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## Article

### Board independence and financial statement fraud : the moderating effect of female gender diversity

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Original Research Article

## BOARD INDEPENDENCE AND FINANCIAL STATEMENT FRAUD: THE MODERATING EFFECT OF FEMALE GENDER DIVERSITY

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### *Abstract*

*We investigate the relation between board independence and financial statement fraud using female gender diversity as moderating variable. This is against the backdrop of the paucity of extant literature addressing the issue. The dichotomous nature of the dependent variable of financial statement fraud necessitated the use of the logit panel least square regression technique in estimating the coefficients of the regression variables. The data was sourced from a sample of seventy-five companies listed on the Nigerian Stock Exchange as at 31<sup>st</sup> December 2016. The sample was filtered from the one hundred and eighty-four firms listed on the Nigeria Stock Exchange as at 31<sup>st</sup> December of the same year. The regression analysis reveals a significant negative relationship between the explanatory variables of board independence, female gender diversity and financial statement fraud. However, the joint effect of board independence and financial statement fraud did not produce the desired result. The relationship between the interactions of the two variables is positive and contrary to our apriori expectation of a negative relationship. Our evidence suggests that independent female board members may not necessarily advance the objective of quality financial reporting. It is recommended that female board members should be appointed as executive directors who may not exercise independence.*

**Keywords:** Board independence, female gender diversity, hegemonic masculinity, homosociality, agency theory.

**JEL Classification:** G340

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## **1.0 INTRODUCTION**

In any business organisation, the board of directors, simply referred to as the “Board,” is vested with the responsibility of hiring managers, and administering the activities of the organisation including the preparation and presentation of financial statements (S.334 (1) of the Companies and Allied Matters Act 2004 as amended). The efficient administration of the activities of the business can only be achieved with some level of objectivity on the part of the board of directors, which was the basis of the separation of decision management from decision control. But a key argument which tends to truncate this perceived objectivity is the fact that the directors are basically selected by the same management, a practice which tends to jeopardise the sacred quality of board independence.

The need for independent directors was heightened after the high profile collapse of some hitherto too big to fail business organisations such as Anderson, Enron, WorldCom, Oceanic Bank Nigeria Plc, Intercontinental Bank Nigeria Plc, Savanna Bank Nigeria Plc, and the financial malfeasance of some entities such as Cadbury Nigeria Plc, Unilever Nigeria Plc, Bank of Montreal, and Koss corporation to mention a few. To address this global financial crisis, some legislative intervention was put in place by different countries to strengthen the corporate governance mechanism with emphasis on the independence of the independent directors. The Sarbanes-Oxley Act of 2002 in the United States of America was designed to strengthen the independence of the directors. The US Securities and Exchange Commission requires 50% of the board of directors of listed companies to be independent of management. The different code of corporate governance in Nigeria were all geared towards institutionalising corporate governance practices.

Within the broad framework of directors independence lies the issue of gender diversity. Conventional boards have been criticised severally for promoting homosocial dominance. Homosociality is described as a same-sex relationship that has no romantic or sexual undertone. The corporate board are currently dominated by male directors with little or no opportunity for female representation. By conventional wisdom, and leaning on the time-

tested electromagnetic force of Physics, unlike charges are known to attract while like charges repel. Hence, the argument for a balanced board cannot be a misplaced priority. According to Brennam and McCarthy (1997), women on the board confer two complementary benefits of independence and a better appreciation of consumer behaviour. Opponents of the homophily ideology are of the view that optimum female representation on corporate boards will enhance the performance of the business organisation. It has been established that firms with optimum female representation will exhibit reduced earnings management.

The political and socioeconomic effects of homosocial dominance has reverberated across the globe, hence the heightened legislative interventions to bridge the gap between male and female representation on corporate boards. In Nigeria, even though female representation in corporate boards has no statutory backing, the 1999 Federal Constitution, Chapter 2, Section 14(1) made provision for gender equality. The National gender Diversity Policy made provision for 35% female representation in all federal appointments in Nigeria from the year 2006. The policy forms the basis of the gender mainstreaming of the Good luck Jonathan administration. The extent to which the present administration is upholding the policy is a question for another forum. In the year 2005, Norway a law that prescribes 40% female representation on corporate boards. A year later, precisely in 2006, the European Commission and the European Parliament established 40% gender representation on the board of listed companies. To date, France, Germany, Italy Spain, Iceland, Belgium, and Netherland have all complies fully (Eckbo, Nygaard, & Thorburn, 2016, cited in Hunnerich & Jansson, 2017).

