increase in reporting of financial and non-financial issues such as environmental issues.

To be in line with the argument above therefore, this study proposed that board members that meet more often annually are more likely to give more details on environmental reporting. This study, consequently, anticipates environmental reporting to positively associates with the frequency of board meetings. Thus, the subsequent hypothesis is developed:

H3: There is a positive relationship between board meetings and environmental reporting.

Base on the above hypothesis, the study proposed the framework below:
From Fig. 1 seen as research framework above, the dependent variable is environmental reporting while the independent variables include board size and board meetings. The arrow shows a direct relationship between each explanatory variable to the dependent variable.

3. Research methodology

This study investigates the association between internal factors of CG and environmental reporting of listed firms in Nigeria for the period of 2014. The study employed data from documented sources acquired from the annual reports and accounts of the firms. A total of thirty-seven companies were studied out of sixty-five listed firms that are environmentally sensitive in nature by Securities and Exchange Commission of Nigeria. This is because, some companies’ information was not available under year into considerations.

The study employed multiple regression method on the cross-sectional data obtained and is suit for this methodology. Therefore, cross-sectional analysis is said to be found suitable and therefore, employed in the analysis of this study simply because the study is for one year over many companies. Generally, the model of cross-sectional analysis based on cross-sectional data is presented in the following form,

\[ Y_i = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + \beta_k X_{ki} + \epsilon_i \]  

where \( Y_i \) is the dependent variable for individual firm \( i \); \( \beta_0 \) is constant and specific to the individual cross sectional unit \( i \); \( X_{1i}, X_{2i} \) and \( X_{ki} \) are independent variables for the individual firm \( i \) of the model to be estimated; and finally \( \epsilon_i \) is the residuals of the model. The study consists of one dependent variable recognised in this study as environmental reporting and two explanatory variables composed of board size and frequency of meetings also known as board meetings. The measurement of the dependent variable is thus, a checklist using Global Reporting Initiative as a measurement of environmental reporting and where coding mechanism is used as seen from researchers like [18].

Even though the environmental reporting of [18], it composed of twenty-two items categorised into four: where pollution reduction, sustainable growth, land remediation and discharge of oil leakages, and finally environmental management were coded. This is not the case in Nigeria as so many companies reveal few of environmental issues therefore; employing such categories could have no significant impact on the said reporting. Thus, scores are based on zero and one unlike [18] that used one to three. The scoring system of the zero and one is used because it allows for a combination of varieties of information into a single figure as numeric number. Even though, other research on reporting utilised word counts to measure environmental reporting [23], it suffered some setback as
it cannot accommodate the quality of the reporting thus, scoring system as quantitative scaling allows for judgement to be in rating the ‘value’ of the disclosure made by a firm.

Meanwhile the independent variables included in this study are two explanatory variables. This is consisting of Board size (BS) which is seen and measured as total members of both executive and non-executive on board. Whereas, board meetings (BM), is measured as number or frequency of meetings by the board annually and this also reflect the meaning of the BM. Based on proposed hypothesis and the variables mentioned above, the empirical results could be computed based on the following cross sectional regression model;

\[ ER_i = \beta_0 + \beta_1 BS_i + \beta_2 BM_i + \varepsilon_i \]  

(2)

where:
ER = Environmental Reporting  
BS = Board Size  
BM = Board Meetings  
\( \varepsilon \) = Residuals of the model  
i is an indicator of cross sectional data  
\( \beta_0 \) is constant where it represents the value of the ER when BS and BM are all zero  
\( \beta_1 \) is the parameter of BS  
\( \beta_2 \) is the parameter of BM

Data collected was first analysed by means of descriptive statistics to particularly show the mean distribution, the standard deviation, and the minimum and maximum value of both the dependent and explanatory variables. This is in addition to correlation matrix analysis using product moment correlation technique so employed in order to establish the nature of relationship between the variables in terms of collinearity as high correlation indicate some level of collinearity among the explanatory variables. The regression model was first estimated by the ordinary least squares technique which according to [40] provides a consistent estimate of \( \beta_0 \) (intercept) and \( \beta_1 - \beta_2 \) (slopes).

