# Boards' Gender Mix as a Predictor of Financial Performance in Nigeria: An Empirical Study

Victor Chiedu Oba<sup>1</sup> & Musa Inuwa Fodio<sup>2</sup>

<sup>1</sup> Department of Accounting, Nasarawa State University, Keffi, Nigeria

<sup>2</sup> Department of Accounting ,University of Abuja, Nigeria

Correspondence: Victor Chiedu Oba, Department of Accounting, Nasarawa State University, Keffi, Nigeria. Tel: 234-70-5742-0645. E-mail: oba156@yahoo.com

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# Abstract

This study investigates the predicting power of a board's gender mix on financial performance by using a cross sectional data analysis. Existing literature on this subject is scanty in emerging economies and to the best of the authors' knowledge; this is the first of its kind in the Nigerian context. Return on capital employed was utilized as measure for financial performance while female director presence and proportion of female directors were proxies for gender mix. The findings show that both female director presence and proportion have positive impacts on financial performance while the board size, a control variable had a neutral effect. The study recommends that managerial and legislative efforts be made to strike a fair gender balance in boards and further research be carried out along this line.

Keywords: gender, resource dependency, corporate governance, performance, agency

# 1. Introduction

Corporate Governance has long been a popular issue among corporations, governments, investors and scholars; especially after the recent corporate scandals of the Enron, World com and Halliburton to mention a few. It has now been established that corporate governance is a very important issue for organizations, investors, and even governments and has aroused interest and awareness globally (Man and Kong, 2011).

A study by McKinsey and Company (2002) revealed that majority of investors are prepared to pay a premium for companies with higher corporate governance standards; consequently, the corporate governance rankings of companies are also one of the considerations of investors when evaluating stock prices (Berthelot, Morris, and Morrill, 2010). In the context of Corporate Governance, board of directors is the shareholder's first line of defense. Board members are the individuals that shareholders rely on to ensure that their investment is protected and well managed (Brennan, 2010). This makes the board of directors one of the most critical internal Corporate Governance as it pertains to identifying structures that align the interests of management and stakeholders (Rose, 2007). According to Fama and Jensen (1983) and Hermalin and Weisbach (2003), the firm's board is by far the most important internal control device seeking to control management and deter it from opportunistic behavior. The discussion of board composition has focused extensively on various board attributes and how to ensure the independence of corporate boards; however, in recent years, the issue of governance diversity has gained tremendous interest in governance literature.

It is believed that good corporate governance is positively associated with board diversity (Carter, Simkins, and Simpson, 2003). Proponents of board diversity claim that diversity at the boardroom improves decision making process and financial performance (Rhode and Peckel, 2010).Observable attributes of board diversity according to Milliken and Martins (1996) refer to gender, age, race and ethnic background. Accordingly, gender diversity becomes one of the focuses of the studies. In recent years, gender diversity has become a highly debated governance issue which has caught the attention of policy makers, shareholders, and academia (Johansen, 2008). The academia and policy makers are more interested in the financial implications of gender diversity. Gender diversity in boardrooms has been associated with corporate Governance and firm performance and has become an issue of investigation.

This is an area in which little is known: - If a possible link exists between a board's gender mix and performance of the firm.

Certain countries have begun implementing a gender quota system in their business settings. This is a recent development. In an exploratory study, Hoel (2008) identifies Norway as the most widely known example of corporate board quotas where a 40 percent gender quota for public limited and state owned companies was introduced in December, 2003. Other countries that have introduced such legislated gender quotas are inter alia Span (2007), see De Anca (2008); France, Iceland and Netherlands (2010), see Marinova , Platenga, and Remery(2010).

The gender quota issue is also being discussed in Belgium, Canada and Italy where laws are pending at different stages of the ratification process (Sealy, Singh, and Vinnicombe, 2008).

