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DO STRENGTH OF WOMEN IN THE UPPER ECHELON INFLUENCE EARNING QUALITY? THE APPLICATION OF CRITICAL MASS THEORY

Inneh Eghosa

Obafemi Awolowo University, Ile-Ife, Osun State.

ABSTRACT

The global financial crises and scandals have necessitated the need for a robust corporate governance mechanism to ascertain an earnings quality of the financial report. The board of directors being the apex body of the corporate governance is saddled with the responsibility for monitoring, supervising and controlling the activity of the management. To reduce the information asymmetry and provide an accurate projection of cash flow, the financial and legislative regulatory authorities in developed economies recommends a well-constituted gender-diverse board in which the marginalised gender is at least 40 per cent of the board. Based on the critical mass theory, the women can only influence the board decision when the threshold is attained. However, following the Nigerian institutional framework in respect of critical mass of women in board, there is still a dearth of literature on the effect of the strength of women in board decisions, with cognisance to critical mass theory.The study examines the effect of the critical mass of female in the board and audit committee on earnings quality. The study employs a longitudinal research design and census study by collecting secondary data on Deposit Money Banks from 2011-2020. The ordinary least square is used in estimating the data collected. The result showed that women on the board and audit committee have a positive and significant effect on earnings quality when the critical mass threshold is reached. The study concludes that females play a critical part in the corporate governance decision-making process when the critical mass threshold is reached.

Keywords: Earnings Quality, Critical Mass Theory, Deposit Money Banks, Board of Director, Corporate Governance

INTRODUCTION

Globally, the banking industry is the most important sector of the economy as it creates an avenue for the deficit units in the economy to access funds from the surplus units, which help in promoting national economic growth. Based on the importance of the banking sector, numerous stakeholders have placed reliance on the banks' financial reports to make an informed economic judgement and this necessitated the need for the financial report to be devoid of material misstatement. However, following the global financial crises, the stakeholders are sceptical of the banks' earnings quality in reflecting the economic reality (Kanageretrian et al., 2014). Also, the managements are accused of engaging in opportunistic behaviour as a result of information asymmetries created by the agency contract (Abad et al. 2017; Srinidhi et al. 2011). In support of the above-mentioned, the agency theory posits that information asymmetry and management opportunistic behaviour may result from the execution of management stewardship (Jensen & Meckling, 1976; Sheleiferd & Uishny, 1989). Furthermore, extant studies (Beatty & Liao, 2015; Leventis et al., 2013; Garcia-Sanchez et al., 2016) affirm that information asymmetry is more pronounced in the banking sector compared to other sectors of the economy. To reduce this agency problem, there is a need for a robust corporate governance mechanism with an effective board of directors.

The board of directors is saddled with the responsibility of ratifying, approving, monitoring and controlling management activities, with a view of protecting various stakeholders (Fama & Jensen, 1983; Jensen & Meckling, 1976; Zahra & Pearce,1989). Despite the existence of the board, there are a colossal financial scandal (e.g., Enron, Lehman Brother and AIG), especially in the first decade of the twenty-first century. The board of these financial scandal companies are accused of gender imbalance of being male dominated or skewed (Adams & Funk, 2012; Güner et al., 2008). In restoring the faith of the stakeholders in the financial report, the board should be diverse in terms of gender, skills, experience, nationality, and other criteria to enhance financial reporting and earnings quality (Chen et al., 2015; Khalil & Ozkan, 2016; Pham et al., 2019), which is in line with the resource dependency theory and agency theory.

Gender diversity has taken a centre stage in last decade, across the globe (Dobija et al, 2021; Nguyene et al, 2020; Yarram & Adapa, 2020; Zalata et al, 2021). However, for the female to have a significant influence on the board decision, the group must have attained a critical mass threshold (Kanter, 1977; Post & Byron, 2015; Schwartz-Ziv, 2017; Strydom et. al, 2016). A critical mass threshold is the sufficient proportion or number of women in the board capable of significantly influencing on the corporate decision as an body rather than as a token (Kanter, 1977, De Masi et al., 2021) .The proponents of the critical mass threshold assume that the greater involvement of women beyond the threshold is not for only fairness but also for effective governance (Kanter, 1977; Konrald et al., 2008; Kramer et al., 2006). Women are believed to be ethical (Adam & Funk, 2012; Lund, 2008) conservative and risk-averse (García-Sánchez & Martínez-Ferrero, 2015; Gul et al., 2013) which are important characteristics in mitigating risks against earnings management and invariably enhancing financial reporting quality. In the advanced economies, the gender diversity policies are geared toward a balanced board, that is the marginalised sex must have at least 40 per cent of the entire board member (Kirsch, 2018; Terjesen & Sealy 2016; Zalata et al, 2021).