The correlation between the twin concept of independence (Beasley, 1996; Seasner, 2000; Moradi, Salehi, Bighi, & Nafani, 2012; Fodio, Ibikunle, & Oba, 2013 and D'onza & Lamboglia, 2012), female gender representation Carpenter, Gelethanyezi, & sanders, 2004; Riagroth, Peek, & Tache, 2007; Rauf, Johari, Buniamin, & Rahman, 2012; and Gravidas, Serger, & Yosef, 2012) and financial statement fraud has enjoyed robust empirical consideration. A multiplicity of factors motivates the current study: uppermost is the fact that the joint effect of board independence and female gender representation on corporate boards may not have been investigated in extant literature to the best of our knowledge. Second, the existing studies reported mixed findings on the

relationship between board independence, female gender representation and financial statement fraud. This inconsistency throws up a vista of opportunity for further research. Third, the issue of homosocial dominance has been reduced predominantly to a developing country challenge, and there seems to be a paucity of empirical literature advancing a developing country perspective to this topical issue.

Against the above backdrop, the fundamental objective of the study is to investigate the joint effect of board independence and female gender representation on financial statement fraud. To achieve this objective, we constructed a dichotomous variable of 1 (for non-fraud companies with a Beneish M index less than -2.22) and 0 (for fraud companies with a Beneish M index greater than -2.22) for a sample of seventy five companies listed on the Nigerian Stock Exchange market between 2009 and 2016.

The preliminary results of the study found support for the homosocial dominance of the board of the sampled companies. The result of the descriptive statistics in Table 1 reported approximately 70% male directors with a mean board size of 9 members and a mean female representation of 1.00. The result of the interaction between board independence and female gender representation is positive and statistically significant which is contrary to our apriori expectation of no significant relationship. The result shows that where female board members are independent of management, they tend to increase financial statement fraud. The result is however not unexpected if we draw an analogy from the high profile cases of corruption associated with female members of government and Captains of industry some of which have even been convicted. The study made a modest contribution to extant literature by showing that the conferment of power (independence) on female board members tends to increase the likelihood of financial statement fraud.

The remainder of the paper is organised as follows: Section two focuses on the literature review and hypotheses development. Section three addresses the methodology with emphasis on theoretical framework and model specification. Section four presents the estimation result and discussion of findings. Section five concludes.

## **2.0 LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT**

### ***Financial Statement Fraud***

Financial statement fraud is a blend of two concepts: Financial statement and fraud. While the former is simply described as the end product of financial transactions or economic events, the latter is any act, omission, or misrepresentation of pecuniary nature which is preconceived to mislead a party to a transaction. The American Institute of Certified Public Accountants- AICPA (1987:8) described fraud as “any intentional act or omission that results in materially misleading financial statements”. It is the deliberate manipulation or misstatement of the information content of the financial statement with the intent to deceive or cause an economic loss. According to Black (2006), financial statement fraud tends to fuel the problem of information asymmetry thereby increasing the agency cost.

Financial statement fraud may be motivated by a multiplicity of factors ranging from management compensation (Watts & Zimmerman, 1990), minimisation of tax liability (Spathis, 2002), desire to meet restrictive debt covenants (Dechow et al, 1996), the need to meet internal and external forecast (Feroz et al, 2000), poor internal control environment (Zimbelman & Aibreicht, 2013), and the need for rapid growth (Bells & Carcello, 2010). The above motives are subsumed in the Cressey (1973) motives of perceived pressure, opportunity and rationalization. Pressure is described as the incentives behind the fraud. Pressure is classified into two as financial pressure (with pecuniary motive) and non-financial pressure (which is driven by the behavioural pattern of the fraud perpetrators). Opportunities are the conditions that lay the foundation for fraud to happen. While rationalization is simply the acceptable reason for fraud and fraudulent practices.

Different studies have adopted different measures of financial statement fraud such as earnings misstatement (Agrawal & Chadha, 2005), Securities and Exchange Commission enforcement actions (Beasley, 1996), Chen et al., 2006, and Dechow et al., 1996), accounting conservatism (Ahmed & Duellman, 2007), and

abnormal accrual (Carcello et al., 2006; Peasnell, et al, 2005). For purposes of the current study, the Beneish M score was used to categorise the firm into manipulators (assigned 1, where the Beneish M index is greater than -2.22) and non-manipulators (assigned 0 where the Beneish M index is below the -2.22 benchmark).

