Board gender diversity and corporate voluntary disclosures of Nigerian firms

Victoria Jatau, Ulan
Email: jatauv@unijos.edu.ng
Benjamin Ekoja Ekoja
Samson Iliya Nyahas
Department of Accounting, University of Jos, Nigeria

Abstract
Purpose- The main objective of this paper was to examine the relationship between gender diversity and voluntary disclosure practice of listed firms in Nigeria.
Methodology- The study used a survey design that is cross-sectional. Data were obtained from content analysis of the finance reports of 68 companies listed on the Nigerian stock exchange as at December 2021 and was analyzed a log-linear regression.
Findings- It was found that female CEOs, female heading risk and audit committees of the board as well as gender diversity and number of females on board matter significantly in explaining variation in corporate voluntary disclosure. However, female heading remuneration committee does not matter in voluntary disclosure.
Originality- this study adds to the literature on gender diversity and voluntary disclosure by testing the relationship between women heading various board committees especially, audit, remuneration, finance and women COE as well as total number of women and voluntary disclosure using data from Nigeria. It was concluded that feminist virtues such as modesty, transparency and care for others enhance disclosure of corporate information that are not necessarily required by company law.
Keywords: gender diversity, women COE, risk committee, Nigeria, remuneration. Women, cultural feminism.

1. Background

This paper examined the relationship between board gender diversity and corporate voluntary disclosure of Nigerian listed companies. The purpose was to determine if female directors holding strategic board positions could affect voluntary disclosure. Corporate disclosure is regarded as the release of a company's information to the general public whether mandated by regulatory authorities or not. Corporate disclosure is an important avenue for communicating a company's financial and non-financial information, an important part of the process for building investor confidence, Kilonzo (2020).

Communication significantly contributes to the success of modern-day business and is crucial in enhancing a user's decision and reduces information asymmetry (Beattie, McInnes, and Fearnley 2004).

Companies communicate their financial and non-financial information through mandatory and voluntary disclosures. Mandatory disclosure is the release of information to comply with company law and accounting standards while voluntary disclosure is any information that falls outside mandatory disclosure (*Financial Accounting Standards Board, 2001).* The importance of corporate voluntary disclosure has been acknowledged in literature. For example, it has been argued that it reduces market risks and attracts direct foreign investment (Boshnak, 2017). Similarly, other studies have shown that increasing voluntary disclosure is a major cause of achieving a high level of accountability and transparency (Qu, Leung, and Cooper, 2013; 2006). Furthermore, it boosts the confidence of investors to invest in the financial markets of emerging economies (Nyahas, *et al.*, 2017).

In today's competitive business environment, companies try to publicize their good value by voluntarily revealing related information in their financial reports as a way of convincing their stakeholders that investment in them is a good move. This may partly explain why in the developed world, the trend in corporate disclosure is tending towards voluntary disclosure (Schuster and O'Connell, 2006). The authors attributed this development to the fact that mandatory disclosure has major deficiencies from a capital market perspective, for example conventional standards provide a huge scope for managerial profit manipulation. Schuster and O'Connell, 2006 also submitted that, the retrospective nature of the financial reporting process means that the reported data does not always tell the whole story hence it is not a reliable basis for forecasting future performance which can result in loss of credibility from a stakeholder perspective.

Furthermore, contemporary accounting reports focus almost exclusively on quantitative data and typically, reveal little about forward looking, ethical, social and environmental issues. These are regarded as key drivers of corporate value and critical for the proper functioning of the capital market, long-term survival of firms, promote confidence of investors and encourage better flow of Foreign Direct Investment (FDIs) into a country *(Qu and Leung, 2006; Qu, Leung and Cooper, 2013*). As indicated by Salter (1998), the average level of corporate disclosure for companies in developed markets continues to be significantly higher compared to that of emerging markets;

In the Nigerian context, the disclosure practices by companies in Nigeria have been consistently reported to be weak and inadequate *(Sanusi*, 2010; *World Bank, 2011*). According to *Sanusi (2010),* companies in Nigeria have been seen to be providing incomplete, inadequate and sometimes distorted information to regulatory bodies thereby denying investors and other stakeholders of the right information to make sound decision. This if not checked might lead to erosion of investors' confidence and ultimately reduction in foreign direct investment

(Nyahas et al, 2017). Therefore, understanding factors influencing the decision of managers to provide more financial information beyond the minimum required by law and accounting standards (Voluntary disclosure) in Nigeria is a crucial one.

Empirically, prior scholars have devoted considerable efforts towards understanding factors associated with voluntary disclosure. The studies have placed much emphasis on firms' specific characteristics such as firm size; governance structure and ownership structure on corporate disclosure *(Rauf and Aktaruddin*, 2018; Soliman, 2013; Albawwat, 2015; Lan,Wang and Zhang, 2013). Other studies have investigated the relationship between profitability, leverage, ownership structure and voluntary disclosure (Hu, Zhu, Tucker and Hu, 2018). They have also documented evidence of relationship between related party transaction and voluntary disclosure (Elkelish, and Hassan, 2014).

Similarly, in Nigeria, Damagun and Chima (2013) examined the effects of corporate governance mechanism, board size, board composition and director's share ownership on voluntary disclosure. *Ibrahim and Hanefa (2016)* investigated the effect of independent outside directors in boards and audit committees, board size, firm size, frequency of board meetings, separation of CEO and board Chairmanship role on disclosure by segments. Nyahas *et al*. (2018) investigated the relationship between organizational culture and stakeholders and voluntary disclosure of listed firms in Nigeria. Finally, Adelopo (2011) looked at voluntary disclosure practices as influenced by firm size, firm performance, foreign share ownership, managerial share ownership, dispersed ownership and block share ownership.