This development seems alien to the developing economies. In Nigeria, no such law exists or is being deliberated. The vision 2020 (National Technical Working Committee on Corporate Governance and Corporate Social Responsibility) which was discarded before implementation only advocated for greater participation in Corporate Governance matters but was without specifics. However, the world has been termed a global village and as such 'what goes around, comes around'. It is expected that this phenomenon would be an issue for consideration and deliberation in the nearest future. It is therefore timely at this point to ascertain in clear and empirical terms if board gender mix has an impact on firm financial performance or if it is just a symbol without bottom line effects.

#### 2. Prior Research and Hypotheses Development

Carter et al. (2003) were one of the first to analyze the impact of board diversity on firm performance. Shortly after, Catalyst (2004), the leading U.S non profit organizations working to advance women in business, studied the effect of gender diversity in top management on firm performance. Subsequently, numerous academics engaged in analyzing the relationship between gender diversity on the board of directors and firm performance. Bernardi and Thread Gill (2010) in their study reveal that the benefits of having female directors translate into financial success as well. In other words, new ideas and perspectives trigger sales and eventually profits.Nguyen and Faff (2007) reveal the positive relation between female presence at boards and financial performance in Australian firms. Researchers who studied Spain and Holland found similar results that exhibit the positive relation between financial performance and female board representation (Campbell and Minguez-Vera, 2008; Luckererath and Rovers, 2010). Carter et al (2003) argue that the level of gender diversity on a board of directors is directly associated with shareholder value.

The presence of multiple women directors is associated with higher revenues, according to a study by catalyst (1997) of the fortune 500 firms, where the top 100 firms by revenue are twice likely to have multiple women on board compared to the top 100 bottom companies. Similarly, Campbell and Vera (2008) studied the Spanish firms using panel data analysis; they found that gender has a positive effect on firm value and that the opposite casual relationship is not significant. In the same vein, Kang, Ding, and Charoenwong (2010) have found that investors generally respond positively to the appointment of women directors in Singaporean firms. Their study examines whether investors react systematically to the different positions that women directors hold on corporate boards, a question that has received little attention in prior studies.

Erhardt, Werbel and Shrader (2003) point out a positive link between gender diversity and firm performance (using ROA and ROI as proxies) for a sample of large firms in fortune magazine. Similar results are found with Hussein and Kiwia (2009) who employ the Shannon index as a proxy for gender diversity. On the other hand, Shrader, Blackburn, and Iles (1997) find no significant influence of the percentage of women on board in relation to financial performance as measured by the profitability ratio. Darmadi (2011) documents a negative effect of the level of female board representation on accounting based performance of ROA. Using ROA and cumulative stock returns as measures of performance, Dobbin and Jung (2011) conclude that gender diversity has a negative and neutral effect on performance. There are also several studies that find negative or no relation between gender diversity and firm performance (Zahra and Stanton, 1988; Adams and Ferreira, 2009, Wang and Clift, 2009).

The role of board gender mix has been ignored in developing economies where gender discrimination is a wide spread cultural ill (Mirza, Mahmood, Andleeb, and Ramzan, 2012). Empirical evidence on impact of women directors on finance performance in emerging economies like Nigeria is non-existent. This present study is thus poised as a humble attempt in fertilizing the virgin minds of researchers along this line and providing solid statistical evidence of the impact of boards' gender mix on firm performance. To achieve the objective of this study, it is reasonable at this point to state the following hypotheses in their null form:-

- H<sub>1</sub>: The presence of a female director has no significant impact on financial performance.
- H<sub>2</sub>: The proportion of women directors has no significant impact on financial performance.
- H<sub>3</sub>: The blau's index of heterogeneity has no significant impact on financial performance.
- H<sub>4</sub>: Board size has no impact on the gender mix financial performance relationship

# 2.1 Theoretical Underpinnings

Resource dependency theorists examine the provision of resources as the main function of the boards of directors as they explore the relationship of the board capital as the antecedent of this function with firm performance (Gkliatis, 2009). According to Terjesen, Sealy, and Singh (2009), resource dependency theory views firms as operating in an open system that needs to exchange and acquire certain resources in order to survive.