4. Results and discussion

The summary of the statistics is presented in Table 1 and is computed using Stata software version 13.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Min</th>
<th>Max</th>
<th>Mean</th>
<th>SD</th>
<th>Skewness</th>
<th>Kurtosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>ER</td>
<td>6</td>
<td>11</td>
<td>9.162162</td>
<td>1.50025</td>
<td>-.5802532</td>
<td>2.537837</td>
</tr>
<tr>
<td>BS</td>
<td>5</td>
<td>16</td>
<td>9.108108</td>
<td>2.45836</td>
<td>.5333589</td>
<td>3.196218</td>
</tr>
<tr>
<td>BM</td>
<td>3</td>
<td>7</td>
<td>4.351351</td>
<td>.949158</td>
<td>1.225426</td>
<td>4.506683</td>
</tr>
</tbody>
</table>

On average an industry report 9 items about its environmental reporting on its annual financial report as seen in Table 1 the mean of ER is 9.16. The minimum value is 6 is an indication that, among all the industries, the maximum reported by an industry about environmental reporting is 6 while the maximum reported is 11. The standard deviation of 1.5 is relatively worthy for the analysis since is not far away from the mean while the skewness and the kurtosis is relatively normal. Meanwhile, the average an industry has is 9.12 as size of the board as seen in Table 1 this mean that an industry has 9 members on board on average. The minimum value is 5 is an indication that, no industry has less
than five members on board while the maximum members on board are 16. The standard deviation of 2.5 is relatively good for the analysis since is not far away from the mean while the skewness and the kurtosis is relatively normal. Looking at the average value of 4.35 about the BM as seen in table 4.1 therefore is an indication that an industry averagely held meetings 4 times annually. The minimum BM is 3 while the maximum BM 7. The standard deviation also is relatively good. Meanwhile the skewness and the kurtosis is relatively normal.

### Table 2
Correlation Matrix and VIF of the Variables

<table>
<thead>
<tr>
<th></th>
<th>ER</th>
<th>BS</th>
<th>BOM</th>
<th>VIF</th>
<th>1/VIF</th>
</tr>
</thead>
<tbody>
<tr>
<td>ER</td>
<td>1.0000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BS</td>
<td>0.3340</td>
<td>1.0000</td>
<td></td>
<td>1.14</td>
<td>0.875877</td>
</tr>
<tr>
<td>BM</td>
<td>-0.0996</td>
<td>0.3523</td>
<td>1.0000</td>
<td>1.14</td>
<td>0.875877</td>
</tr>
</tbody>
</table>

From the Table 2 above, the correlation co-efficient of ER and BS is 0.334 which signifies a moderate positive correlation. The strength of the correlation is considered moderate based on [32] interpretations. That means the higher the board size the higher the environmental reporting of the said industries. This is in line with the stakeholder’s theory that backs this study. However, contrary to that of BS, board meetings have negative correlation with environmental reporting as it has values of -0.01 on average and the correlation is said to be weak. The most important aspect the correlation between the two explanatory variables BS and BM which happen to be weak and positive as seen in Table 2 where it reveals a value of 0.35 averagely. This could be an indication of free collinearity among the independent variables. The multi collinearity issues can be confirmed however, by considering the Variance Inflation Factor (VIF) value, if it falls within 1 to 4 then the study can assumed to be multi collinearity free. Based on that, the results shown on the Table 2 provide an evidence of absence of multi collinearity. This is because the results of the VIF is 1.14 for all the explanatory variables. Since, all the VIF are less than 4.00 is an indication of absence of collinearity among the independent variables. Thus, the assumption of Ordinary Least (OLS) Square is fulfilled.