Even though gender synthesis (diversity) conceptualized as women in the context of this study has gained prominence among academics as an important factor in explaining corporate performance (Singh, Vinnicombe, and Johnson, 2001; Watson, Kumar and Michaelsen, 1993), the effect of gender diversity on voluntary disclosure remains largely unexplored (Nalikka, 2010; Sartawi, 2014). In response to this Nalikka (2012, 2010; Githaiga and Kosgei, 2022) examined the relationship between gender diversity and voluntary disclosure of listed companies in Helsinki and East Africa respectively. While the contribution of these authors is acknowledged they however provide limited understanding of the relationship between gender diversity and voluntary disclosure. This is because they conceptualized gender diversity using three leadership attributes of female chief executive officer, female chief finance officer (Nalikka, 2012) and proportion of women in the board (Nalikka, 2012; Githaiga and Kosgei, 2022) thereby providing explanation at top level of management leaving out the contribution of women in leading sub committees of the board.

This paper therefore fills this knowledge gap by empirically investigating relationship between female chief executive officer, female heading finance department, female heading audit committee, female heading risk committee, female heading remuneration committee, number of females on the board and voluntary disclosure utilizing data from Nigeria where such study is limited.

The rest of the paper is structured as follows: the next section discusses the literature review and hypotheses development, this is followed by the methodology, then the results and discussion and then the conclusion and recommendations.

2. Literature Review

Conceptual clarification

Voluntary disclosure has been variously defined by different writers as information made public at the discretion of corporations (Rouf and Akhtaruddin, 2018). It is also seen as reporting information outside the financial statements, which is not explicitly ruled through norms or laws, (Hassan and Marston, 2019). FASB (2001) see voluntary disclosure as any release of communication separates from the requirements of company laws and accounting standards.

The Financial Accounting Standards Board (FASB, 2001) sees voluntary disclosure as the release of information that is not explicitly required by Accounting standards or SEC rules. Therefore, it is clear that there is no universally accepted definition of voluntary disclosure. For the purpose of this study is considered as any release of information that is primarily outside the requirements of International Financial Reporting Standards (IFRSs) or required by the Nigerian Companies and Allied Matters Act (2004). Consequently, corporate disclosure in such areas as management strategic forecast, environmental impact assessment, relationship with stakeholders and ethical issues are considered voluntary even though they may be required by regulations.

Board Gender Diversity: The concept of board diversity is related to the mix of various persons with different backgrounds in terms of education, geographical spread, gender difference, cultural and other aspects that show that the board has a balance of different categories of persons (Nalikka, 2009). Diversity can be classified in terms of being task-related or relations oriented (Jackson, Joshi and Erhardt, 2003). The relations-oriented dimensions include age, gender and nationality differences, while educational and functional background and tenure are related to task-related dimension. Task related dimension is related to cognitive aspect *(Handajani, Subroto, Sutrisno and Saraswati, 2014)* as such, diversity in the board composition can be measured using demographic aspects such as age, gender, ethnicity, nationality, educational background, industry experience, professional qualification.

In this study the researchers employed the task related dimension of board gender diversity. Specifically, the study uses gender diversity that is, the mix of male to female members in the board. As such, board gender diversity is viewed in terms of the number of women on board, whether a woman is the Chief Executive Officer (CEO), whether a woman is the Chief Financial Officer, whether a woman is the Head of audit committee, whether a woman is the Head of risk committee, and whether a woman is the Head of remuneration committee as these variables have been shown to influence corporate voluntary disclosure (Nalikka, 2012).

Theoretical foundation

This study is anchored on the prescriptions of agency theory and cultural feminism to examine the relationship between board gender diversity and voluntary disclosure. Agency theory stems from an economics-based paradigm that views men as rational actors who seek to maximize their self-interest (Jensen and Meckling, 1976). Within this paradigm, individuals prefer optimizing their own gains to sacrificing for the benefit of another individual or a collective. Suggesting that managers of corporation will seek to focus on individual self-gains, positing that agents will pursue actions that benefit them, regardless of the consequences for principals (Jensen and Meckling). As such it is believed that the composition of the board matters in corporate disclosure. Advocates of agency theory recommended the use of control mechanisms such as governance structures (e.g., boards of directors), to ensure that agents "and principals" interests are aligned (Jensen, 1983). This assumption has led to a lot of empirical studies on board diversity and voluntary disclosure (Nadeem, 2020; Sarhan and Ntim 2019; Zamil, Ramakrishnan, Jamal, Hatif, and Khatib, 2021; Minutiello, and Tettamanzi, 2022).

However, it has been argued that agency theory represents and extreme view of humans (*Hernandez, 2012).* As other theoretical perspective to human stems from feminists theories which seek to explain the difference between sex of male and female. In this regards, cultural feminism theory by Gilligan (1977) which is anchored on the basic beliefs that there are differences in the approaches of men and women to moral and social structuring issues based on a different way of approaching ethical and social issues. She submitted that males emphasize the autonomy of individuals and an ethos of rights in their approach to work, whereas females emphasize communitarian values and an ethos of care. The theory assumes that there are fundamental personality differences between men and women, and that women's differences are special and should be celebrated. It supports the notion that there are biological differences between men and women. For example, "women are kinder, modest and gentler then men," leading to the mentality that if women ruled the world there would be no wars.