The relationship between gender diversity and earnings quality has been under-studied (Zalata, 2021). Wiley and Monillor- Tomos (2018) assert that there is no empirical evidence on the application of the critical mass threshold of women in the United State board prior to thier study. Post and Byron, (2015) asserts that gender-related studies failed to consider the critical mass of female in the board but rather examine the subject matter from the linear perspective. Limited empirical Studies (e.g Dobija et al, 2021; Joecks et al., 2013; Nuber & Velter, 2021; Wiley & Monllor- Tomos, 2018) have taken cognisance of critical mass of women in the upper echelons of the organisation in gender related studies.

Furthermore, in Nigerian context there are limited studies, if any, on the critical mass threshold on any gender-related studies in Nigeria. Also, there are very limited studies (e.g., Enofe, Iyafekhe & Eniola, 2017) that have examined the relationship between gender diversity and earnings quality. The researcher fills the gap in knowledge by contributing to the limited empirical literature on gender diversity earnings quality. Secondly, the study also tested the critical mass theory, by considering the critical mass threshold on gender diversity, to ascertain whether the postulation of the theory is applicable to the Nigeria Banking Sector. Thirdly, the researcher measures the earnings quality by using earnings predictability to ensure that the two components of earnings quality of information and opportunistic component are captured, which proposed by Beneish (2001) supported by the studies (e.g., Garcia-Meca et al., 2018; Kanageretrian et al., 2014).

The study covers the Nigerian Deposit Money Banks (DMB's), which is justified on the ground that the sector has witnessed several financial scandals. Secondly, the DMB's is the only sector in Nigeria that has institutional framework which recommend that the critical mass threshold of at least 30% of board member to be female, which issued is by the Central Bank of Nigeria. The study examines the effect of gender diversity on earnings quality in the Nigerian Deposit Money Banks (DMBs) from 2011-2020. The base year of 2011 is justified by the Financial Reporting Council of Nigerian 2011 Act, which released the first gender policy that affects the board composition. The study employs ordinary least squares and carry out a robustness check using the critical mass threshold of at least three board members being female, the proportion of women, beyond the tokenism threshold of 15 per cent. The result indicates that the strength of women is positively related to earnings quality. The rest of the paper is divided into the following sections: the literature review, methodology, result and interpretation, and conclusion and recommendation.

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

There is no acceptable standard definition for earnings quality (Abdelghany, 2005; Beneish, 2001; Inneh et al, 2020), as numerous researchers, professionals such as auditors, financial analysist, and other users of financial statement view the concept differently (Kirschenheiter & Melumad, 2002). For instance, the accounting practitioners and auditors view the concept in relation to earnings management and assume the financial reporting shows higher quality when it exhibits a low earnings management (Brown, 1999; Healy & Wahlen, 1999). The capital market analysts, view the earnings as quality when it provides information about the future performance and cash flow (Ball and Shivakumar, 2005; Bellovary et al., 2005). Beneish (2001) posits that the earnings quality provides both the informative and opportunistic perspectives. The informative perspective is of the view that earnings quality should provide information content about the future firm's performance and cash flow. While the opportunistic perspective posits that managers manipulate result to mislead the user of accounting information as a result of the agency cost created by information asymmetry. The Beneish (2001), (Brennan, 2021). attempt to reconcile the divergent view of various stakeholders of financial statement in respect of earnings quality. Hence, the onus rest on the board to ensure that the earnings quality demonstrate both perspectives. However, most of the earnings quality studies focus on the opportunistic perspective neglecting the informative content of the earnings management (Brennan, 2021).