The Beneish M score was calculated from eight ratios even though a variant of five ratios also exists. The ratios are: Depreciation index (DEPI), Revenue and general administrative index (RGD), Leverage index (LVGI), Total accrual to total asset index (TATA), Revenue growth index (RGI), Asset quality index (AQI), Gross margin index (GMI) and Days trade receivable index (DSRI). The M score is based on a linear combination of these variables with the following weights assigned:

$$M = 4.84 + .92(DSRI) + 0.528(GMI) + 0.404(AQI) + 0.892(RGI) + .115(DEPI) - 0.172(RGI) + 4.679(TATA) - 0.327(LVGI) \text{ -----} \\ \text{----- eqn (i)}$$

The five variable version of the Beneish m score excludes RGI, DEPI, and LVGI, which were said to be insignificant in the original Beneish model. The linear combination of the five variable model is presented as:

$$M = 4.84 + .92(DSRI) + 0.528(GMI) + 0.404(AQI) - 0.172(RGI) + 4.679(TATA) \text{ -----} \text{ eqn (ii)}$$

### *Independent Directors and Financial Statement Fraud*

Independence maybe described as an abstract state of the human mind which lacks a precise definition and too complex to be reduced to a legal code. The Cambridge English Dictionary described independence as the ability to live your life without being helped or influenced by other people in matters of opinion or action. It is also used to describe the ability to function or accomplish a given task without the interference, influence, or dictate of others. It is a qualitative characteristic required or expected of people in places of authority. It is a valid component of professionalism and describes a state of freedom of thought and action.

Independence exists in a continuum of two opposing extremes of total independence to the extreme left of the continuum and total dependence, to the extreme right of the continuum.

Professionalism, objectivity, and the high ethical standard requires that positions to the extreme left of the continuum are preferable. Independence may be jeopardised by the presence of the threats of self-interest, self-review, familiarity, advocacy and intimidation.

From the perspective of the Board, non- executive directors without pecuniary association with management are by their nature supposed to be independent of management. Independent directors are internal governance mechanisms designed to reduce the agency cost arising from the conflict of interest between resource owners and resource managers. The premium placed on the independent director is a function of how well they involved with quality decisions in their respective organisations.

There appear to be two strands of literature on the nexus between independent directors and financial statement fraud. The first and more popular strand of research reported a negative relationship between the two variables. Suggesting that the presence of non-executive directors reduces financial statement fraud. Klein (2002); Peasnell, Pope, and Young (2005); Anderson, Masi, and Reeb (2004) found a negative relationship between board independence and financial statement fraud proxy by the cost of debt. Suggesting that board independence increases financial reporting quality by reducing the likelihood of financial statement fraud. Chen et al. (2006) proxy financial statement fraud using SEC enforcement actions and reported a negative relationship. According to Fama and Jensen (1983), outside directors help to strengthen the internal control mechanism of the board.

The second strand of literature reported a positive or no relationship between board independence and financial statement fraud. The presence of non-executive directors in the board was found to be insignificantly associated with financial statement fraud (Ohiokha, 2017) and financial performance (Bhagat & Black, 2011). In the same vein, Park and Shin (2004) reported a positive relationship between non-executive directors and financial statement fraud. The positive relationship was attributed to the rudimentary nature of the labour force in Canada. Agrawal and Chadha (2005) did not find any relationship between board independence and financial statement fraud. Proponents of the positive relationship argued that the independent directors lack the incentive to properly monitor management. It has also been discovered that some independent directors are superficially

independent as they are found to have either socio or economic ties with management. This apparent independence seems to reduce the efficacy of the independent director (Hwang & Kin, 2009). Even though this assertion was made in the time past, nothing seems to have change in contemporary times.

The different strand of empirical literature suggests that the issue of the nexus between board independence and financial statement fraud is far from being settled. This inconsistency formed the basis of our first proposition: ***The proportion of non-executive directors on the board is not significantly related to financial statement fraud.***

### *Female Board Gender and Financial Statement Fraud*

Group segregation of women is a reflection of the age-long inequality or gender segregation that is deeply rooted in the society in general. Same-sex educational institutions, traditional cult groups, Chieftaincy affairs are some of the societal reflection of bias against the female gender. Some have argued that the segregation is a natural phenomenon. According to Bussey and Bandura (1992), as early as three of four years, children seem to have a preference for their sex compared to the opposite sex. It is therefore correct to say that homosociality is as old as man.