In this study, voluntary disclosure is seen as a discretionary release of information to the meet general purpose of every stakeholder. Given the attributes of women as assumed by cultural feminists, we believe that if there are more women in the board of corporations, they are likely to promote disclosure of information beyond the minimum mandatory requirements of capital market regulators due their nature of modesty, kindness, caring, openness, and ethically committed to duty and ethical as well as moral virtues.

Empirical studies and hypotheses development

Voluntary disclosure has attracted the attention of many scholars and in particular, the relationship between board diversity and voluntary disclosure. Here we discussed some literature on board gender diversity and various organizational outcomes such as performance and disclosures.

Female CEO and voluntary disclosures

The relationship between gender diversity and corporate performance has been highlighted in literature. Particularly Chadwick and Dawson (2018) suggest that the idea that women in senior leadership roles affect organizational outcomes. Their findings revealed that organizations with female CEOs outperformed those without in non-financial outcomes. Moreover, the study contradicts the empirical findings of *Conyon and He (2017)* who investigated the relationship between firm performance and boardroom gender diversity using a quartile regression method. Using large data from 3000 US firms from 2007-2014 were used and the results showed that the presence of women on the board had a positive effect on firm performance. Particularly it showed that female directors such as CEOs have a significant larger positive on high performing firms relative to low performing firms.

This study however, did not indicate whether women in leadership positions such as being the CEO could make any significant difference in organizational disclosure. *Odia and Ken-Otokiti (2021)* submitted that female CEO is positively associated with sustainability disclosure. Moreover, feminist theorist *(Giligan, 1977)* suggests that women possess special attributes that make them do better than men leading to the assumption that when women lead there will be more disclosure. Based on the above empirical and theoretical proposition, we hypothesized thus.

> *H_I: There is a positive relationship between having a female Chief Executive Officer (CEO) and Voluntary Corporate Disclosure*

Female heading remuneration committee and voluntary disclosure

Gender diversity has also been used to examine corporate social performance in many studies. In particular, Byron and Post, 2016 using a meta-analysis of 87 independent samples suggested that while generally positive, the female board representation is positively related to social performance. Aribi, Alqatamin, and Arun (2018) using data from a sample of 329 largest UK companies examined whether gender diversity is associated with the voluntary disclosure of greenhouse gas (GHG) emissions in the form of a Carbon Disclosure Project report. They documented evidence of a significant positive association between gender diversity (measured as the percentage of female directors on the board) and the propensity to disclose GHG information as well as the extensiveness of that disclosure.

Other scholars such as Ho and Wong (2001) have investigated the relationship between composition of the board and voluntary disclosure. They concluded that the composition of risk committees which is an important factor in examining the level of disclosure. Similarly, it has been documented that the composition of audit committee as an effective monitoring tool improves disclosure and reduce agency costs. Cultural feminism theory suggests that women are modest and have a sense care and argued that women exhibit distinct pattern of moral development based on relationship and on feelings of care and responsibility for others. This implies that when women head the remuneration committee, there will be more disclosure. Based on the assumption of cultural feminism theory and empirical evidence we hypothesized thus:

H_2: There is a positive relationship between a female heading remuneration committee of a board and Corporate Voluntary Disclosure.

Female heading risk committee and voluntary disclosure

In like manner, Madi, Ishak, and Abdul-Manaf (2014) investigated the influence of audit committee characteristics on corporate voluntary disclosure of 146 Malaysian listed firms for the year 2009. Based on content analysis of disclosure, the empirical results of multiple regressions revealed that audit committee independence, size and multiple directorships of audit committee members are positively associated with corporate voluntary disclosure.

Scholars have also shown interest in examining how women in top management positions such as heading board committees' influence firm performance. A study by Christiansen, Lin, Pereira, Topalova and Turk (2016), examined the link between gender diversity in senior corporate positions and financial performance of 2 million companies in Europe. They used data from the European subset of the Orbis database and analyzed it using regression. The results showed a positive association between corporate return on assets and the share of women in senior positions. Though this study showed how women in top management positions could influence firm performance, it is not clear whether the presence of women on top of organizational boards could influence corporate voluntary disclosure.

H_3 There is a positive relationship between a female heading the risk committee of a board and Corporate Voluntary Disclosure.

Gender diversity and voluntary disclosure

Other studies focused on examining the relationship between the proportion of women on board and corporate outcomes. One of such studies by Reinert and Weigert, 2016 examined the relationship between the proportion of women in top management positions at banks and their financial performance. Prudential data from supervisory reporting for credit institutions in Luxemburg from 1999 to 2013 was used. The data was analyzed using regression analysis. The result indicated a positive association between female management and firm performance; specifically, a 10% increase in women in top management positions improved the bank's future Return on Equity (ROE) by more than 3%. This however did not state whether increasing the number of women on the board could result in an increase in corporate voluntary disclosure. Based on the prior empirical evidence and prescriptions of agency theory and cultural feminism we hypothesize as follows:

> *H_4: There is a positive relationship between gender diversity as measured by blau's index and Corporate Voluntary Disclosure.*

Number of females on board and voluntary disclosure

In another research by Chen, Crossland and Huang (2016), The Impact of female board representation on firm level and strategic behavior within the domain of mergers and acquisition was examined. They built their study on social identity theory to predict that greater female representation on a firm's board will be negatively associated with both the number of acquisition the firm engages in and conditional on doing a deal, acquisition size. They used a multiyear sample of US public firms, using a difference-in-difference analysis on a subsample of firms that experienced changes in board gender composition. The result was a strong support for their hypothesis.

