

Board Attributes and Financial Fraud Likelihood in Nigeria

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ABSTRACT

The study examines the effect of board attributes on corporate fraud likelihood of quoted manufacturing firms in Nigeria. The scope of the study covers board attributes such as Board size, board independence and board diversity and the beneish M-score was used as the measure of fraud likelihood. This study utilized a longitudinal research design. The sample covered 15 manufacturing companies in the Nigerian Stock Exchange (NSE) as at 2017. Secondary data was utilized for this study and the data was extracted from the annual reports of corporate organizations for the period 2012-2017 financial years. The binary regression was employed as the method of data analysis in the study. The findings reveal that the odd ratio of BDIND is 0.66031 which implies that changes in managerial ownership will reduce the odds of corporate fraud. The odd ratios for BDSIZE and BDDIV though slightly higher than 1 are nevertheless not significant at 5%. The study concludes that there is the need for boards to be more effective in their monitoring roles so as to reduce the occurrence of fraud. Addition, the independence of the boards should be maintained.

Keywords: Board size, Board independence, fraud likelihood, logistic regression.

INTRODUCTION

Some of the largest alleged accounting frauds in history occurred some years ago, leading to the well-known upheaval in the accounting industry and sweeping legislative and regulatory changes. These events have left regulators, practitioners, and academics searching for answers to the causes of these alleged frauds. The Association of Certified Fraud Examiner's (ACFE) 2012 report estimates that a typical organization loses approximately 5% of its revenues to fraud each year. As a result, corporate fraud can severely undermine economic institutions that depend on a basic level of ethical corporate behavior. Consequently, board characteristics and financial fraud have attracted a good deal of public interest because of their apparent importance for the economic health of corporations and

society in general. Consequently, it has received considerable attention in recent years from academics, market participants, and regulators. This situation has been heightened by the spate of corporate failures that have brought doubts in the minds of stakeholders on the credibility and reliability of financial reports. Boards are at the frontline of corporate governance reform considering and settling a host of issues related to executive compensation, conflicts of interest, composition, function and efficacy of board committees, promulgation of ethical conduct, and so forth. Furthermore, [1] identified the important role of boards of directors in balancing the interests of shareholders with those of different stakeholders in order to achieve long-

term sustainable growth for the corporation. The attributes of corporate boards have gained importance in studies seeking to understand board behavior and the implications that it can have on organizational outcomes. One of the very prominent board attributes is the board size. Board size represents the total number of the members (executive and non-executive) represented in the board. Another board attribute is board independence. [2] opined that the independence of a corporate board is indicated by the number of outside or non-executive directors. Finally, board diversity is also considered which refers to the board gender-mix.

In providing a theoretical premise for the role of board attributes in financial fraud likelihood, we fall back to the basic issues postulated by the Agency theory. According to the theory, the firm can be viewed as a nexus or network of contracts, implicit and explicit, among various parties. Agency problems occur when the interests of agents are not aligned with those of principals owing to the separation of management and ownership. The 'principal-agent' problem is reflected in management pursuing activities which may be detrimental to the interest of the shareholders of the firm. Thus the level of fraud may be perceived as a reflection of the existence of agency problems. According to [3], the principal can limit practices that will affect the

RESEARCH OBJECTIVES

The broad objective of the study is to examine the relationship between board attributes and fraud likelihood. However, the specific objectives are;

- i. To examine the effect of Board size on financial fraud likelihood in quoted manufacturing companies.
- ii. To investigate the impact of board independence on financial fraud likelihood in quoted manufacturing companies.
- iii. To determine the impact of board diversity on financial fraud likelihood in quoted manufacturing companies.

likelihood that fraud occurs by incurring corporate governance costs to curb the agent's self-serving behavior. Although, corporate governance can be defined in a variety of ways, generally, it involves the mechanisms by which a business enterprise organized in a limited corporate form is directed and controlled. [4], argue that prior literature has examined the role of the various board structures and the extent to which these structures have either individually or collectively influenced the attainment of financial statement quality that is free from material misstatements and misrepresentations.

In Nigeria, several attempts have been made at the institutional level to ensure that corporate boards are effective and result in improved financial reporting. This has culminated in the "code of corporate governance" issued in November 2003. A new code in 2011 provides further insight into the relationship between financial reporting quality and corporate governance in the Nigerian environment especially after the adoption and acceptance of the code of corporate governance issued in 2003 and then 2011 for quoted companies. The study objective therefore is to examine the relationship between financial fraud likelihood and board attributes in the Nigerian environment.