Therefore, the OLS regression results can be considered thus, the estimation techniques are presented in Table 3

### Table 3
Regression results

|       | Coef.  | Std. Err. | t     | P>|t|  | [95% Conf. Interval] |
|-------|--------|-----------|-------|------|---------------------|
| BS    | .2572  | .1021     | 2.52  | 0.017 | [.0496, .4649]      |
| BM    | -.3922 | .2646     | -1.48 | 0.147 | [-.9299, .1455]     |
| Cons  | 8.5261 | 1.2207    | 6.98  | 0.000 | [6.0453, 11.01]     |
| F(2, 34) = 3.37 | Prob > F = 0.0462 | Durbin Watson |
| R-squared = 0.1655 | Adj R-squared = 0.1164 | DW = 2.0047 |

*** significant at 1% level. ** significant at 5% level. * significant at 10% level.

Author’s computations using StataMP software version 13

From Table 3 above shows the parameters of the variables as the p-values reveal about the significances of the variables, and joint F statistics probability where is statistically significant, the R-Square of the model including the adjusted R-Square of the model. From the said table this study depicts from equation 2 thus, \(ER = 8.5261 + 0.2572 \times BS - 0.3922 \times BM\). From the OLS estimation, the R-squared is 16% for the model that means board size and board meetings accounted for 16% changes in environmental reporting thereby indicating 84% accounted for by other variables not included in this model. This is accepted as the value of R-square is greater than 10% [32].
In the OLS model estimations, the $\beta_0$ as constant of the model is 8.53 it means that where BS and BM, the value of ER stand at 8.53 of the reporting. However, board size has positive relationship with environmental reporting and is significant at 5%. That means an increase in BS will bring about an increase in ER by the parameter of 0.26 with the econometric assumptions of other thing remain constant. This is in line [28] and [6, 33, 34]. Therefore, the hypothesis that said the more the directors on board, the more environmental reporting is supported.

Furthermore, in contrary, the frequency of board meetings has negative relationship, as seen in the model with the parameter -0.39 but is not statistically significant at level of significances. This indicates any increase in BM will bring about a decrease in ER by the parameter of 0.39 *ceteris paribus*. However, the hypothesis is not supported, thus, the projected positive relationship is could stand since there is no sufficient evidence to support the result found in the model.

Consequently, the probabilities of F-statistics shown in Table 3 with the value of 0.04 means that, BS and BM are jointly significant in explain changes in ER. The model also mates the assumption of auto and serial correlation since the model is free from the said auto and serial correlation. This is because; the Durbin-Watson value is 2.0047 fall between the range of 1 and 3 using rule of thumb which prove no auto correlation [32].

5. Conclusion

The study objective is to determine whether board size and board meetings has relationship, if any, with environmental reporting in Nigeria using environmentally sensitive industries as a case. About 37 firms were used in favour of the study and there is evidence of the said relationship as estimated base on the evidence from Nigerian environmentally sensitive industries annual reports of 2014. Therefore, internal factors of corporate governance compose of board size and board meetings among others increase environmental reporting in Nigeria listed environmentally sensitive industries. The result also agreed with the stakeholder’s theory which supported the more effectiveness of the board the better the reporting of both financial and non-financial issues in general, thus, the more the reporting the more shareholders’ satisfaction on the operation of the companies as friendly to the environment. This could be seen in the explanatory variables parameters which include board size and board meetings where it was indicate that individually board size is positively significant relationship with the environmental reporting but board meetings hypothesis not supported and collectively they are all significant in explaining changes in environmental reporting among Nigerian listed environmentally sensitive industries.

Furthermore, the positive sign against board size and negative sing shown on board meetings show an increase and decrease in environmental reporting respectively as seen against the parameters $\beta_1$ and $\beta_2$ where $\beta_1$ is positive and $\beta_2$ in the estimated model. Thus, this study concludes that internal factors of corporate governance of environmentally sensitive industries in Nigerian improve environmental reporting in terms of size of the board significantly with no effect by board meetings even though they are jointly significant.

References