> *H_5: There is a positive relationship between number of females on the board and Corporate Voluntary Disclosure*

Female Heading Audit Committee and Voluntary Disclosure

According to Ho & Wong (2001), the presence of an audit committee significantly influences the magnitude of corporate disclosure. The composition of audit committee which includes insiders and outsiders is also an important factor in examining the level of disclosure. They are expected to enhance corporate transparency and disclosure, also Forker (1992) regarded the audit committee as an effective monitoring tool to improve disclosure and reduce agency costs. It is expected that the size of the audit committee is associated with the level of disclosure and vice versa, nothing was mentioned about a female heading the audit committee.

Madi, Ishak, and Abdul-Manaf (2014) investigated the influence of audit committee characteristics on corporate voluntary disclosure of 146 Malaysian listed firms for the year 2009. Based on content analysis of disclosure, the empirical results of multiple regressions revealed that audit committee independence, size and multiple directorships of audit committee members are positively associated with corporate voluntary disclosure. Frequency of meetings and financial expertise of audit committee members were not significantly associated with corporate voluntary disclosure. The results offered evidence to policy makers, investors and accounting professionals on the extent to which audit committee characteristics associated with such committee effectiveness in monitoring corporate reporting processes. From the above we therefore hypothesize thus:

H6: There is a significant relationship between female Heading Audit Committee of the board and Corporate Voluntary Disclosure

3. Methodology

Research design: This study employed a survey design that is the cross-sectional in nature. The choice of this design is to enable the researcher collect data for both the dependent and the independent data at the same point in time based on Du Toit and Mouton (2013) recommendation. They recommend that when a researcher is interested in collecting data for both dependent and the independent variables at a single point in time, the research design to be adopted is cross-sectional design.

The study population comprised of all the 194 listed firms on the Nigerian Stock Exchange as at December 2020. This includes firms that are listed on the Nigerian Stock Exchange (NSE) and are still actively participating as at the time of data collection for this study. All the firms that participated also have their financial report published on their websites particularly for the financial year 2020 and in compliance with Companies and Allied Matters Act (2004) as well as the International Financial Reporting Standards (IFRSs). This means that even companies with foreign ownership that are quoted on the NSE were considered as Nigerian listed companies for the purpose of this study.

Since the total population is known, the Yamane (1973) sample size determination model was employed to determine the sample size. In this model,

In this model, n=N/1+N(e2)

$$n = \frac{N}{1 + N(e)^2}$$

Where:

n= the required sample size,

N= the population size and

e=a tolerable error.

The tolerable error is a statistical identity associated with confidence levels. At (.05) level of confidence, e^2 = 0.5% = 0.0025, the sample size for this study was computed as 130 firms. However, after collecting the data most of the firms do not have complete information needed in this study as such only 68 companies have useful and relevant data for the study, thus the analysis that followed was based on sample size of 68 firms.

The sampling technique employed in the study is stratified random sampling. Stratified random sampling was found suitable for the study because of the heterogeneous nature of the firms comprising of different industrial categories following Blumberg, Schindler, and Cooper (2014) recommendation. Here the firms where stratified based on Securities and Exchange Commission industrial classification. Since a level of homogeneity can be obtained within each stratum, simple random sampling shall then employed to randomly select the companies. Table 3 presents the population and sample size for the study.

Table 1: Population and sample size

Category	Population	Proportion	Sample
Consumer Goods	43	43/192*129	29
Conglomerates	5	5/192*129	3
Financial	53	53/192*129	35
Services	22	22/192*129	15
Industrial Goods	23	23/192*129	15
Health Care	10	10/192*129	7
Natural Resources	2	2/192*129	2
Oil and Gas	13	13/192*129	9
ICT	10	10/192*129	7
Agriculture	3	3/192*129	3
Construction	8	8/192*129	5
Total	**192**		**130**

Source: Nigerian Stock Exchange available online @ http:www.african-markets.com/en/stock-markets/ngse/listed-companies and author's computation.

Operationalization and Measurement of Variables

Voluntary disclosure

This variable was operationalized to measure information contained in annual reports that are not specifically required by the Nigerian Company and Allied Matters Act {(CAMA) (2004)} published by the Nigerian Corporate Affairs Commission (CAC) or the International Financial Reporting Standards in line with FASB (2001). This construct was measured using voluntary disclosure index. The index approach has the advantage of permitting the researcher to examine several variables of interest (Kumar, Boesso and Michelon, 2016). Before determining the index for each company in the sample, a disclosure checklist was prepared based on the selection of voluntary items of information i.e. over and above what is required by company law and accounting standards. The preliminary list was further screened to eliminate any mandatory items as found in the Companies and Allied Matters Act 2004, International Financial Accounting Standards IFRS as required by the Nigerian Financial Reporting Council (FRC).