The financial statement of the any companies should provide both the opportunistic and informative perspective better when the board is heterogenous. The board of directors is the apex body in any corporate entity saddled with the responsibility of monitoring, advising, controlling, and supervising the activities of the management (Åberg et al., 2019; Gull et al., 2018). The management may likely exploit the information asymmetry and engage in opportunistic behaviour for personal benefit (Krishnan & Parsons, 2008; Srinidhi et al., 2011) which is in line with the agency theory, however, the board are expected to minimise the agency problem created by information asymmetry (Gul et al., 2011; Srinidhi et al., 2011) the greater participation of women in the board may mitigate against opportunistic behaviour as women are more ethical and conservative than men (Harris et al., 2019; Kao et al., 2020; Liu et al., 2016; Tang et al., 2020; Zalata et al., 2019a) . In the same vein, the board is also responsible for building and maintaining corporate image creating both social and business networks and managing the corporate resources (Åberg et al., 2019), which is expected from the resource dependency theory. Wiley and Monllor- Tomos (2018) posits that effective management the company's resources and reduction of the information asymmetry, requires board diversity. The argument for more women is premised on attributes such as highly ethical (Cumming et al., 2015; Levi & Zhang, 2010; Nuber & Velter, 2021), conservative (Baixauli-Soler et al., 2015; Gavious et al., 2012), risk averse (Byron & Post, 2016; Khazanchi, 1995) bring heterogenous opinion (Burgess & Tharenou, 2002), increases independence (Carter et al., 2003; Srinidhi et al. 2011) among other attributes exhibited by the female group . Conversely, similarity attraction theory posits that diversity often leads to a lack of cooperation, distrust, and conflict of one social group from the other (Wiley & Monllor- Tomos, 2018).In a similar vein, social categorisation theory, views that members within a particular social group tend to trust, cooperate, and relate with the member within their group compared to outside members. Most countries across the globe structure the gender policy based on social categorisation prior to the global financial scandal and crises. For example, ten per cent of companies in the USA, had the entire board members 100 per cent dominated by men and 75 per cent of the entire companies have a token female representation (Catalyst, 2013). In Nigeria gender-related policies issued by Financial Reporting Council of Nigeria (2011) stipulate that the board should be diverse without giving a fixed quota but, most listed firms in Nigeria, just like the USA has just one female member. However, Kramer et al (2006) claim that when a board contains only one woman, she experiences the limitation of tokenism. Kanter (1977) asserts that when women are less than 15 per cent of the entire board member, the group is regarded as a token or just a symbol, hence this social group is marginalised and cannot significantly influence the board decision. Hence, the female group influences the boardroom decision when the right number or proportion of threshold is attained (Kanter, 1977; Joecks et al., 2013; Wiley & Monllor- Tomos, 2018).

The critical mass theory is the appropriate number or proportion of the under-represented group, more often than not the female group, to the entire members capable of having a significant influence on the board's policy as a group but not token (Kanter, 1977). There is no consensus as to the critical mass threshold, while Kanter (1977) assumes that the critical mass threshold of women is at least 15 per cent, Konrad et al. (2008), Kramer et al. (2006) assume a magical number of 3 female members and Joecks et al. (2013) postulate that the critical mass of female on the board is 30 per cent. However, the proponents of the critical mass theory assume that the benefits of women on the board are not unlocked except the critical mass threshold is reached.

The critical mass threshold premised their argument on the assumption that a curvilinear relationship or U shape exist in gender diversity related studies (Nuber & Velter, 2021; Wiley & Monllor- Tomos, 2018), and the female sex group is assumed to be the stereotyped social group unlike the agency and resource-based theory that assumes a linear relationship. To buttress this, Schwab et al (2016) assert that it is impossible to find a board that is 100 per cent dominated by females or the male group being regarded as a token. The critical mass of women is so important in the board composition, yet limited studies (e.g., Joecks et al., 2013; Nuber & Velter, 2021; Wiley & Monllor- Tomos, 2018) have examined its effect in gender-related studies.

Nigeria Institutional Framework on Gender Diversity

In Nigeria, the Financial Reporting Council of Nigerian (FRCN) (2011) Act Section 54 Sub-Section 1 stipulates that the board should be diverse in terms of experience and gender. The FRCN (2011) Act futher states that the board diversity should result in independence, skills, integrity, and motivation of members to attend and participate in the meeting. Despite the recommendation of gender diversity by the FRCN (2011) Act, there was no provision or recommend of a fixed quota to encourage women participation in the board, hence most listed companies, other than DMB's tilted toward the social identity or similarity attraction gender group by having only one female member in the board.

Contrary to the FRCN (2011) Act, CBN, in 2012, the stipulate that at least 40 per cent of the entire management team of the DMB's must be women (International Finance Corporation, 2019). In 2014, the CBN recommends a voluntary threshold of 40 per cent of the DMB's board members to be female (CBN, 2014; PWC, 2020). Also, in 2018, the apex body mandated at least 30 per cent of the entire board members to be female (International Finance Corporation, 2019). The CBN's gender policy is directed towards increasing the participation of women in the board and probably to unlock the benefit associated with the social group or for social justice, as the proportion of .

Despite the CBN's gender policy in ensuring that women reach the critical mass threshold in the upper echelon, limited studies, if any, have examined the effect of the critical mass of women in, gender related studies in Nigerian banks. Most studies (e.g Akinkoye & Fapounda, 2019; Charles, Opemipo & Sunday, 2018) examine the association between gender diversity and performance, assume a linearity association. However, there are limited studies (e.g. Enofe et al., 2017) exist in Nigeria on board gender diversity and earnings quality let alone considering the effect of critical mass threshlod.