Research Hypotheses

The following hypotheses have been stated in line with the research objectives; H1: Board size has no significant impact on financial fraud likelihood in quoted manufacturing companies.

H2. Board independence has no significant impact on financial fraud likelihood in quoted manufacturing companies.

H3: Board diversity has no significant impact on financial fraud likelihood in quoted manufacturing companies.

LITERATURE REVIEW

Financial Statement Fraud

This type of fraud is characterized by intentional misstatements or omissions of amounts or disclosures in financial reporting to deceive financial statement users. This is also known as fraudulent financial reporting, and is a type of fraud that causes a material misstatement in the financial statements. More specifically, financial statement fraud involves manipulation, falsification, or alteration of accounting records or supporting documents from which financial statements are prepared. It also refers to the intentional misapplication of accounting principles to manipulate results. Fraudulent financial reporting involves intentional misstatements including omissions of amounts or disclosures in financial statements to deceive financial statement users. It can be caused by the efforts of management to manage earnings in order to deceive financial statement users by influencing their perceptions as to the entity's performance and profitability. Such earnings management may start out with small actions or inappropriate adjustment of assumptions and changes in judgments by management.

Pressures and incentives may lead these actions to increase to the extent that they result in fraudulent financial reporting. Such a situation could occur when, due to pressures to meet market expectations or a desire to maximize compensation based on performance, management intentionally takes positions that lead to fraudulent financial reporting by materially misstating the financial statements. Financial statement frauds cause the highest amount of losses at the company level and aim to distort the financial truth in order to obtain certain advantages or to hide possible losses or negative performance [5]. According to a study conducted by the Association of Certified Fraud Examiners, fraudulent financial statements, as compared with the other forms of fraud perpetrated by corporate employees, usually have a higher impact on the victimized entity as well as a more negative impact on

shareholders and the investing public. At a general level, financial statement fraud exploits the information asymmetry that exists between different parties in a financial transaction. By combining the illusion of disclosure with false information, financial statement fraud increases this information asymmetry while appearing to minimize it [6].

Measurement of Financial Statement Fraud: Beneish M-Score

The Beneish model is a statistical model that uses financial ratios calculated with accounting data of a specific company in order to check if it is likely (high probability) that the reported earnings of the company have been manipulated. As noted earlier, there is an increasing empirical validation of the robustness of the Beneish M-score in detecting fraud. For example, [7] for Indian companies' data proved that the use of the M-score is better than the Modified [8] in detecting earnings manipulation. In the US, [9] also showed that the Beneish M-score could have detected the warning signs sooner. [10] for the U.S showed that the Beneish-M score outperformed many commonly used measures, such as discretionary accruals derived from the Jones model, the modified Jones model in detecting fraud. This study thus provides new and unique insight. The Beneish M-Score is calculated using 8 financial ratios. If M-Score is less than -2.22, the company is unlikely to be engaged in fraud. If M-Score is greater than -2.22, the company is likely to be engaged in fraud.

Board Characteristics

In this section, the key board characteristic variables are discussed such as the board size, board independence and board diversity.

Board Independence

Board independence is a key dimension of corporate governance as it is concerned with the extent to which the board can be said to be objective. The independence of the board can be measured by the number

of non-executive or outside directors on the board. The importance of outside directors has been recognized even at the level of policy, with codes of corporate governance giving a special attention to the need to have a reasonable proportion of them on the board of listed firms. Empirical evidence has shown that properly constituted boards with the right mix of non-executive directors tend to contribute to an unbiased sense of judgment [11]. A board comprising reasonable proportion non-executive directors is more likely to be independent of management than one dominated by inside directors, and therefore more likely to protect the interests of other stakeholders [12]. In Nigeria, the new code of corporate governance provides that the non-executive directors should be in the majority [13]. [14], the independence of a board of directions is related to its composition and the board is expected to be more independent as external directors' increase in proportion to non-independent directors.

Board Size

The Nigerian Corporate Governance Code establishes that the board size should neither be too large nor too small but should be appropriate in size to enable active and effective member participation and that the members should be capable of effectively carrying out their duties. The Code also mentions that the board member size is left to the discretion of the firm but that size should not be less than 5 and not more than 13 [15]. Board size has been the topic of discussion in several works over the years. The optimal size for a board of directors is an issue for a company, with a big-sized board facing coordination challenges and a small-sized one being appropriate for coordination but lacking necessary competence and experience [16]. In this regard, [17] claimed that small boards facilitate improved performance, with the optimal number of members being seven or eight.