Construction of disclosure checklist: The disclosure checklist was developed in line with previous researchers (*Damagum and Chima, 2013; Rouf* *and Akhtaruddin 2018).* The disclosure checklist covered 25 information items in five areas (strategic information, forward-looking information, financial, environmental as well as social and ethical information disclosures). Each area has five items derived from the annual reports and was carefully studied and scored based on the checklist. There are unresolved issues identified in previous research with regards to the scoring of disclosure items which include whether the disclosure item should be scored on the weighted or - basis (Sejjaakaa, 2005). The weighted approach assumes that some items of information are more important than others hence are weighted higher (Barako, 2006). This, however, may introduce a bias towards a particular user orientation *(Damagum & Chima, 2013).* The un-weighted approach, on the other hand, helps in avoiding any bias arising from weighting such as making any particular disclosure item more important than the other. Using the un-weighted approach all items shall be weighted equally. This assumes that all disclosure items are equally important since different users pay attention to different items of information, which may not be true (Barako, 2006). The un-weighted approach was employed in this study to avoid any bias arising from weighting such as making a particular disclosure item more important than the others. Each item was therefore scored (1) if the item is disclosed in the annual reports and (0) if otherwise in line with Rouf and Akhtaruddin (2018). The disclosure index was arrived at using the formula employed by *Rouf (2011)*:

$$\text{Dscore} = \sum_{i=1}^{n} \frac{d_i}{}$$

Where:

Dscore = the aggregate disclosure score.

dj = 1 if the j^{th} item is disclosed or 0 if not disclosed

n = the maximum score each company can obtain.

Female Chief Executive Officer: This variable is operationalized as any Chief Executive Officer who is a female. It was measured as a dichotomous variable where 1 was scored if the chief executive officer was a female otherwise 0. This is in line with Nalikka (2012)

Female heading the audit committee: This variable is operationalized as a head of the audit committee of the board that is a female. To measure this variable, a score of 1 was awarded if the head of the audit committee is a female otherwise 0. This follows the measurement by prior studies (Nalikka, 2012).

Female heading the risk committee: For the purpose of this study, this variable was operationalized as any head of the risk committee who is a female. This variable was measured as a dichotomous variable where a score of 1 was awarded if the head of audit committee is a female otherwise 0.

Female heading the remuneration committee: For the purpose of this study, female heading remuneration committee was operationalized as any head of remuneration committee who is a female. We measured this variable as a dichotomous variable where 1 was scored if the head of remuneration committee is a female otherwise 0.

Number of females on the board: This variable is operationalized as the total number of women on the board of a company. This includes both executive and non-executive members. This variable was measured as the ration of women in the board.

Gender diversity: This variable was measured using the *Blaus's 1977* index in line with Nalikka 2012. Therefore, board gender diversity was calculated using Blau's index of heterogeneity $(1-\sum pi^2)$ where pi is the proportion of group members in each of the i^{th} categories.

Method of Data Analysis:

This study employed the use of log-linear regression to test the relationship between the predictor variables and voluntary disclosure. This choice of log-linear regression is based on the nature of the data. According to *Field (2009),* to test relationship-using data that are categorical in nature, log-linear regression is the best statistical tool to be used. In this study the data used are categorical in nature, as such log-linear regression is considered suitable for the analysis, since the aim is to test relationships. The general model is in the form

$Y=bo+b_1X1i+ei$

Where y=dependent variable; bo is the intercept; X1i= the predictors.

Model specification

$VD=b_o+b_1FCEO+b_2FHAC+b_3FHRC+b_4FHREM+b_5NFOB+b_6GD+ei$

VD=Voluntary disclosure; FCEO=female chief executive officer; FFO=Female finance officer; FHAC=Female Heading Audit Committee; FHRC= Female Heading Risk Committee; FHREM= Female Heading Remuneration Committee; NFOB=Number of females on Board; GD=gender diversity and b1,2,3,4,5,6,7 are intercepts

4. Results and discussion

Demographic Characteristics

Several demographic characteristics were considered which were important in the interpretation of the results. The respondent characteristics included the number of females who are chief executive officers within the sampled firms, the number of female finance officers, number of females heading audit committee, female heading risk committee, female heading remuneration committee and number of females in the board of directors. These demographic characteristics are considered important because the main objective of the study is to examine whether the mix of female in the board structure has any significant relationship with corporate voluntary disclosure.

Table 2: Demographic characteristics

	Frequency	Percentage
Chief Executive officer		
Male	51	75
Female	17	25
Total	**68**	**100**
Head of Audit Committee		
Male	53	77.9
Female	15	22.1
Total	68	100
Number of Female and male on Board		
Male	40	58.8
Female	28	41.2
Total	**68**	**100**
Head of Remuneration Committee		
Male	60	88.2
Female	8	11.8
Total	***68***	***100***
Head of Risk Committee		
Male	59	86.8
Female	9	13.2
	68	100

Source: *Field Survey from annual reports of the sampled firms*

Table 2 indicates that male dominates most of the board structures. The table shows that in terms of chief executive officers male constitute 75% of all firms surveyed while female CEOs only constitute 25%. Similarly, the demographic statistics shows that men dominate heading risk committee of the board constituting 86.8% (59 out of 68 firms surveyed with females constituting only 13.2%. In most of the firms surveyed, the statistics indicate that 88.2% of those heading remuneration committee of the board are men (60 out of 68) remaining 11.8% for the females. In terms of number of females on board, the statistics is skewed in favor of the male board members. Specifically, the statistics indicate that men constitute 59% of board members with female having 41%.

Descriptive statistics

The descriptive statistics for the study variables are presented in table 2. The table presented the mean, the standard deviation standard errors maximum and minimum values.