Hypothesis Development

Limited studies (e.g.Enofe et al., 2017; Garcia-Lara et al., 2017; Srinidhi et al., 2011; Sun et al.2011) exist on gender diversity and earnings management and the results are inconclusive. Most prior literature premise their studies on the agency theory and resources dependency theory which assume a linear relationship between gender diversity and earnings quality. In resolving the conflict of mixed results Post and Byron (2015) assert that the linear empirical studies fail to take cognisance of the critical mass threshold. Joecks et al (2013), Kanter (1977), Kramer et al (2006), and Konrald et al (2008) postulate a curvilinear relationship between gender diversity and performance. The critical mass proponents assumes that the benefit of women in the board is unlocked when the critical mass threshold is attained. Beyond the optimal tipping point of the critical mass, the female members will become the dominant group, while the male group will metamorphose to symbol or token, and this may lead to dysfunctional conflict between both sex categories (Nguyen et al., 2015). To affirm this, Schwab et al., (2016) claimed that "too little or too much" of a particular sex category led to dysfunction of group dynamics.
Although there are limited empirical literature on the subject matter, studies showed that when the critical mass of women threshold in the board and audit committee is attained, there is a positive and significant relationship with earnings quality.

Hence the study hypotheses that:

H_{11}: The critical mass of women on board is significant and positively related to earnings quality.

H_{12} : The critical mass of women on the audit committee is significant and positive related to earnings quality.

METHODOLOGY

Population and Sample Selection

The study employs a census sampling technique by taking all the 14 Listed Deposit Money Banks (DMBs') listed on the Nigerian Exchange Group Plc (NGX) as of 2020 as a sample. However, the study exempts DMB's that were incorporated within the period (2011-2020) resulting in Jaiz Bank not being considered as a sample. Also, the researcher selects DMBs' whose audited financial reports were consistently issued from 2011-2020. The DMBs' that fail to publish economic information on any of the variables of interest of the study were also not considered as a sample. The criteria resulted in 11 DMBs and 110 firm-year observations being selected as sample. Secondary data were hand-collected from the audited financial report of 11 DMB's that meet the criteria from 2011-2020. Based on the aforementioned, the study uses balanced panel data which falls within the context of a longitudinal research design.

Model Specification/ Measurement of Variables

The researcher premises the earning quality model from the two perceptions (the opportunistic and information) as postulated by the Beneish model (2001) constituent with studies (Tucker & Zarowin, 2006). The study adopts the earnings quality model of the studies (Garcia-Meca et al., 2018; Kanageretrian et al., 2014) based on the fact that it considered the informative and opportunistic aspect as postulated by the Beneish model (2001) and also of its suitability in the banking industry. The model is as stated as

E.Q = $EBT\square\ LLP_{it+1}$ $\quad Eqn(1)$

The E.Q denotes the earning quality, while the EBT_{it+1} connotes project earnings before tax, the DMB's performance which covers the informative aspect while the LLP covers the opportunistic aspect which is achievable through the choice of accounting framework used by the firm within the framework of IFRS & IAS. The strength of women is measured by the critical mass threshold of women in the boardroom and audit committee. Hence, the relationship between the strength of women and earning quality is mathematically stated as:

$$EBT.LLP = \beta_0 + \sum_{n=1}^{2} SOW \qquad Eqn\ (2)$$

The researcher decomposes the strength of women into two parts, the strength in boardroom and audit committee, considering the critical mass theory. Hence, the association between earning quality and strength of women is functionally $EBT.LLP = \beta_0 + \beta_1 CMWOB + \beta CMWAC \quad Eqn\ (3)$

Where the earnings quality is proxied with earning predictability and the strength of women measured by the critical mass of women on board CMWOB and the critical mass of women in the audit committee. The critical mass of women in the board is measured as a dichotomous variable, with a value of one, provided the proportion of female involvement in the board is at least 30 per cent, zero otherwise, constitent with the study (Wiley & Monillor- Tomos, 2018). The study expects a positive association between earnings quality and the critical mass of women in the board, this is premised on the assertion that women in the board manage the firm resources judiciously in an ethical manner, this is consistent with the studies (Ghosh, Marra & Moon, 2010; Gavious, Seqeu & Yosef, 2012). Also, the audit committee members perform both the supervisory, monitoring and oversight function, the greater the proportion of women the better the performance of these functions. The study predicts a positive association between the critical mass of women in the audit committee and earnings quality which is in line with prior studies (Lin & Hwang, 2010; Sun, Liu & Lan, 2011).