The role of women on the board may be viewed from two opposing perspectives which we have loosely classified as positive and negative roles. Proponents of increased female representation on corporate boards believe that women are capable of multitasking and this is capable of conferring a broad spectrum of an idea which may translate into positive decisions that may help reduce financial statement fraud (Abbott, et al, 2012). Drawing from the principle of the attraction of unlike forces in electromagnetic forces of Physics, attractive forces of a balanced board will enhance cohesion and positive integration that to breed a peaceful atmosphere for effective deliberation. If like charges repel, there is bound to be a natural form of resentment in a homosocial board dominated by male directors. Uncontrolled resentment may degenerate into hatred and animosity, and there is hardly any positive outcome from such a charged environment. Women are said to be better in the acquisition of voluntary information which may help to reduce information asymmetry. They are more cautious, risk-averse and less aggressive in decision making (Bynes, Miller, & Schater, 1999). Jaggi, Lueng , and Gul (2009) reported that women are likely to reduce actions

that may trigger earnings management. They are ethically conscious and not likely to engage in the dysfunctional behaviour.

Abbot, Parker, and Presley (2012) find a significant association between the presence of at least one woman on the board and a lower likelihood of restatement. They proxy gender diversity with a dichotomous variable of 0 where there is no presence of female gender and one if there is at least one female director. In the same vein, Arun, Almahrog, and Aribil (2015) focused on UK listed companies and found that firms with a higher number of female directors reported reduced earnings management. Ianti and Rami (2012) focused on High-Tech companies and reported a negative relationship between the female board of directors and financial statement fraud.

Opponents of female gender representation in corporate boards argued that a heterogeneous board may develop communication problem resulting from a low level of identity. Heterogeneous board is said to be incapable of building effective team spirit (Earley & Mosakowskil, 2000). According to Jianakoplus and Bernasek (1995), women are less likely to undertake any risky venture due to their nature of risk averseness. The implication of these extreme conservatism is a low level of economic resources and below average performance. To some, minority group members may encourage divergent thinking in the boardroom, which may not only be diversionary but may result in excessive time-wasting in decision making (Westphal & Milton, 2000).

Campbell and Miguez-Vera (2008), drawing inspiration from the work of Lau and Murnighan (2006) argued that increased gender representation generates more diverse opinion and unnecessary details that make decision making time-consuming and less effective. William and O'Reilly (1998) believed that divergent views might produce conflicts that will culminate in higher employee turnover.

In the light of the different perspectives, we hypothesise in null form, ***that there is no significant relationship between female gender representations on corporate and financial statement fraud.***

#### *Firm Size, Firm Age and Financial Statement Fraud*

The firm-specific characteristics of size and age were included in the regression model to control for the potential

influence of their variation on the dependent variable of financial statement fraud.

### *Firm Size*

Different proxies exist for the size of the firm as a control variable such as: market capitalization (Abdullah, Parvez, Karim, & Toheen, 2005), log of total assets (Louge & Marquardt, 2004), total number of employees (Korad & Mangel, 2000), log of total revenue (Shehath, 1991) and book value of equity (Kaszok & McNichols, 2002). In this current study, we proxy firm size using the log of total assets. Kim, Liu, and Ghon-Rhee (2003) found a positive relationship between firm size and earnings management. Ali, Noor, Khurshid, and Mahmood (2015) found a positive relationship between size and financial statement fraud and concluded that big firms have the financial flexibility to manipulate earnings and take advantage of investment opportunities. According to Meek et al. (2007), larger firms have stronger corporate governance practices, hence reduced information asymmetry which may translate into lesser likelihood to manipulate earnings. Pressure for internal and external targets may also increase the likelihood of financial statement fraud (Barton & Simko, 2002).

### *Firm Age*

Age is defined as the length of time for which a company is quoted on the stock exchange market (Beasley, 1996). With time, companies develop a reputation and enjoy public confidence which they may not afford to jeopardise. Hence, extant literature reported a negative relationship between the age of the firm and likelihood of financial statement fraud (Alsaed, 2006, Akhtarudin, 2015). Older firms are known to have the resources to have the financial resources to engage experts with a track record of transparency and professional reputation that will tend to reduce the extent of creative accounting. However, in high tax areas, companies tend to manipulate earnings to reduce their company income tax liability. Hence, may report a positive relationship between firm age and likelihood of financial statement fraud (Spathis, 2000).