Board Diversity

Among the various board diversity characteristics, gender is one of the most significant issues faced by modern corporations [18]. Board Diversity is heterogeneity or difference among members of a particular board, and has many aspects for categorisation ranging from task skills to relational skills, age to nationality, functional background to religious background, and from political preference to gender preference [19]. Within board diversity, the male to female ratio composition is regarded to be a significant aspect in the board's decisions [20]. Female directors tend to bring different perspectives to the board and can influence the various board level outcomes including the decision making process. Supporting the presence of female board members, [21] suggest that sound decision making requires equilibrium between skills and attributes among the board members and that female directors are more likely to be objective and independent.

Prior Studies

[22] examined whether boardroom characteristics have an effect on corporate financial fraud in China. Data was obtained from the enforcement actions of the Chinese Securities Regulatory Commission (CSRC). The results from univariate analyses, where they compared fraud and no-fraud firms, show that board characteristics are important in explaining fraud. In particular, the proportion of outside directors, the number of board meetings, and the tenure of the chairman are associated with the incidence of fraud. [23] study extends numerous U.S. findings to the Australian context and investigated the relationship between two attributes of the Board, independence and duality, and Financial fraud. Using a matched sample of fraud and no-fraud firms from 1998-2010, he found that as the percentage of independent directors increases, the likelihood of fraud decreases. As expected, the results show a positive relationship between duality and the likelihood of fraud. These results support

the call for strengthening the composition and structure of the BOD in Australia.

[24] examined the relationship between board characteristics and financial statement frauds in Italy using Logit regression analysis. The research covers a period of 11 years (2001-2011). The research evidence shows a significant positive relationship between corporate governance characteristics and financial reporting fraud in Italian context.

[25] in a paper developed an analysis of the prevalence and determinants of fraudulent financial reporting as identified in the Chinese listed firms over the period 1996 to 2007, and highlights the relationship of financial fraud and corporate governance mechanisms. However, the finding in this paper reveals that as for the highly discussed corporate governance characteristics (e.g. independent directors, the supervisory board, audit committee), the fraud firms and their non-fraud counterparts are not statistically distinct.

[26] their study focused on corporate governance practices in Malaysia, where the increasing incidence of fraud suggests a lack of adequate corporate governance systems in Malaysian listed companies. Using an unbalanced data set comprising 200 companies representing a total of 579 firm-year observations, the study examined the effects of internal corporate governance mechanisms on the occurrence of fraud. Specifically, it investigated the effects of board characteristics and quality of audit on the occurrence of fraud in Malaysian listed companies from 2007 to 2009. The findings indicate that the number of board meetings was positively associated with the occurrence of fraud, but both state and foreign ownership revealed a negative correlation.

[27] investigated the relationship between top management ownership structure and the decision to release false financial information. Using a matched sample of 103 firms in the U.S. convicted of

publishing fraudulent financial statements in 1992 - 1996, analytical results show that such illegal corporate behavior is most likely when power is concentrated in the hands of insiders. In such firms, insiders control top management and the board of directors by simultaneously occupying key managerial positions that have considerable power within the firm while sitting on a board (duality), and through their ownership interests in the firm.

[28] analyzed how various characteristics of boards of directors and other governing groups impacted the occurrence of U.S. corporate fraud in 1978 - 2001. Analytical findings verified a positive relationship between ownership structure and the likelihood of corporate fraud and found that as the number of independent directors increased on a board; the likelihood of corporate fraud declined. On the average, fraudulent companies had larger boards, a larger percentage of inside directors holding, and a higher percentage of grey directors, whereas non-fraudulent firms had a higher percentage of independent outside directors.

[29] investigated the relationship between corporate governance and corporate fraud by utilizing Logit regression and by employing a sample of 176 firms listed in Chinese stock markets during the period from 2001 to 2005. The results reveal that: (1) the proportion of independent members in board of directors is lower for firms experiencing corporate fraud than for no-fraud firms.

Hatice, [30] examined how various characteristics of the board of directors and other governance features like ownership structure affected the occurrence of U.S. corporate fraud in the 1978-2001 period. After identifying cases of fraud, they matched each "fraud company" with a "no-fraud" counterpart based on the fraud company's industry and size. This procedure resulted in a sample of 133 pairs of fraud and no-fraud

companies. They utilized logit regressions for the analysis of data. The findings from the study suggested that board composition structure is significantly correlated with the incidence of corporate fraud. In the sample, as the number of independent outside directors increased on a board and in the board's audit the likelihood of corporate wrongdoing decreased.