Furthermore, Board characteristics other than gender diversity are also included in the model as control variables. Other board characteristics included are board independence, financial expertise, board size and board meeting. The inclusion of other board characteristics as control variables resulted in Equation 4.

$$EBT.LLP_{it} = \beta_0 + \beta_1 CMWOB_{i\square\square} + \beta_2\, CMWOAC_{it} + \beta_3 BI_{it} + \beta_4 BFE_{it} + \beta_5 BS_{it} + \beta_6 BM_{it} \qquad equa\ (4)$$

The study postulates a positive relationship between the board independence and earnings quality, on the premise that board independence reduces the management's opportunistic behaviour and ensure that the financial reporting depicts the reality of the state of affair and performance of the firm, the study is in line with study such as (Gavious, Segeu & Yoset, 2012; Peasnell et al,, 2005). The board size measures by the total number of members in the board assumes that large board size has a higher likelihood of a better deliberation before arriving at a decision especially with several diversities such as academic qualifications, experiences, ethnicity, and nationality among others. Earnings quality increases with board sizes, hence the study predicts a positive relationship between board size and earning quality this is in line with the studies (Peasnell et al, 2005; Xie et al. 2003). The financial expertise in the board is expected to spot any form of managerial opportunistic behaviour and also monitor the choice of accounting policies employed by the financial accountants and managers. The increase in the level of board financial expertise is expected to improve the earning quality, this is in tandem to studies (García-Sánchez et al., 2017).

Lastly, board meeting is a medium used in taking several strategic decisions such as supervision, ratification, monitoring and oversight function, hence studies (Chen & Zhang, 2012; Xie et al. 2003; Vafeas, 1999) shows that board meetings positively influenced earnings quality. Conversely, studies (Ahmed 2007; Daghsni et al. 2016) assumes that board meeting is just a necessary ritual as it has no significant influence in board decision hence the research predicts a positive or no significant relationship between a board meeting and earning quality.

Control variables such as audit size, firm size and leverage are also included in the gender diversity- earning quality association. The audit type (AT) measured by an attributable variable of one when the firm is audited by the Big Four (namely, Deloitte, PricewaterhouseCoopers (PwC), Klynveld Peat Marwick Goerdele (KPMG) and Ernst & Young (EY)) and zero otherwise. The listed firms are expected to perform a mandatory statutory audit to increase investors' confidence in the financial statement. Several studies (e.g., Ogujiofor et al, 2017; Inneh et al, 2021; Oladipupo & Monye-Emina, 2016) have shown that audit type influences earnings quality and are of the view that large audit firms promote high financial reporting quality, and invariably earning quality. Conversely, recent studies (kinney & Libby, 2002; Libby et al., 2015; Choi et al., 2010) are of the view that economic bonding and client's bargaining may compromise auditors' independence. Hence, the researcher based on the aforementioned posits a bi-directional (positive or negative) relationship between audit type and earnings quality.

The study proxies firm size, by the natural logarithms of total assets. Firm size is assumed to be directly related to earnings quality; this is consistent with the studies (Fan et. al, 2019; Gavious et al., 2012). Finally, companies that are highly geared have a higher probability of engaging in earning management to achieve company target or opportunistic behaviour. Hence, the researcher expects a negative relationship between leverage and earnings quality, this is consistent with the study (Ali, Noor, Khurshid, & Mahmood, 2015; Fan et. al, 2019)

Hence, the gender diversity earning quality relationship for the study is furtherly expanded as:

$$EBT.LLP_{it} = \beta_0 + \beta_1 CMWOB_{it} + \beta_2\, CMWOAC_{it} + \beta_3 BI_{it} + \beta_4 BFE_{it} + \beta_5 BS_{it} + \beta_6 BM_{it} + \beta_7 A.T_{it} + \beta_8 FS_{it} + \beta_9 LEV_{it} + e_{it} \qquad equ\ (5)$$

Table 1
Definition of Variables

Variable Name	Codes	Definition
Earning Quality	EBT.LLP	is the joint effect of future performance and accounting choices
The critical mass of women on board	CMWOB	Expressed as a dichotomous variable of one, if the female involvement in the board is at least 30% or 3 members, zero otherwise
The critical mass of women in the audit committee	CMWOAC	Expressed as a binary code, the study accords one if the proportion of women in audit committee is at least 30% or zero otherwise

Variable Name	Codes	Definition
Board independence	BI	The number of non-executive members in the board
Board financial expertise	BFE	Expressed as a number of board members that hold a professional/ academic qualification in accounting/ finance-related field
Board size	BS	The totality of the members on the board irrespective of his/her gender
Board meeting	BM	Expressed as the frequency of board meetings in an accounting year
Audit type	AT	A binary variable of a value of one if assurance services are carried out by the big four, and zero otherwise
Firm size	FS	Expressed as the national logarithm of the Deposit Money Banks total assets
Leverage	Lev	This is the monetary value of equity scaled down by the value of total assets

Source: Author's Compilation 2021

RESULT AND INTERPRETATION

Descriptive Statistic

The gender diversity on the board and audit committee are represented by the variables: Critical Mass of Women on the Board (CMWOB) and the Critical Mass of Women on the Audit Committee (CMWOAC). Table 2 shows that an average of 29 per cent of the DMB's from 2011-2020 have at least 30 per cent of the entire board being female. The low female representation, measured by the critical mass theory, could be as a result of the FRCN (2011) Act which stipulated that every listed company on the Nigeria Exchange Group floor should have at least a member as female. The DMB's female board members is less volatile with a standard deviation value of 0.29. However, the result from Table 2 shows that 27 per cent of the DMB's from 2011-2020 have at least 30% of its audit committee members as female, with a standard deviation of 0.45.

