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BOARD DIVERSITY AND FINANCIAL PERFORMANCE IN LISTED MANUFACTURING COMPANIES IN NIGERIA

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ABSTRACT

The issue that is germane in this study is whether boards with higher levels of female directors can assist management in fulfilling its stewardship obligation better than boards with lower levels of female inclusion. Hence, this study explored the effect of board diversity on financial performance of listed manufacturing companies in Nigeria. The study adopted *ex-post facto* research design. The population of the study comprised 21 quoted companies in consumer goods sector on the Nigerian Stock Exchange (NSE) as of December 31, 2019. A sample of 6 quoted companies that had complete and relevant data for the period of study (2010-2020) was selected through purposive sampling techniques. Data were extracted from published audited annual reports and accounts of the selected companies. Data were analyzed using descriptive and inferential (multiple regression) statistics. The hypotheses were tested at 0.05 significance level. The findings revealed that board diversity (BD) had positive and significant effect on financial performance of listed manufacturing companies in Nigeria (FD = 18.696, t-test = 4.058, $p < 0.05$). This implies that female director on the board is a significant factor influencing changes in ROA. Firm size has a negative significant control on the effect of BD on financial performance (FS = -0.435, t-test = -2.657, $p < 0.05$). By implication, the bigger the size of the company the lower the ROA. The study concluded that board diversity promotes financial performance. It was recommended that the shareholders of companies should appoint more female directors on board as it enhances financial performance.

Keywords: Board diversity, Return on Asset, Firm Size, Financial Performance

INTRODUCTION

There is need for directors need to direct the affairs of firms to deliver returns for the benefit of the shareholders and other stakeholders. The issue that is germane in this study is whether boards with higher levels of female directors can position companies to fulfil this stewardship obligation better than boards with lower levels of female inclusion. To what extent can board gender diversity improve its financial performance. The inclusion of women on board of directors can lead to the improvement of the organization (Kim & Stark, 2016). Also, the need to redress the issue of gender imbalance as regards representation has brought gender diversity to the front burner over the past decades. According to Mishra (2019), appointment of female directors signals major positive change by the organization. The reason is that the greater the gender diversity, the higher the tendency to generate higher returns for the organization without suppressing facts about firm's performance (Garcia- Sanchez, et al., 2018). Also, the inclusion of women on board can lead to appropriate flow of information and discussion of genuine ideas that can enhance the performance of the firm (Birringdelli, et al., 2018). Though in Nigeria, board diversity is a growing phenomenon. According to Mudiyansele, *et al.*, (2018), firm size is an indication of organizational maturity. As a mature company, it is expected that the maturity will significantly affect the effect of board diversity on financial performance of firms. To that extent, the purpose of this study is to examine the effect of board diversity on the financial performance of quoted manufacturing companies in Nigeria.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

The inclusion of female directors promotes the quality of board and enhances the effectiveness of the management (Post, Rahman & Rubow, 2011). According to Mahmood, et al, (2018), female directors are less economically inclined and more prone to helping mankind than their male counterparts. Thereby making female directors to be less

driven by short term personal agenda and as such the recognition of female director contributions is increasing (Rao, et al., 2012) as prior studies have highlighted the benefits of having women on board.

According to Huse and Solberg (2006), the inclusion women on board increases the preparation, the commitment, and the diligence of the board while Adams and Ferreira (2009) posited that having women on board improves decision making process, increases board effectiveness that can result in better attendance and performance. Arayssi, Dah and Jizzi (2016) found that adequate women representation on the board enhances quality deliberations and ultimately influences the quality and integrity of reporting thereby leading to performance.

Alabede (2016) investigated the effect of board diversity on the operating performance of United Kingdom (UK) listed firms and the finding reveals that there is a positive relationship between board diversity and operating performance. However, Simionescu, Gherghina, Tawil and Sheikha (2021) examined the effect of board gender diversity on firms' performance of Standard and Poor companies over the period of 12years and found that there is no statistical significance between gender diversity and return on asset (ROA). This difference might be due to the data gathered and the sample of the studies

Furthermore, Vafaei, Ahmed and Mather (2015) examined the association between gender diversity on corporate boards and the financial performance of a large sample of the top 500 listed companies in Australia during the period 2005–2011 and the finding revealed that board diversity is positively associated with financial performance. However, Aladejebi (2021) conducted a study on the effect of board diversity on the performance of listed deposit money banks in Nigeria and the finding reveals a weak relation between the number of female directors on board and banks' performance. By implication gender diversity does not have strong influence on the performance of a bank.

In another study Bianchi and Latridis (2014), examined the impact of board gender diversity on corporate financial performance. The study found that companies with a higher proportion of women on their boards perform better than those with a lower proportion in terms of return on sales and EBITDA. However, Chauban and Dey (2017) conducted a study to establish whether female directors add value to indian firms or not and the finding revealed that gender diversity does not matter for Indian firms because of it is a patriarchal society where women encounter more problems if elected on the board. As a result of this mixed results from different countries and the growing relevance of women in the corporate organizations and the society at large, the focus of this study is to examine the effect of gender diversity on the financial performance of manufacturing companies in Nigeria.