Diversity scholars use the resource dependency lens to argue that today's increasingly complex business terrain requires leadership from individuals who can make available resources which include legitimacy and diversity. On the other hand, the agency theory describes the relationship that exists between the principal and the agent. A common assumption of this theory is that a diverse board will act independently and objectively and would also serve as good monitors for shareholders' interest (Hillman and Dalziel, 2003).

This study is anchored on both the resource dependency and agency theorists.

# 3. Methodology

This study uses a survey research design. The population of the study is made up of companies listed on the floor of the Nigerian stock exchange; however, firms belonging to the financial and utility services are excluded from the population. This is because of the special regulatory environment in which they operate. A sample of thirty (30) quoted companies for the period 2005-2007 was used. This sample is considered a good representation of quoted companies in Nigeria since it covers all sectors on the exchange except the financial and utility services. More so, the sample selection conforms to the arguments of Emory and Cooper (2003), that the ultimate test of a sample design is how well it represents the characteristics of the population it purports to represent. Also, the sample size is in line with Hair, Anderson, and Tatham (1987) sample size determination. Data was obtained from annual reports of sample firms.

# 3.1 Dependent Variable

Financial performance in this study is represented by ROCE-Return on capital employed. This is measured as profit before interests and tax to Net Capital employed. The choice of this performance measure arises because it has evolved considerably over the course of the past decade and has enjoyed periods of popularity.

# 3.2 Independent Variables

- 1. Female director presence is measured as a dummy with a value of O if none and 1 if any female director exists.
- 2. Proportion of female directors on the board to board size
- 3. Blau's index: This is the degree of heterogeneity of the gender mix named after Blau, P.M (1977). It is a commonly used diversity index to measure evenness and heterogeneity. It is specified as follows:-

$$\frac{1 - \sum P_i^2}{i = 1}$$
(1)

Where  $P_i$  = Percentage of board members in each category.

# And n = Number of categories

Gender is a dichotomous variable and as such the range of the Blau index is 0 to 0.5 which means the closer to 0, the less diverse; and the closer to 0.5, the more diverse.

# 3.3 Control Variable

Schnake, Williams, and Fredenberger (2006) argue that the number of women on boards of directors interacts with board size such that the fewer the number of women on boards and the larger the board, the poorer the financial performance of the firm. Board size is measured as the number of directors on the board. This study controls for board size using the combinatorial method.

# 3.4 Model Specification

The regression model employed to test the relationship between the Board gender mix and firm performance is as follows:-

$$ROCE_{it} = \beta_0 + \beta_1 PRESENCE_{it} + \beta_2 PROPORTION_{it} + \beta_3 BLAU_{it} + \beta_4 SIZE_{it} + eit.$$
(2)

Where:-

ROCE = Return on Capital Employed B<sub>o</sub> = Intercept Coefficient PRESENCE = Presence of a Female Director PROPORTION = Proportion of Women directors to board size BLAU = Blau's Index of Heterogeneity SIZE = Board Size eit = Gaussian white noise

# 4. Discussion on the Results

Based on the descriptive statistics (refer to Table 1), Return on capital employed (ROCE) with mean value (0.26) shows that return on every 100 Naira of capital employed in sample firms is 0.26 Naira.

There was an average of 9 directors on each sample firm's board while 44.4% of the sampled firms had a female director on the board of directors. However, the extent of gender heterogeneity derived by the Blau's index was found to be an average of 10.1 while the proportion of non-executive directors on the boards was an average of 60% of total directors.

#### Table 1. Descriptive statistics

	MEAN	STD.DEVIATION	Ν	
ROCE	.2355	.44024	90	
FPRES	.4444	.49969	90	
BLAU	.1014	.12387	90	
PROPORTION	9.0667	2.43477	90	
SIZE	.0599	.8057	90	

A normality test was performed to determine that the dependent variable was normally distributed. The kolmogorov-smirnov and Shapiro-Wilk Normality test was conducted. However, emphasis was placed on the Shapiro-Wilk test since the sample is not asymptotic.