Table 2 shows other board characteristics such as board independence (BI), board financial expertise (BFE), board size (BZ) and board meeting (BM). The Table shows that the DMB's board size is fairly large with an average size of 15 members. Also, there is an average of 4.33 board independent members. The board financial expertise statistics shows that the DMB's has on average two members that are knowledgeable in finance, this may lead to financial reporting quality. Also, the Board Meeting (BM) has a mean value of 5.74 and a median of 6. The average value of the BM indicates that the board frequently deliberates on strategic issues.

Table 2 also indicates that the DMB's patronise an oligopolistic audit market that is dominated by the Big Four. From the Table, the Audit Type (AT) has a mean of 0.95, this indicates that 95% of the DMB's engage the Big Four for assurance service. The patronage of this type of auditors may likely lead to earning quality because the Big four has the better technical know-how, technical support, and skilled personnel to undertake the audit engagement.

Table 2: Descriptive Statistics

	Mean	Median	Maximum	Minimum	Std.Dev.	Skewness	Observations
EBTLLP	1.49	1.00	6.00	-1.29	1.72	1.11	110
CMWOB	0.29	0.00	1.00	0.00	0.29	2.85	110
CMWOAC	0.27	0.00	1.00	0.00	0.45	1.02	110

	Mean	Median	Maximum	Minimum	Std.Dev.	Skewness	Observations
BI	4.33	2.00	27.00	1.00	5.53	2.52	110
BFE	2.31	0.50	11.00	1.00	3.02	1.17	110
BS	15.40	14.00	47.00	8.00	7.56	2.11	110
BM	5.74	6.00	16.00	3.00	2.66	0.29	110
AT	0.95	1.00	1.00	0.00	0.21	-4.36	110
FS	19.68	20.70	29.60	0.00	4.84	-0.84	110
LEV	1.64	0.87	90.40	-1.00	8.54	10.33	110

Source: Author Computation 2021

EBTLLP represents Earnings Persistency, DEP connotes Dependent Variable, , CMWOBi reprsents Critical Mass of Women on Board(30%), CMWOAC stands for Critical Mass of Women In Audit Committee(30%), Bi connotes Board Independence, BFE denotes board Financial Expertise, BS represents Board Size, BM denotes Board Meeting and AT represents Audit type, FS Firm Size and LEV representing Leverage

Correlation Analysis

The pairwise association among the variables of interest in Equation 3 indicate that the regressors in the model have less likelihood of suffering from multicollinearity problem, the output of the correlation analysis is displayed in Table 3. The evidence of less likelihood of multicollinearity is evidenced by the highest pairwise association among these explanatory variables which exist between board size (BS) and the critical mass of women in the audit committee (CMWOAC) with a correlation of 0.450 and (P<0.005). The pairwise association between BS and CMWOAC is an indication that the board size is positively related to board independence, the statistics specify that the DMB's with a relatively large board size has a greater possibility of having more independent board members. There is other salient information in the pairwise correlation association that is worthy of discussion. Among these are pairwise association between women in audit committee (CMWOAC) and board independence (BI), and board financial expertise (BFE) and board size with a pairwise correlation and probability value of (r= 0.364, p<0.05) and (r=0.202, p<0.05) respectively. The statistics are indication that the greater participation of women in the boardroom (at least 30 per cent of the entire members) may be influenced by the board size and the board independent members.

Table 3 Correlation Matrix

PROBABILITY	EBTLLP	CMWOB	CMWOAC	BI	BFE	BS	BM	AT	FS	LEV
EBTLLP	1.000									
	0.000									
CMWOB	0.702	1.000								
	0.000	0.000								
CMWOAC	-0.092	-0.123	1.000							
	0.339	0.202	0.000							
BI	-0.101	-0.059	0.364	1.000						
	0.295	0.541	0.000	0.000						

PROBABILITY	EBTLLP	CMWOB	CMWOAC	BI	BFE	BS	BM	AT	FS	LEV
BFE	0.126	-0.211	0.202	-0.239	1.000					
	0.191	0.027	0.035	0.012	0.000					
BS	0.128	-0.004	0.450	0.091	-0.088	1.000				
	0.184	0.965	0.000	0.000	0.362	0.000				
BM	0.323	0.199	-0.140	0.032	-0.094	0.123	1.000			
	0.001	0.037	0.146	0.739	0.330	0.202	0.000			
AT	0.037	0.069	-0.062	0.108	0.095	0.174	0.226	1.000		
	0.701	0.474	0.518	0.261	0.324	0.069	0.018	0.000		
FS	0.029	0.110	-0.131	-0.159	0.107	-0.236	-0.009	0.053	1.000	
	0.762	0.251	0.171	0.098	0.265	0.013	0.922	0.586	0.000	
LEV	0.032	-0.029	0.159	-0.019	0.249	0.000	-0.058	0.029	-0.058	1.000
	0.742	0.767	0.096	0.840	0.009	0.999	0.547	0.761	0.548	0.000