Table 3: Descriptive statistics

	N	Min.	Max.	Mean	Std. Error	Std. Dev.
Female Chief Executive	68	.00	1.00	.1324	.04140	.34139
Female Heading Audit Committee	68	.00	1.00	.1029	.03713	.30614
Female Heading Risk Committee	68	.00	1.00	.0588	.02875	.23704
Female Heading Remuneration Committee	68	.00	1.00	.0147	.01471	.12127
Number of Female on Board	68	.00	1.00	.4118	.06013	.49581
Gender Diversity	68	.00	.50	.1846	.02214	.18258
Disclosure index	68	.08	.92	.7235	.02544	.20982
Valid N (listwise)	68					

Source: *author's computation using SPSS*

Table 3 indicates the descriptive statistics of the study variables in terms of mean, standard deviation and standards errors. Others are the minimum and maximum values entered for each of the variables. The descriptive statistics indicate that maximum and minimum values of all the variables are within specified range. This is an indication of the absence of out of rang values specified for the study. According to *Field (2009)*, when deviations are small compared to mean values, it is evident that the data points are close to the mean and hence calculated mean highly represent the observed data. Since the deviations are small compared to the mean, this means the data points closely represent the observed data and so the analysis of the data can be further examined using inferential statistics.

Correlation analysis

Before the main analysis, it is important to understand whether the study variables are indeed associated. To do this a one tailed test bivariate correlation was run using SPSS and the result presented in Table 3.

Table 4: Zero-order

	1	2	3	4	5	6	7
Female Chief Executive (1)	1.000						
Female Heading Audit Committee (2)	-.132	1.00					
Female Heading Risk Committee (3)	.087	-.085	1.000				
Female Heading Remuneration Committee (4)	.313**	-.041	.489**	1.000			
Number of Female on Board (5)	.290**	.012	.172	.146	1.000		
Gender Diversity (6)	.221*	-.136	.002	.110	.603**	1.000	
Disclosure index (7)	.232*	.119	.023	.158	.256*	.240*	1.000

Table 4 above gives a picture of the inter-relationship between the independent and the dependent variable (voluntary disclosure). The correlation analysis indicates that chief executive officer is significantly related to voluntary disclosure (r=0.232 at 5% level of confidence). In a similar vein the result shows that gender diversity and voluntary disclosure are significantly correlated (r=0.240 at 5% level of confidence). Additionally, the result shows that there is a significant relationship between the number of women on the board and voluntary disclosure (r=0.256 at 5% level of confidence). However, the result shows that number of females heading audit committee of the board is not significantly correlated with voluntary disclosure (r=0.119) indicating that a unit change in number of females heading audit committee will not change voluntary disclosure significantly. Likewise, the result shows that female heading risk committee is not significantly correlated with voluntary disclosure (r=0.023) signifying that a unit increase in number of women heading risk committee of the board may not change voluntary disclosure of Nigerian listed firms significantly. Looking at number of females heading remuneration committee, the correlation analysis suggests that there is no significant correlation with voluntary disclosure (r=0.158).

Regression Analysis and test of hypotheses

A log-linear regression was adopted because of the categorical nature of the study variables. According to *Field (2009)* log-linear regression is used when the outcome variable is categorical with predictors that are categorical or continuous. This is the case for the current study with most of the variables as categorical except gender diversity. Field also differentiates between two types of logistic regression, binary and multi-nominal logistic regression. Binary regression is used when the predictor variable is only, but multi-nominal regression is used with multiple predictors. In this study there are many predictor variables as such multi-nominal logistic regression is considered suitable for the analysis. Table 4.5 presents the regression results

Model fitness: In assessing the model fitness for logistic regression scholars suggested that the goodness of fit model be assessed to determine whether the model specified for the data is a good fit. The below presents the goodness of fit of the data used in analyzing the results.

Table 5: Model Fitting Information

	Model Fitting Criteria	Likelihood Ratio Tests		
Model	-2 Log-Likelihood	Chi-Square	df	Sig.
Intercept Only	286.634			
Final	249.559	37.075	154	.000
Pseudo R-Square = .4; Cox and Snell = .420; Nagelkerke = .425; Mcfadden = .119				

According to *Field (2009)* the values of the Pearson statistics and the deviance values should not be significantly different from zero. Looking at table 5, the values of both statistics are non-significant ($p>0.05$) signifying that the model is a good fit for the data. In assessing the R^2 for a logic regression, the focus is on Pseudo $R^{2.}$ There are two values that are significant for the interpretation of the model fitness using the Pseudo R^2 these are the Cox and Snell value and Nagelkerke value. The rule of thumb is that if the probability value of Cox and Snell is not significantly different from that of Nagelkerke, and then is a confirmation of model fitness and good effect size of the predictor variables on the outcome variable. Looking at the Cox and Snell value (0.420) and the Nagelkerke value (0.425), they are reasonably similar values indicating that the model fits the data. The predictor variables explain over 40% variation in voluntary disclosure.