## **3.0 METHODOLOGY**

### *Theoretical Framework and Model Specification*

#### *Theoretical Framework*

Corporate governance research has been a subject of different theoretic, from the Agency theory of Jensen and Meckling (1976), the Stakeholders theory of Freeman (1984), the Stewardship theory of Donaldson and Davis (1997) to the Resource dependency theory of Salancik and Pfeffer, (1978). The current study is anchored on the traditional agency theory, with reinforcement from the Lipman-Blumen (1976) homosocial theory of sex roles, which describes social bonds between persons of the same gender without any sexual interest. The theory is deeply rooted in the concept of hegemonic masculinity, which Carrigan, Connell, and Lee (1985) described as the legitimacy of the dominant male role in group dynamics. The Agency theory has its origin in the Berlie and Means (1932) doctrine of separation of ownership from control. According to Zahra and Pearce (1993), the agency theory has featured prominently in board discourse from inception. Hence, it formed the basis of our analysis of the nexus between the joint effect of board independence and feminist representation on corporate boards. The background of the theory is that as firms grow in size, the control of its operational activities is divested from the owners to professional managers (Board of directors). For effective coordination, the managers are required to be independent of any form of control from the resource owners. Independence can only be achieved where decision management is completely separated from decision control (Fama & Jensen, 1983). Independent managers are therefore expected to impact positively on the performance of the business as well as help to reduce earnings management. Therefore, we expect a functional relationship between board independence and financial statement fraud of the form:

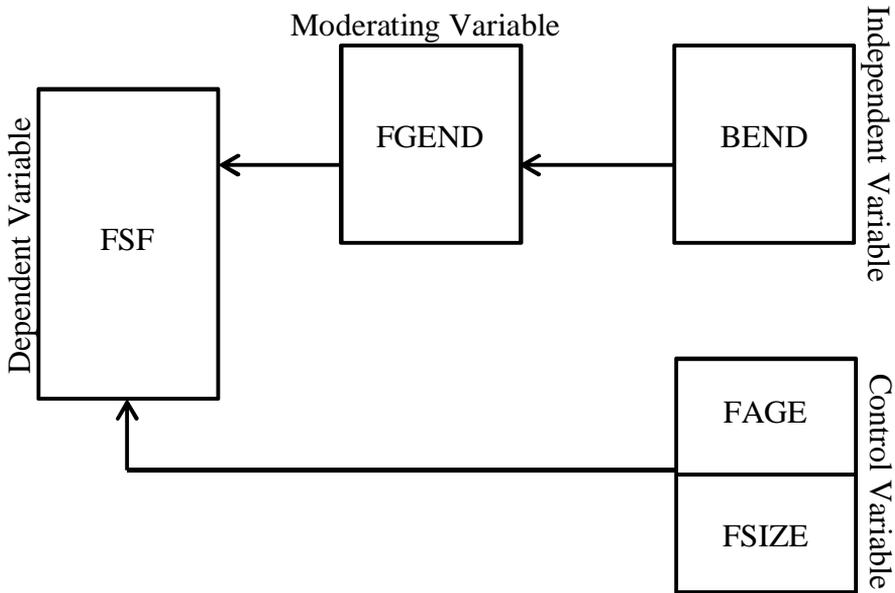
$$FSF = f(\text{Board independence}) \text{ ----- eqn (iii)}$$

The structure of the conventional board will hardly be able to support the above linear relationship given the lopsided nature of the board which is positively skewed towards male directors. Drawing inspiration from the Lipman-Blumen homosocial theory, the absence sparse or complete absence of female directors is said to be motivated by the larger form of segregation in the Society. This has implications for both the economic and social performance of any group, the corporate board inclusive. The exclusion of women on the pretence that they lack economic power and the expertise to function is no longer tenable. Hence, there is the wave of heterosexual propaganda that has gained worldwide recognition. The gender mainstreaming in political structures, the legislative

intervention in Europe which stipulates 40% quota of gender representation on the board of listed companies is not by accident. If women are said to be innovative and averse to uncalculated risk, it is expected that their presence in corporate boards will no doubt reduce the likelihood of financial statement fraud. Against the backdrop, and borrowing from the electromagnetic principle of like charges attract, we expect a functional relationship between female board representation and financial statement fraud of the form:

***FSF = f(Female gender representation) ----- eqn (iv)***

**Model Specification**



**Fig 1: Framework for the Independence-Financial Statement Fraud Dynamics**

Against the backdrop of the above framework, we collect equations three and four in a functional relationship as:

$$FSF = f(BIND, FGEND) \text{ ----- (v)}$$

Integrating the control variables of firm age and firm size that may cause variation in the dependent variable of financial statement fraud, equation five is modified as:

$$FSF = f(BIND, FGEND, FAGE, FSIZE) \text{ ----- (vi)}$$

Expressing equation five in econometric form and considering the panel nature of the regression data, equation six is transformed as:

$$FSF_{it} = \beta_0 + \beta_1 BIND_{it} + \beta_2 FGEND_{it} + \beta_3 FAGE_{it} + \beta_4 FSIZE_{it} + \mu_{it} \text{ ----- (vii)}$$