RESULT AND DISCUSSION OF FINDINGS

Table 3 shows the output of the model in Equation 5, using the panel Ordinary Least Square (OLS). The researcher winzorises the data collected on each variable of interest at a 1 and 99 per cent level of confidence to control for outliers. Also, Table 3 shows the robustness check using the variable substitution. The estimate using a panel OLS shows that there are six out of nine regressors that are significantly related to earnings quality. These variables are a critical mass of women on board (CMWOB), the critical mass of women in audit committee (CMWOA), board independence (BI), board financial expertise (BFE), board size (BS), board meeting (BM) and Audit Type (AT). The value of the adjusted R square of 0.688 indicates that 66.8 per cent of the variation in earnings quality is accounted for by the explanatory variables within the model, while the F-statistic value of 24.5 at a $P<0.01$ indicates that the model is jointly fit and at least one of the regressors is statistically related to earnings quality.

Table 3 shows that the critical mass of females on the board is positive and significantly associated with earnings quality, this is evidenced with statistics of (coeff = 4.262, $P< 0.05$). In the same vein, the association of the critical mass of women on the audit committee and earnings quality has a direct and significant association with earnings quality as indicated with a statistic of (coeff = 0.597, $P< 0.05$). The result suggests that when the participation of women in the upper echelon of the DMBs reach the critical mass of at least 30 per cent there is a higher likelihood of an increase in earnings quality both in the aspect of reducing the company's information asymmetric associated with future performance and the opportunistic behaviour of managers using accounting policies. The result is in line with the studies (e.g. Dobija et al, 2021, Gavious et al., 2012; Schwartz-Ziv, 2017) that hold the view that women are ethical, risk-averse and are painstaking in strategic decision processes and performance of oversight functions such as earnings quality.

Moreover, the output in Table 3 shows that board independence is positive and significantly associated with earnings quality with statistics of (coeff = 0.082, $P< 0.05$). This implies that the greater the number of the independent board members the less likelihood of having a fictitious financial reporting of the statistics. The result is an extension of the women in the board as studies shows that women increases board independence in tandem with the studies (Gavious, Segeu & Yoset, 2012; Khalil & Ozkan, 2016; Pham et al., 2019; Peasnell et al, 2005). Also, the result indicates that board financial expertise has a positive and significant relationship with earnings quality, this is supported with statistics of (coeff $= 0.179$, P< 0.05). The result implies that the members with financial expertise bring their wealth of experience in finance to improve the DMBs financial reporting quality. The result is consistent with the studies (e.g., Ebaid 2013; García-Sánchez et al., 2017).

The board size of the DMB's has a direct and significant relationship with earnings quality, with a statistic of (coeff $= 0.09$, P< 0.05). The result suggests that larger board sizes foster the quality of earnings and financial reporting, this could be attributable to the fact that larger board sizes bring diverse industrial experience, skills, academic qualifications among others. The result of the relationship between board size and earnings quality is in line with studies (Peasnell et al, 2005; Xie et al. 2003)

Table 3 shows that the frequency of board meetings is positive and significantly associated with earnings quality with statistics of (coeff $= 0.082$, P< 0.05). The result infers that the meetings provide a platform for deliberating on key management decisions. Also, the women in the upper echelons use the meeting to influence and ratify management decisions in a democratic manner, which is in line with the studies (Chen & Zhang, 2012; Xie et al. 2003; Vafeas, 1999)

Finally, the audit type is positive and significantly related to earnings quality with a statistic of (coeff $= 1.12$, P< 0.05). The result indicates that larger audit firms bring in enormous resources such as technological advancement, high human capital skills, international coverage while performing the statutory audit. The engagement of the Big Four increases the earnings quality of the DMBs. The result is in line with the studies (Ogujiofor et al, 2017; Inneh et al, 2021; Oladipupo & Monye-Emina, 2016).

The study performs a robustness check substituting the critical mass threshold of 30 per cent with at least 3 female members or 15 per cent of the board members being female. Table 3 indicates that the critical mass threshold of at least 3 female members is positive and significantly associated with earnings quality with a statistic of ($t = 3.74$ $p < 0.05$). Also, Table 3 indicates that the critical mass threshold measured by 15 percent of the board being female is positive and significantly related to earnings management with a statistic of ($t = 3.19$ $p < 0.05$). However, for audit committee members, the critical mass threshold of 3 female members or 15 percent are insignificant with earning quality.