The chi-square statistic is the difference in -2 log-likelihoods between the final and reduced models. The reduced model is formed by omitting an effect from the final model. The null hypothesis is that all parameters of that effect are 0

Table 6: Likelihood Ratio Tests

Effect	*Model Fitting Criteria -2 Log-Likelihood of Reduced Model*	*Likelihood Ratio Tests Chi-Square*	*df*	*Sig.*
Intercept	249.559[a]	.000	0	.
Gender Diversity	16433.971[b]	1350.011	14	.000
Female Chief Executive	15390.515[b]	306.555	14	.000
Female Heading Audit Committee	15159.145[b]	75.186	14	.000
Female Heading Risk Committee	15019.682[b]	321.34	14	.000
Female Heading Remuneration Committee	15092.638[b]	8.679	14	.851
Number of Female on Board	15647.194[b]	563.234	14	.000

Table 6 shows the results of the likelihood ratio tests and these can be used to ascertain the significance of predictors to the model as suggested by *Field (2009)*. Looking at the table gender diversity has a significant effect on the model (X^2 (2) =1350.011 $p<0.05$), likewise female chief executive officer has a significant effect on the model $X^2(2)$ =306.55, $p<0.05$). Similarly, female heading Audit Committee has a significant effect on the model X^2 (2) =75.186, $p<0.05$). Also, the number of females on board has a significant effect on the model $X^2(2)$ =563.234, $p<0.05$). These likelihood statistics can be seen as sorts of overall statistics that tell us which predictors significantly enable us to predict the outcome category, but they don't really tell us specifically what the effect is. To see this, we have to look at the individual parameter estimates. In testing the hypotheses of the study, the focus is on the individual parameters (Table 7) similar to the estimates in a normal OLS.

Table 7: Hypotheses tests

Tabl

	B	*Std. Error*	*Wald*	*df*	*Sig.*		*95% Confidence Interval for Exp(B)*	
							Lower Bound	*Upper Bound*
Intercept	11.610	13.673	.721	1	.396			
Gender Diversity	.215	3.220	27.819	1	.000	.297	1.506456job	58418.287
[Female Chief Executive=.00]	.877	2.780	6.034	1	.013	.416	3.548E-5	4874.985
[Female Finance Officer=1.00]	.237	5.000	5.142	1	.000	.424	.004	.004
[Female Heading Audit Committee=.00]	.289	3.452	2.978	1	.007	.001	.000	88.010
[Female Heading Risk Committee=.00]	.010	6.555	2.211	1	.646	.029	1.297E-7	18724.627
[Female Heading Remuneration Committee=.00]	.303	5.769	.051	1	.821	.272	3.337E-6	22131.476
[Number of Female on Board=.00]	.130	9.839	4.176	1	.000	.016	6.775E-11	3814973.508

The test of hypothesis one revealed that there is a positive relationship between Female CEO and voluntary disclosure of listed firms in Nigeria (b=0.877, Wald=3.034, p<0.05), lending support to hypothesis one which states that there is positive relationship between female CEO and voluntary disclosure. This means that a positive change in the number of women CEOs is associated with positive change in voluntary disclosure. This finding is in tune with Nalikka

(2010; 2012) who found evidence in UK that female CEO is significantly related to the extent of voluntary disclosure as well as Shaheen et al (2023) in China. The result is also in consonance with *Adams et al (2023)* who found that female CEOs tend to behave differently than men with respect to board governance because of their meek nature they pay attention to little details than men. This shows that the more we have women as CEOs, the more they are likely to disclose corporate information deliberately without coercion. Notionally, the theory of cultural feminism explains that women are modest, caring and more ethically oriented than men. Meaning that when women are in leadership position such as governing the board, there will be better organizational output such as voluntary disclosing information that meets the needs of all stakeholders without exception. This finding shows that female CEOs are associated with increase disclosure of social, ethical and environmental information in the annual reports of listed firms in Nigeria in line with what was found by Nalikka (2012) in Helsinki satisfying the contextual concern raised by this study.

There is a significant relationship between Female head of audit committee and corporate voluntary disclosure (b=0.289, Walds=2.97, p<0.05). Thus, lending support to hypothesis two which states that, which says that there is significant relationship meaning that having female as head of audit committee has a significant relationship with voluntary disclosure. This finding agrees with the findings by *Mada-Marzuki, 2022)* who find evidence suggesting that audit committee as an effective monitoring tool to improve disclosure and reduce agency costs. Moreover, Nalikka (2012) suggested that a female heading the audit committee is associated with the level of disclosure of listed firms in Helsinki. From theoretical point of view the role of demographic factors in explaining organizational outcomes is well acknowledged. This is in line with cultural feminism as explained by Samara et al (2023) whose focus is on characteristics of individual managers such are gender as factors explaining organizational outcomes such as performance. Thus, lending support to cultural feminism that, women have special qualities that enable them to do better than men in many aspects of human endeavor. The modest nature of women suggests their attribute of caring for the social relationship as well as ethical concern makes them more accountable to various stakeholders need for information through voluntary disclosure.

Test of hypothesis 3 revealed that there is significant relationship between female heading risk committee and voluntary disclosure Committee (b=0.289, Walds=2.97, p<0.05). Therefore, lending support to hypothesis one suggesting, that there is a significant relationship meaning that having female as head of audit committee has positive influence on voluntary disclosure.