Considering the joint effect of board independence and female gender representation on financial statement fraud which is the fundamental objective of this study, we modified equation seven to reflect the interaction of the variable of board independence and female gender representation as:

$$FSF_{it} = \beta_0 + \beta_1 BIND_{it} + \beta_2 FGEND_{it} + \beta_3 BIND * FGEND_{it} + \beta_4 FAGE_{it} + \beta_5 FSIZE_{it} + \mu_{it} \text{ ----- (viii)}$$

*Where:* *FSF* is financial statement fraud, *BIND* is board independence, *FGEND* is female board gender, *FAGE* is firm age. *FSIZE* is firm size,  $\mu$  is error term for firm *i* in year *t*. *i* is subscript representing the firms (1to75) and *t* is subscript representing the period covered (2009 to 2016).

Based on extant literature and the theories underpinning the concept of corporate governance, it is presumptively expected that the coefficients of the regressors  $\beta_1, \beta_2, \beta_3 \dots \beta_n$  will  $< 0$ . The implication is that increases in the explanatory variables will ultimately reduce the likelihood financial statement fraud.

### *Research Design*

Leaning on the positivist research philosophy and the deductive research approach, the strategy adopted for the current study is multimethod quantitative research design. The population of the study is the totality of 184 companies listed on the Nigerian Stock Exchange as at 31<sup>st</sup> December 2016. A sample of 75 firms was scientifically selected through data filtering, and a data set of 600 firm year-observations from 2009 to 2016 was adopted for the study.

The dichotomous nature of the dependent variable of financial statement fraud necessitated the use of binary logit panel regression technique in the estimation of the regression variables. The regression analysis was preceded by the classical regression assumption tests of heteroscedasticity using the Breusch-Pagan-Godfrey approach, serial correlation using the Breusch-Godfrey test and the model specification using the Ramsey RESET test. The null forms of the hypotheses were rejected where the probability values exceed the benchmark of  $P= 0.05$ .

### *Operationalisation of Variables*

#### *Dependent Variable*

*Financial Statement Fraud (FSF):* The Beneish M score was used to categorise the sampled firms into manipulators, assigned 1, where the Beneish M index is greater than -2.22 and non-manipulators, assigned 0 where the Beneish M score is below the -2.22 benchmark (Beasley, 1996; Ohiokha, 2017; Okoye, 2016)

#### *Explanatory Variables:*

*Board independence (BIND):* Computed as the percentage of non-executive directors to the total number of directors on the

board (Agrawal & Chadha, 2005; Bhagat & Black, 2011; Ohiokha, 2017 and Park & Shin, 2004) *Female gender representation*: Computed as a dichotomous variable of 1 if there is presence of female board member and 0 if otherwise (Murnihgan, 2006; Westphal & Milton, 2000 and William & O'Reilly, 1998).

*Control Variables:*

*Firm Age (FAGE)*: Proxy by the number of years from the time the company was quoted on the floor of the Nigerian Stock Exchange (Alsaeed, 2006; Akhtarudin, 2005; and Beasley, 1996)

*Firm Size (FSIZE)*: Proxy as the natural logarithm of the total assets of the selected companies (Ohiokha, 2017; Marquardt, & Wieldman, 2004).

**4.0 ESTIMATION RESULTS AND DISCUSSION OF FINDINGS**

*Univariate Analysis*

*Table 1: Results of the Descriptive Analysis*

	FSF	BIND	FAGE	FSIZE	FGEND
Mean	0.730000	0.659067	27.15333	6.962017	0.540000
Median	1.000000	0.670000	31.00000	6.950000	1.000000
Maximum	1.000000	1.000000	55.00000	8.980000	1.000000
Minimum	0.000000	0.170000	2.000000	4.940000	0.000000
Std. Dev.	0.444330	0.158950	11.25793	0.764055	0.498813
Skewness	-1.036131	-0.373879	-0.433741	0.081362	-0.160514
Kurtosis	2.073567	2.668386	2.403547	2.392270	1.025765
Jarque-Bera	128.8136	16.72777	27.70707	9.895379	100.0166
Probability	0.000000	0.000233	0.000001	0.007100	0.000000
Sum	438.0000	395.4400	16292.00	4177.210	324.0000
Sum Sq. Dev.	118.2600	15.13388	75917.89	349.6839	149.0400
Observations	600	600	600	600	600

Table 1 presents results of the descriptive statistics of the regression variables. The dependent variable of financial statement fraud reported a mean value of 0.730000 indicating that about 73% of the sampled firms experienced fraudulent financial reporting during the period under consideration. The predictor variable of board independence reported a mean value of 0.659067 indicating that about 66% of the directors of the selected firms are non-executive directors. The control variable of age reported a mean

value of 27.153333 representing an average age of twenty-seven years. The mean firm size is 9.962017 representing a mean total asset of about #10Billion. The values of the standard deviations are relatively small indication small dispersion from the respective mean values of the variables of regression. The Jarque-Bera values are relatively large with significantly associated probability values which are indicative of the standard normal distribution of the variables.