[31] sought to find the effect of corporate governance on financial statement frauds. The variables of the corporate governance consist of independent Board of

THEORETICAL FRAMEWORK

Agency theory having its roots in economic theory was expounded by [17] and further developed by [6]. [6] defined agency relationship as a contract under which the principal engage another person or the agent to perform some services on their behalf which involves delegating some decision making authority to the agent. If both parties to the relationship are utility maximizers, there is good reason to believe that the agent will not always act in the best interests of the principal. The principal can limit divergences from his interest by establishing appropriate incentives for the agent and by incurring monitoring

METHODOLOGY

This study employs a longitudinal research design. A longitudinal design involves repeated observations of the same variables over long periods of time unlike the cross-sectional design which examines variables at a point in time. A sample size of 15 manufacturing firms was selected. Secondary data was used for this study and it was retrieved from corporate annual reports of the sampled companies for 2012-2017 financial years. The logistic regression was employed as the method of data analysis in the study. The technique is appropriate for modelling binary outcome variables such as fraud likelihood in this context which is depicted as a probability function. Logistic regression can be binomial, ordinal or multinomial. Binomial or binary logistic regression deals with situations in

Commissioners (IND). The findings of this study indicated that independent Board had no significant impact on financial statement frauds. [20] obtained empirical evidence for the relationship between independent directors holding on a corporate board and the incidence of management-perpetrated fraud in Australian public companies during 1985 - 1998. Empirical results provided support that non-fraudulent firms had a significantly higher proportion of independent directors holding on their boards than fraudulent firms.

costs designed to limit the irregular activities of the agent. To reduce agency problem there must be better monitoring and controlling mechanisms which help to ensure that managers pursue the interests of shareholders rather than only their own interests. Corporate Boards and their characteristics thus suffice as part of the cost that principal must bear in order to monitor the agents. The presence of effective and strong boards is expected to ensure that management is accountable and do not misappropriate shareholders resources.

which the observed outcome for a dependent variable can have only two possible types, "0" and "1". In binary logistic regression, the outcome is usually coded as "0" or "1", as this leads to the most straightforward interpretation.

The Model specification

A functional relationship between fraud likelihood and Board characteristics is expected and hence the model below;

$$P_{it}(\text{FFL}=1) = 1 / (1 + e^{-z}) \\ = 1 / \{1 + \exp[-\beta_0 + \beta_1 X_{1,it} + \mu_{it}]\} \\ = P_{it}(\text{FFL}=1) = 1 / \{1 + \exp[-\beta_0 + \beta_1 \text{BDIND} + \beta_2 \text{BDSIZE} + \beta_3 \text{BDIV} + \mu_{it}]\}$$

Where: FFL= Financial fraud likelihood is measured using the Beinish M-score, exp =exponential function; β_1, \dots, β_n = slope coefficients; X_1, X_2, \dots, X_n = explanatory variables

BDIND= Board independence, BFSIZE= Board size and BDIV=Board diversity

i =ith firm, t = time period, μ_{it} = Model disturbance term

PRESENTATION OF RESULTS

Table 1: Descriptive statistics

	Mean	Maximum	Minimum	Std. Dev.	Jarque-Bera	Prob
BSIZE	10.02841	20	4	3.256252	26.24532	0.000
BDIND	0.63	0.82	0.17	2.766729	273.732	0.000
BDIV	2.165739	5	0	1.163229	580.8837	0.00
BMS	6.3409	14.203688	-2.15753	0.323982	155799.2	0.00

Source: Researcher’s compilation (2017)

Where:

BSIZE=Board size

BIND= Board independence

BDIV= Board diversity

BDM= Board meetings

BMS= Beneish m score

The average Board size is about ten (10) with a maximum value of 20 and minimum value of 4 respectively. The standard deviation showing the dispersion of the data about the mean is quite low at 2.766. The Jacque-bera value of 26.245 and p-value of 0.00 confirms the normality of the data. BDIND has an average value of 0.63 which indicates that about 63% of board members are independent members with maximum and minimum values of 0.82 and 0.17 respectively. The standard deviation of 2.766 is quite low which suggests considerable clustering around the

distribution mean. The Jacque-bera value of 273.732 and p-value of 0.00 confirms the normality of the data. The Board gender diversity is 2.165 which suggest that on the average two board members are females. The maximum and minimum values are 5 and 0 respectively. The Jacque-bera value Of 580.8837 and p-value of 0.00 confirms the normality of the data. The average BMS is 6.3 with maximum and minimum values of 14.2036 and -2.1575 respectively. The Jacque-bera value of 40.4915 and p-value of 0.00 confirms the normality of the data.