#### Table 2. Tests of normality

Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wi	ilk		
	Statistic	df	Sig	Statistic	df	Sig
ROCE	.206	90	.000	.797	90	.000

# a, Liliefors significance Correction.

Both Kolmogorov-Smirnov and Shapiro-Wilk Test revealed that Return on capital employed measures was not normally distributed with the significant values less than 0.05. In general, significant values less than 0.05 is considered as good evidence that the data set is not normally distributed. A violation of the assumption of normality invalidates many other statistics like correction coefficient, t-test and related statistics (Brown, 1997). To treat such non-normality, a logarithmic (base 10) transformation was performed.

# $ROCE = Log_{10} (ROCE)$

Another normality test (Table 3) revealed that the transformed measures produce normal distribution with significant values well above 0.05. Furthermore, values of skewness and kurtosis also fell within the permitted range of below two.

# Table 3. Tests of normality after logarithmic transformation

Kolmogorov-Smirnov (a)			Shapiro-Wilk			
	Statistic	df	Sig	Statistic	df	Sig
ROCE	.077	80	.200*	.792	80	0.71

a. Liliefors significance correction

\*This is a lower bound of the true significance

#### Table 4. Correlations

	ROCE	FPRES	BLAU	PROPORTION	SIZE
ROCE	1	.201	.139	230*	.042*
SIG. (2TAILED)		.058	.190	.029	696
FPRES	.201	1	.721**	.333*	.197
SIG. (2TAILED)	.058		.000	.001	.063
BLAU	.139	.721**	1	.328****	.089
SIG (2TAILED)	.190	.000		002	.404
PROPORTION	230*	.333**	.328**	1	202
SIG (2TAILED)	.029	.001	.002		.057
SIZE	.042	.197	.089	202	1
SIG(2TAILED)	.696	.063	.404	.057	

\* Correlation is significant at the 0.05 level (2tailed)

\* \* Correlation is significant at the 0.01 level (2tailed)

The correlation matrix in Table 4 reveals a number of significant correlations among the variables. As shown, the highest Pearson correlation coefficient was between the female director presence and the Blau's index of heterogeneity (r: 0.72).

Gujarati (1995) and Kennedy (1999) demonstrate that a correlation matrix is free from multicollinearity when correlation coefficients fall below 0.8 or 0.9. In this study, multicollinearity does not appear as a problem in interpreting the results since the highest Pearson correlation is below the threshold of 0.8.

However, the Variance Inflation factor and Tolerance values on Table 5 go to corroborate our findings. They both demonstrate acceptable levels going by Hair et al, (1987).

	Unstandardiz	ed Coefficients	Standardized coefficients			Collinearity statistics	
Model	В	Std Error	Beta	t	Sig	Tolerance	VIF
Constant	.433	.187		2.319	.023		
FPRES	.571	.238	.648	2.397	.019	.135	7.416
BLAU	-1.157	.932	325	-1.241	.218	.143	6.980
PROPORTION	1.997	601	.365	3.324	.001	.814	1.228
SIZE	024	020	131	-1.200	234	.832	1.202

Table 5. Coefficients

Results on Table 5 show that only two of our predictor variables had significant impact on return on capital employed. Female director presence had a positive statistical significance on financial performance. The P Value was <0.05 and as such permits the rejection of the null hypothesis and acceptance of the alternative that female director presence has a significant impact on financial performance measured by ROCE. This result tends to support the findings of Man and Kong (2011), and Burke (2000) that the presence of a women director and firm performance are interrelated.

Likewise, the proportion variable has a positive statistical significant impact on financial performance. This finds support in the works of Smith, Smith and Verner (2006) who found that the proportion of women in top

management jobs tends to have positive effects on firm financial performance. It however contradicts the findings of Farrell and Hersch (2005), and Rose (2007). They do not document female gender proportion as a significant determinant to firm performance.