*Table 2: Results of the Correlation Analysis*

Covariance Analysis: Ordinary  
 Date: 07/28/17 Time: 01:29  
 Sample: 1 600  
 Included observations: 600

Correlation t-Statistic Probability	FSF	BIND	FAGE	FSIZE	FGEND
FSF	1.000000 ----- -----				
BIND	0.058120 1.423687 0.1551	1.000000 ----- -----			
FAGE	-0.007729 -0.189021 0.8501	-0.042359 -1.036785 0.3003	1.000000 ----- -----		
FSIZE	-0.087302 -2.143060 0.0325	-0.108137 -2.659974 0.0080	0.030379 0.743230 0.4576	1.000000 ----- -----	
FGEND	0.033745 0.825668 0.4093	0.016474 0.402914 0.6872	-0.051633 -1.264319 0.2066	0.152510 3.773619 0.0002	1.000000 ----- -----

The results of the correlation analysis are presented in Table 2. The correlation coefficients are mixed with some variables reporting positive coefficients (Board independence and financial statement fraud (0.058120); Female gender and financial statement fraud (0.033745); board independence and female gender representation (0.016474); firm size and firm age (0.030379) and female gender and firm size (0.152510) and others reporting negative coefficients (firm age and financial statement fraud (-0.07729), firm size and financial statement fraud (-0.087302), firm age and board independence (-0.042359), firm size and board

independence (-0.108137) and female gender diversity and firm age (-0.051633). The coefficients are relatively small indicating the complete absence of the problem of multicollinearity in the predictor variables. With multicollinearity, it becomes impossible to get a unique estimate of regression coefficients of the predictor variables

*Multivariate Analyses*

*Table 3: Hosmer-Lemeshow Test of Goodness of Fit*

Goodness-of-Fit Evaluation for Binary Specification

Andrews and Hosmer-Lemeshow Tests

Equation: UNTITLED

Date: 07/28/17 Time: 01:35

Grouping based upon predicted risk (randomize ties)

	Quantile of Risk		Actual	Dep = 0		Dep = 1		Total Obs	H-L Value
	Low	High		Expect	Actual	Expect	Actual		
1	0.3992	0.6029	29	28.0157	31	31.9843	60	0.06488	
2	0.6055	0.6454	19	22.3331	41	37.6669	60	0.79239	
3	0.6467	0.6945	19	19.7558	41	40.2442	60	0.04311	
4	0.6951	0.7144	19	17.6301	41	42.3699	60	0.15073	
5	0.7151	0.7446	20	16.3548	40	43.6452	60	1.11687	
6	0.7447	0.7670	15	14.5059	45	45.4941	60	0.02219	
7	0.7670	0.7898	11	13.2149	49	46.7851	60	0.47609	
8	0.7899	0.8158	15	11.8666	45	48.1334	60	1.03138	
9	0.8161	0.8441	8	10.1468	52	49.8532	60	0.54664	
10	0.8445	0.9138	7	8.17634	53	51.8237	60	0.19594	
		Total	162	162.000	438	438.000	600	4.44021	
H-L Statistic			4.4402	Prob. Chi-Sq(8)		0.8154			
Andrews Statistic			4.9582	Prob. Chi-Sq(10)		0.8940			

Table 3 presents the result of the Hosmer-Lemeshow test of goodness of fit with the null hypothesis of the model fit the regression data and the alternate hypothesis of the model does not fit the data. The test is a Chi-square estimation of the goodness of fit test, and the result of the analysis reported H-L Statistic of 4.4402, df (8) and a probability value of 0.8154 indicating there is no evidence of poor fit which means the regression model is correctly specified.