For the purpose of this study, female director is measured by number of female directors to total number of directors, firms' performance is proxied on return on asset which is measured by profit after tax on total asset. and the control variable of the study is the firm size which measured by profit after tax on total asset

H1. Board diversity has a significant effect on financial performance of listed manufacturing companies in Nigeria.

H1A Firm size significantly control the effect of board diversity on the financial performance of listed manufacturing companies in Nigeria.

THEORETICAL FRAMEWORK

Agency theory was developed by Jensen and Meckling (1976). The theory describes an agency relationship where one party known as principal engages another party called the agent to render services on behalf of the latter (Rusmanto, Waworuntu & Syahbandiah, 2014). By implication, there is a transfer of power from the principal to the agent. An agent has the duty to act in the best interest of the company (principal). Agency theory rests on the principle that there is a separation between the ownership and control of a company, and this gives rise to agency cost. This is established to minimize the influence of conflicts of interest between principal and agent (Jensen & Meckling, 1976). Agency costs being borne by managers is expected to motivate them to voluntarily disclose information on financial performance to reduce information asymmetry.

One of the supporters of theory is Gantowati and Nugraheni (2014), who posited that greater information asymmetry would exist between managers and shareholders if managers do not reveal information to protect own selfish interest rather than that of the shareholders. Also, Alange and Steiber (2009), confirmed that agency cost can be reduced by

establishing a financial incentive scheme with the aim of aligning principal's and agent's interests and establishing a governance structure where the board of directors evaluate the performance of the managers by engaging an external auditor (Alange & Steiber, 2009).

According to Cho, Lee, and Pfeiffer (2013) agency theory allows managers to reduce the influence of information asymmetry by publishing sustainability reports. It increases the transparency in reporting which brings to the awareness of the principal the impact of the management policy in protecting their interests.

METHODOLOGY

Sample selection

169 firms were listed on the Nigerian Stock Exchange as of 31 December 2019. The Nigerian Stock Exchange categorized listed firms into 11 sectors of the economy. The sample used for this study are six companies in consumer goods sector and the basis of selection is their age and size. They are Cadbury Nigeria Plc, Dangote Sugar Refinery Plc, Nigerian Breweries Plc, Guinness Nigeria Plc, Nestle Nigeria Plc and Unilever Nigeria Plc. The rationale for the selection of the 6 companies is based on their size, age, and availability of annual reports for the periods of 11years i.e., 2010-2020.; first, the selected companies must have been listed for about 11 years or more, that is from 2010-2020. Content analysis was done to extract data from the financial report of the sampled companies.

Model Specification and measurement of variables

The model for the study is stated below:

$$ROA_{it} = \beta_0 + \beta_1 BD_{it} + \beta_2 FS_{it} + U_{it}$$

Financial Performance (FP) is proxied on Return on Asset (ROA) which is computed by dividing profit after tax by total asset in any accounting year. Board diversity (BD) is measured by the number of female directors on board compared the entire board. The study adopted *ex-post facto* research design and simple linear regression analysis is done to ascertain the effect of independent variable (BD) on the dependent variable (ROA). The control variable is Firm size, and it is measured by the logarithm of total asset as indicated in the annual report.

RESULTS

Table 1 Descriptive Statistics and Correlation Coefficient of Board Diversity, Firm Size and Return on Asset

Panel A: Descriptive Statistics					
Variables	Mean	Maximum	Minimum	Std. Dev.	Observations
ROA	0.523	28.050	-0.087	3.442	66
FD	0.166	0.500	0.000	0.095	66
FS	10.480	11.649	0.000	2.367	66
Panel B: Correlation Coefficient					
Variables	ROA	FD	FS	VIF	
ROA	1.000			N/A	
FD	0.432	1.000		1.09	
FS	-0.150	0.287	1.000	1.09	

Source: Researcher's computation (2021)

Notes: Table.1 shows the mean, maximum, minimum and standard deviation of the variables in Panel A and Panel B reports the correlation coefficients. The dependent variable is Return on Asset (ROA), while the explanatory variables

are Female Director on the Board (FD), and the control variable is Firm Size (FS). The variance inflation factor (VIF) which is a test for multicollinearity is on the last column of Panel B. All the values were calculated from the 66 firm-year observations for six firms. The estimation process was facilitated using EVIEWS 10.

Interpretation for Descriptive Statistics

Return on Asset: The mean value of 0.523 and standard deviation of 3.442 implies that the mean value of 52.3%, suggest that on the average the return on asset of the selected firms on the Nigerian Stock Exchange is very high. The standard deviation of 344.2% connotes that there is a dispersion of the return on asset from the mean to around 344.2 per cent. Thus, the standard deviation value is far from the mean, suggesting that the return on asset is susceptible to change over time. The minimum value of -0.087 and maximum value of 28.050 indicate that the selected firms on the Nigerian Stock Exchange have different levels of return on asset. This further implies that while some of the sampled firms have negative return on asset, others have high return on asset.