The Blau's index of gender diversity had no significant impact on financial performance. Results were not significant at the 5% level of significance. Man and Kong (2011) document a negative relation between the blau's index and Tobin's Q while Campbell and Minguez-Vera (2008) find a positive impact of the Blau index and Shanon index on firm performance.

Board size also had no tangible impact on performance. This conflicts with the findings of Schnake et al (2006) whose work shows that the larger the board, the poorer the financial performance of the firm. However, the average board size stood at (9) which is the recommended and optimal size also found in related studies (Jensen, 1993; Coleman, Adjasi, and Abor 2007).

Table 6.	ANOVA
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Model	Sum of	df	Mean square	F	Sig
	squares				
Regression	2.814	4	.704	4.14	.004
Residual	14.435	85	.170		
Total	17.249	89			

#### Table 7. Model summary

R	R Square	AdjustedR Square	Std. error of estimate	Durbin Watson
.404	.163	.124	.41210	2.053

Adjusted  $R^2$  of the model was 0.124. This suggests that only 12.4% of the variation in performance is explained by the gender variables. This is not a commendable fit but is a reasonable one since firm performance certainly has other unrelated variables that explain its variation.

The Durbin Watson statistic stood at 2.053. It supports the assumption of absence of autocorrelation in the model since it falls within the threshold of '2' (Hair et al, 1987). While the F statistic shows the overall significance of the plane; its P value < 0.05 guarantees the statistical significance of the model.

# 5. Conclusion and Recommendations

The goal of this paper was to examine boards' gender composition and how it influences firm performance. The presumption was that gender is vital for the financial success of firms. The findings of this study show that the presence of a female director and proportion of female directors on a board have a positive significant impact on the firm's performance. This indicates that the presence of multiple female directors is associated with higher revenues. It only goes to confirm the arguments of the study.

The female segment of top management around the globe more specifically in developing economies is very negligible. This study reveals that 56% of the sample firms do not even have a single female director on their boards. This is not equitable. The inclusion of women in boards should not particularly be restricted to their contribution to financial performance. Promoting women on top management is a social equity issue and as such, socially responsible firms would avoid any discriminatory acts on women. However, based on the findings of this study, constructive efforts should be made both at firm and governmental levels to improve on boards' gender balance since it has bottom line effects. This area of research would require further investigation as to the actual or optimal number of women on boards that actually trigger improved performance and also testing other forms of financial performance such as market measures. Future research might be extended by observing the characteristics, qualifications and traits of female directors on performance; how other board characteristics interact with this possible relationship and the role the firm's sector or industry might play in influencing these interactions.

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# APPENDIX 1: SAMPLE COMPANIES

- 1. CAP NIGERIA PLC
- 2. THOMAS WYATI NIGERIA PLC
- 3. NIG. AVIATION HANDLING COMPANY
- 4. UNITED NIGERIA TEXTILES PLC
- 5. CAPPA AND D'ALBERTO PLC
- 6. A.G LEVENTIS NIGERIA PLC
- 7. TRANS NATION WIDE EXPRESS
- 8. ASHAKA CEM PLC
- 9. 7. UP BOTTLING COMPANY PLC
- 10. DN. MEYER PLC
- 11. GLAXO SMITH KLINE CONSUMER
- 12. BETA GLASS CO PLC
- 13. ACADEMY PRESS PLC
- 14. MOBIL OIL NIG. PLC
- 15. IKEJA HOTELS
- 16. ADSWITCH PLC
- 17. B.O.C GASES PLC
- 18. MAY & BAKER NIG PLC
- 19. RT. BRISCOE PLC
- 20. NIG. WIRE & CABLE PLC
- 21. UACN PLC
- 22. JAPAUL OIL & MARITIME
- 23. OKOMU OIL PALM PLC
- 24. C & I LEASING PLC
- 25. GUINNESS NIG PLC
- 26. ETERNA OIL AND GAS
- 27. NIG. GERMAN CHEMICALS
- 28. AVON CROWN CAPS AND CONTAINERS PLC
- 29. NESTLE NIG. PLC
- 30. CADBURY NIG. PLC