This is because the board has overall responsibility for monitoring and approving the risk policies and associated practices of the Company. In particular, the board risk committee is also responsible for reviewing and approving risk disclosure statements in any public document. This finding is in consistence with the findings by Omoro, Aduba and Okiro (2015) who studied demographic diversity in top management teams and found that there is a bias against women in leadership position. This is explained by the fact that women lag behind in corporate leadership, productivity and wealth accumulation because business and corporations are structured to institutionalize masculine preference and bias, not because a pernicious scheme of male malevolence is holding women down (Omoro et al (2015). The structures of gender bias are as invisible to men as they are to women – and women share responsibility with men for identifying and eliminating structural bias so that business and corporate capitalism can work effectively for everyone. This bias is reflected in the distribution of the leadership role in the current study of listed firms in Nigeria. The data shows that there is an insignificant number of females on the board especially in relation to female heading risk committee.

The regression results show that there is positive and significant relationship between board gender diversity and voluntary disclosure of listed firms in Nigeria (b=0.215, wald=27.819 $p<0.05$) thereby lending support to hypothesis four. This result validates the finding by *Nalika (2009)* who found that gender diversity is significantly related to level of voluntary disclosure of listed firms in Helsinki. It is also consistent with the findings by Bueno et al (2018) who submitted evidence showing that board gender diversity is a significant predictor of voluntary disclosure of listed firms in Brazil. In this study, gender diversity is considered as the proportion of female to male in the board composition of listed firms. The diversity affects cognition, dynamics and decision-making of the board as observed by *Johnson et al (2013).* It allows for new questions and different ways of thinking and assists in the most complex strategic issues such as disclosure policy. Benkraiem et al (2017) suggested that the presence of women improves board effectiveness and management oversight and has a significant impact on corporate governance. Women are more prone to the principles of fairness and equity and are more focused on social aspects such as social disclosures. This shows that boards consisting of women have significant results in influencing board activities relating to disclosures.

The regression result indicates that there is significant relationship between number of females on board and voluntary disclosure (b=0.130, Wald=4.176, $p<0.005$) thereby lending support to hypothesis five. This result is contrary to prior studies such as that by *Fenades and Barbosa (2022)* who found evidence suggesting that the number of females on the board does not affect voluntary disclosure of listed companies in Brazil. However, the result is in line with the findings by Altawalbeh et al (2020), who documented that there is a significant positive relationship between number of females on the board and voluntary disclosure of listed firms in Jordan. This contradictory result may be as a result of the contextual differences that account for this variation. The current study considers the proportion of female on the board that makes of the total board size. The more we have diversity in terms of gender in the board, the better it is for disclosure because disclosure is a management activity that takes into consideration different perspectives. Having a large number of females on the board means that those females are able to advocate for policies that will protect the social aspect that has to do with women. In particular with the debate about gender, many companies are likely to communicate their policy on gender through voluntary disclosure. This explains why the proportion of female on the board influences voluntary disclosure positively. The result lends support for cultural feminism, which assumes that women possess special traits, that enables them do even better than their male counterparts.

The regression result shows that female heading remuneration committee is not statistically related to the extent of corporate voluntary disclosure (b=0.303, Walds=0.051 p>0.05), therefore hypothesis 3 is rejected. This result is in tandem with Park et al (2023) who found that there is higher voluntary disclosure only in firms who tied compensation to market values. The implication of this is that increasing the number of women heading the remuneration committee of the board does not matter for increase voluntary disclosure. Suggesting that performance-based compensation in the form of increased remuneration does not necessarily lead to higher disclosure even when women head the remuneration committee. The remuneration committee is the committee of the board that is saddled with the responsibility of recommending an appropriate reward policy that attracts and motivates executives to achieve the long-term interests of shareholders. Compensation or remuneration is part of monitoring mechanism to align the interest of shareholders and that of management as suggested by agency theory. Relating this to voluntary disclosure means that since many components of voluntary disclosures are meant to satisfy the interest of other stakeholders, management may feel relaxed to disclose because it may not be of real value to shareholders. Managers may not likely disclose information on such issues as environmental impact if this will lead to sanction from regulatory agencies. Similarly, firms operating in a competitive environment as the case is with many of the listed firms in Nigeria may not be willing to disclose some corporate information as a completive strategy. This means that regardless of whether a male or a female is in the leadership position, it doesn’t matter for corporate voluntary disclosure.

5. Conclusion and implication

This study has documented evidence of the link between board gender diversity and voluntary disclosure utilizing prescription of two theories, agency and cultural feminism, utilizing data from a less developed country like Nigeria. Thereby filling the knowledge gap in that regard. Specifically, this study has found that women heading risk, audit committee, number of females on board, gender diversity as measured by the Blau’s index and female CEOs matter in corporate voluntary disclosures. This implies that feminist inherent virtues of modesty, meekness, caring and transparency are crucial factors enhancing corporate voluntary disclosure as suggested by the theory of cultural feminism. Meaning that individuals who possess these characteristics perform better in terms of transparency through corporate disclosures.

The finding of this study indicated that besides women being the CEO of businesses and the proportion of women on the board of corporations, women heading the various sub-committees have positive relationship with increased voluntary disclosure. These findings have vital implications for theory and practice. Theoretically, the study adds to the growing body of knowledge on gender diversity and voluntary disclosure by extending the debate on women leadership to the sub-committee of the board using data from an emerging country like Nigeria. Secondly it implies that listed companies in Nigeria should consider increasing the number of women leading other sub-committees of the board besides just female CEOs if the objective is to improve the weak disclosure practice which has being a source of concerns of key stakeholders. Thirdly, investors should consider investing more in firms with more women heading various committees of the board since it has been established that there is increase environmental social and ethical disclosure when women lead. This will promote better transparency and reduce information imbalance between the managers and the shareholders.

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