Table 2 Variance Inflation Factor Test

Variable	VIF
BSIZE	1.9151
BDIND	4.910936
BDIV	4.615146

Source: Researcher’s compilation (2017)

The variance inflation factor (VIF) explains how much of the variance of a coefficient estimate of a regressor has been inflated, as a result of collinearity with the other regressors. Essentially, VIFs above 10 are seen as a cause of

concern as observed, none of the variables have VIF’s values more than 10 and hence none gave serious indication of multicollinearity.

Table 3: Logistic regression-Odd ratios

	Aprori sign	Coefficient Standard error () p-value {}
C	+	0.21733 (0.46199) {0.473}
BDIND	+	0.66031* (0.01805) {0.031}
BDSIZE	+	1.03928 (0.05149) {0.437}
BDIV	+	1.02381 (0.0265) {0.363}
Model Diagnostics		
Pseudo R²		0.327
Likelihood ratio		36.40
Prob		0.000
Hosmer-Lemeshow		5.16
Prob.		0.7399

Source: Researcher's compilation from Stata 13

In a logistic regression output, the Odds ratios are more informative than the betas reported in table 4.4. The odd ratios (OR) of an event are the ratio of the probability that an event will occur to the probability that it will not occur. When a logistic regression is calculated, the regression coefficient is the estimated increase in the logged odds of the outcome per unit increase in the value of the independent variable. Basically, Odd ratios=1 indicate that changes in the variable do not affect odds of outcome, odd ratios>1 indicate changes in the variable is associated with higher odds of outcome and odd ratios<1 indicate that changes in the variable are associated with lower odds of outcome. Moving to the goodness of fit and diagnostic evaluation of the results, the Pseudo R² of 0.327 suggests that the ownership model explains about 32% of the likelihood of corporate fraud. The Pseudo R² values for logistic regression are typically smaller than what is seen for linear regression models [21]. The Hosmer-Lemeshow test which examines whether the observed proportions of events are similar to the predicted

probabilities of occurrence in subgroups of the model population has p-value of 0.739 which indicates a good fit to the data, therefore, good overall model fit as the closer it is to 1, the better the fit. The likelihood ratio is also significant as p-value <0.05 and thus confirms that the given logistic model with independent variables was more effective than the null model.

From the table above, we observe that the odd ratio of BDIND is 0.66031 which implies that changes in managerial ownership will reduce the odds of corporate fraud. The odd ratios for BDSIZE and BDDIV though slightly higher than 1 are nevertheless not significant at 5%. From the analysis, BDIND is the only board characteristics variant having a statistically significant effect on fraud likelihood. It is observed that the odd ratio of BDIND is 0.66031 which implies that changes in Board independence will reduce the odds of corporate fraud. Hence we reject the hypothesis that Board ownership has no significant effect on fraud likelihood. From the analysis, the odd ratios reveal that Board size though

slightly higher than 1 is nevertheless not significant at 5%. Hence we reject the hypothesis that board size has no significant effect on fraud likelihood. Finally, odd ratios for BDIV though

slightly higher than 1 are nevertheless not significant at 5%. Hence we reject the hypothesis that Board diversity has no significant effect on fraud likelihood.

CONCLUSION AND RECOMEMNDATION

As observed earlier, board characteristics and financial fraud have attracted a good deal of public interest because of its apparent importance for the economic health of corporations and society in general. Consequently, it has received considerable attention in recent years from academics, market participants, and regulators. Boards are at the frontline of corporate governance reform considering and settling a host of issues related to executive compensation, conflicts of interest, composition, function and efficacy of board committees, promulgation of ethical conduct, and so forth. Hence, the attributes of corporate boards have gained importance in studies seeking to understand board behavior and the implications that it can have on organizational outcomes and in this

context fraud likelihood. Hence the focus of the study is to examine the impact of board characteristics on financial fraud likelihood. Using the binary regression estimation technique, the results odd ratio of BDIND is 0.66031 which implies that changes in board independence will reduce the odds of corporate fraud. The odd ratios for BDSIZE and BDDIV though slightly higher than 1 are nevertheless not significant at 5%. From the analysis, BDIND is the only board characteristics variant having a statistically significant effect on fraud likelihood. The study concludes that there is the need for boards to be more effective in their monitoring roles so as to reduce the occurrence of fraud. In addition, the independence of the boards should be maintained.

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