*Table 4: Results of the Logit Panel Least Square*

Dependent Variable: FSF

Method: ML - Binary Logit (Quadratic hill climbing)

Date: 07/28/17 Time: 01:30

Sample: 1 600

Included observations: 600

Convergence achieved after 4 iterations

Covariance matrix computed using second derivatives

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	4.124885	1.110543	3.714295	0.0002
BIND	-2.611603	0.952265	-2.742519	0.0061
FGEND	-3.387363	0.833810	-4.062513	0.0000
BIND*FGEND	5.506297	1.231118	4.472600	0.0000
FAGE	0.003171	0.008464	0.374701	0.7079
FSIZE	-0.226813	0.127408	-1.780205	0.0750
McFadden R-squared	0.040385	Mean dependent var		0.730000
S.D. dependent var	0.444330	S.E. of regression		0.435467
Akaike info criterion	1.139407	Sum squared resid		112.6413
Schwarz criterion	1.183377	Log-likelihood		-335.8222
Hannan-Quinn criteria.	1.156524	Deviance		671.6444
Restr. deviance	699.9106	Restr. log likelihood		-349.9553
LR statistic	28.26617	Avg. log likelihood		-0.559704
Prob(LR statistic)	0.000032			
Obs with Dep=0	162	Total obs		600
Obs with Dep=1	438			

The results of the cross-sectional logistic regression are presented in Table 4. The analysis shows that there exists a statistically significant negative relationship between the predictor variable of board independence and financial statement fraud. The result shows a Wald Z-statistic of -2.742519 and a probability value of 0.0061 or  $P < 0.05$ . The result implies that a unit increase in board independence will reduce the log odds of financial statement fraud by -2.61. The result rejects our null hypothesis of no significant relationship. The result is consistent with the predominant negative relationship reported in the extant literature between non-executive directors and the likelihood of financial statement fraud (Anderson, Mansi, & Reeb, 2004; Chen et al., 2006; Fama & Jensen, 1986; Klein, 20012; Peasnell, Pope, & Young, 2005). This strand of literature believes that the presence of independence board members reinforces the control mechanism of the board and reduces the likelihood of fraudulent reporting. The finding is inconsistent with the positive relationship reported by Ohiokha, (2017) and Park and Shin (2004).

The relationship between female gender on the board and financial statement fraud is negative and statistically significant with a Wald Z-statistic of -4.062513, a coefficient of -3.387363 and a significant probability value of  $0.0000 < P = 0.05$  at the five% level. Suggesting that a unit increase in the presence of a female on the board will reduce the log odds of financial statement fraud by -3.387363. The result negates the justifications for the hegemonic masculinity that pervades corporate boards worldwide. It exposes the weaknesses of the Lipman-Blumen homosocial theory. The robust negative coefficient is beyond the likelihood of chance and corroborates the significant negative relationship reported in the extant literature (Abbott, Parker, & Presley, 2012; Arun, Almahrog, & Aribil, 2015; Jaggi, Lueng, & Gul (2009). Women are known to take calculated risks, innovative, better at networking and less aggressive in decision making. It is expected that these qualities will collectively reduce the likelihood of fraudulent financial reporting.

Contrary to expectation, the interaction between female gender on the board and board independence is positively related to the likelihood of fraudulent financial reporting. The variable reported a robust coefficient of 5.506297, a Wald Z-statistic of 4.472600 and a significant probability value of 0.0000 at the five% level. The evidence suggests that a unit increase in the presence of independent female directors will increase the log odds of fraudulent financial reporting by 4.472600 units. Drawing analogy from the high profile cases of fraud involving women in high places of authority in Nigeria, it is safe to say that female director should be restricted to executive directors since the combination of feminism and power of independence increases the likelihood of financial statement fraud in Nigeria.

The result of the control variables of firm age and size is not statistically different from zero. Suggesting that the control variables do not substantially increase or decrease the likelihood of financial statement fraud in the selected companies.

## **5. CONCLUSION AND RECOMMENDATIONS**

We investigate the relationship between the joint effects of board independence and female gender representation on the likelihood of fraudulent financial reporting by firms listed on the Nigerian Stock Exchange market. Our evidence of a significant positive relationship between the joint effect of board independence

and female gender representation is robust and beyond the likelihood of chance. The finding is justified by the high profile cases of corruption perpetrated by women in high places of authority in Nigeria. Such as the Patricia Etteh multiple contract scam of #628M (Ogundiya, 2010), and the Cecilia Ibru 20Million US Dollars corruption case (Kana & Zakari, 2016) Independence will confer absolute powers on female directors which according to Acton (1887), cited in Martins (2017), may corrupt absolutely. The study is limited first by the micronumerosity of our research data and secondly by the fact that it did not specify the optimum number of women required for a balanced board. This is against the backdrop of the current wave of quota female gender representation on corporate boards. It is imperative for future researchers to resolve the issue of an optimum number of female directors required for a balanced board in Nigeria. The limitations did not, however, vitiate the generalisation of our research findings.

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