DEP	EBTLLP							
IND	CRIITI 1		CRITI 2		PROPORTION		TOKENISM	
Variable	Coef	t-Stat	Coef	t-Stat	Coef	t-Stat	Coef	t-Stat
CMWOB	4.26	12.00	-	-	-	-	-	-
CMWOAC	0.60	2.28	-	-	-	-	-	-
CMWOB2	-	-	3.74	17.61	-	-	-	-
CMWOAC2	-	-	-0.05	-0.25	-	-	-	-
PRWOB	-	-	-	-	15.09	27.40	-	-
PRWOAC	-	-	-	-	0.28	1.40	-	-
TWOB	-	-	-	-	-	-	3.19	6.07
TWOAC	-	-	-	-	-	-	0.23	1.05
BI	0.08	2.70	0.01	0.21	0.03	2.35	0.04	1.61
BFE	0.18	4.78	0.14	4.93	0.02	2.34	0.09	1.48

BS	0.10	4.25	0.02	1.29	0.05	4.37	0.06	3.89
BM	0.11	2.93	0.07	2.20	0.00	0.38	0.08	4.28
AT	1.12	2.28	-0.24	-0.64	0.38	2.32	0.47	2.01
FS	-0.01	-0.59	0.02	1.19	0.00	0.38	0.01	0.57
LEV	0.00	0.10	0.00	0.49	0.00	2.11	0.01	1.61
C	0.36	0.55	-0.46	-0.92	-0.16	-1.29	-0.41	-0.82
R-sq		0.688		0.81		0.98		0.75
Adj- R-sq		0.66		0.80		0.98		0.73
F-stat		24.505		48.76		476.08		34.06
Prob		0.00		0.000		0.00		0.00

Source Authors Computation (2021)

EBTLLP represents Earnings Persistency, DEP connotes Dependent Variable, IND denotes Independent Variable, CMWOBi reprsents Critical Mass of Women on Board(30%), CMWOAC stands for Critical Mass of Women In Audit Committee(30%), Cmwob2 connotes Critical Mass of Women on Board(Minimum of 3 Members), Cmwoac2 stands for Critical Mass of Women in Audit Committee(Minimum of 3 Members), PRWOB denotes Proportion of Women on Board, PRWOAC represents Proportion Of Women in Audit Committee, TWOB connotes Tokenism of Women on Board, TWOAC represents Tokenism of Women In Audit Committee, Bi connotes Board Independence, BFE denotes Financial Expertise of Audit Committee, BS represents Board Size, BM denotes Board Meeting and AT represents Audit type

CONCLUSION

The study examines the association between the female members in the board, audit committee and earnings quality. To achieve the objective, there are two hypotheses developed. The first hypothesis is the relationship between the critical mass of women on board and earnings quality, while the second hypothesis is the relationship between the critical mass of women on audit committee and earnings quality. The study measures earnings quality by adopting the method developed by Garcia-Meca et al., (2018), Kanageretrian et al., (2014) in line with the Beneish (2001) model on the basis that the model covers the informative and the opportunistic perception of earnings management. The earnings quality model is most suitable in the banking industry but rarely used in Nigeria. Also, the involvement of women in the board is measured using the critical mass of women measured by a dichotomous variable of one, if the board has at least 30 per cent, 15 per cent or 3 members being female and zero otherwise. The gender diversity measurement is also in limited use by gender diversity-related studies in developing economies. Secondary data are collected from the Nigerian Exchange Group Plc, Factbook and audited financial report of the 11 DMB's on the variables of interest of the study repeatedly from 2011-2020. The researcher employs the panel OLS to estimate the gender diversity – earnings quality model.The study adds to the body of knowledge, by being among the few, if not the first, study to examine gender diversity on earnings quality considering the two aspects of earnings management in the determination of earnings quality and the critical mass theory application to gender-related studies in Nigeria.

The study shows that the involvement of at least 30 per cent both at the board and audit committee are positively associated with earnings quality. The study reveals that when the participation of women attains the critical mass, the under-represented sex category in the board and audit committee influences the management decision significantly especially in the area of earnings quality. To buttress this fact, other

surrogates of gender diversity such as the proportion of women, token of women in the board and proportion of women and tokenism of women in audit committee are employed. The study concludes that when the women board memberships attain the critical mass threshold, the earnings quality improves significantly is consistent with critical mass theory.
The policy implication of the study is that the institutional framework in respect of gender policy in Nigeria should be geared towards maintaining a critical mass threshold or balanced board that is majorly practised in advanced economies.
The limitation of the study is the inability to combine the financial and non-financial sectors of the companies listed on the Nigerian Stock Exchange floor to have a holistic view of the relationship of gender diversity and earning quality.

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