Female Director: The mean value of 0.166 and standard deviation of 0.095 implies that the mean value of 16.6%, suggest that on the average female director of the selected firms on the Nigerian Stock Exchange is very low. The standard deviation of 9.5% connotes that there is a dispersion of the female director from the mean to around 9.5%. Thus, the standard deviation value is not very far from the mean, suggesting that the female director proportion on the board is less susceptible to change over time. The minimum value of 0.000 and maximum value of 0.50 indicate that the selected firms on the Nigerian Stock Exchange have different proportion of female director on their board. This further implies that while some of the sampled firms have 0.000 female director, others have high female director.

Firm Size: The mean value of 10.480 and standard deviation of 2.367. The mean value of 1048.0%, suggest that on the average the firm size of the selected firms on the Nigerian Stock Exchange is very high. The standard deviation of 236.7% connotes that there is a dispersion of the firm size from the mean to around 236.7 per cent. Thus, the standard deviation value is far from the mean, suggesting that the firm size is susceptible to change over time. The minimum value of 0.000 and maximum value of 11.649 indicate that the selected firms on the Nigerian Stock Exchange have different levels of firm size. This further implies that while some of the sampled firms have zero firm size, others have high firm size.

Interpretation for Correlation

Starting with the test for multicollinearity, the variance inflation factor for each of the explanatory variables is less 10, the VIF are 1.09 and 1.09 for female director and firm size respectively. This implies that the explanatory variables included in the specified and estimated model are not correlated with one another.

From the results, female director has positive association with the return on asset of the selected firms listed on the Nigerian Stock Exchange with correlation value of 0.432. This implies that increases in the proportion of female director on the board will lead to increase in return on asset of the selected firms. Conversely, firm size has negative association with return on asset with correlation value of -0.150, thus increases in firm size will lead to fall in return on asset of the selected firms. In addition, the proportion of female director on the board has significant relationship with the return on asset of the selected firms while firm size has insignificant relationship with the return on asset of the selected firms listed on the Nigerian Stock Exchange. This implies that while the proportion of female director on the board is significant factor influencing changes in the return on asset of the selected firms, while firm size is not significant factors that influence changes in the return on asset of the selected listed firms.

Hypothesis Testing

Table 2 Firm Size, Board Diversity and Firm Performance

Dependent Variable: ROA

Variables	Coefficient	Drisc/Kraay	Standard error	t-test	Prob.
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Constant	1.980	1.692	1.170	0.242
FD	18.696***	4.058	4.607	0.000
FS	-0.435***	0.164	-2.657	0.008
Adjusted R ²	0.269			
Wald-Test	211.66 (0.000)			
Hausman Test	0.37 (0.830)			
Bresuch-Pagan RE Test	541.00 (0.000)			
Heteroscedasticity Test	439.29 (0.000)			
Serial Correlation Test	210.87 (0.000)			
Pesaran CSI	8.09 (0.000)			
Observations	66			

Source: Researcher`s computation (2021)

Notes: Table 2 reports the Static Panel regression results of the effect of firm size, board diversity and firm performance of listed manufacturing firms in Nigeria. The dependent variable is Return on Asset (ROA), while the explanatory variables are Female Director on the Board (FD) and the control variable is Firm Size (FS). Significant at 10%, ** Significant at 5%, *** Significant at 1%.

Interpretation of Diagnostic Test

The diagnostic tests reported in Table 2 are as follows; first, the Hausman test which is used to determine the consistent and efficient estimates between the fixed effect and the random effect models. Second, the Breusch-Pagan Lagrangian Multiplier test for random effect test. Third, the Breusch-Pagan/Cook-Weisberg heteroskedasticity test, which is used to check if the cross sections have unequal finite variance. Four, the Wooldridge test for autocorrelation which is used to check if the successive errors are correlated. Five, the Pesaran's test of cross-sectional independence.

The Hausman test was carried out to determine either fixed effect or random effect estimates is consistent and efficient for the model. The Hausman specification test has as its null hypothesis that the random effect model is consistent and efficient, while the alternative hypothesis states that the fixed effect estimates is consistent and efficient. The result of the Hausman test statistic of 0.37 with a probability value of 0.830 is not significant because it is greater than the 5% level of significance. Thus, the insignificance of this test result indicated that the null hypothesis of the Hausman specification test cannot be rejected by the study. Therefore, the random effect estimation technique is appropriate for the estimated model.

The study went further to test the appropriateness of the random effect estimation technique by examining the Breusch Pagan Lagrangian test. The result of this test showed test statistic of 541.00 with a probability of 0.000 which is less than the 5% level of significance, thus paving way for the use of random effect model.

In testing for autocorrelation in the panel data, the Wooldridge test was used. The null hypothesis that the successive error terms are not correlated was rejected in favour of the alternative hypothesis that the successive error terms are serial correlated because the statistic of 210.87 with a probability value of 0.000 is less than the 5% level of significance.

The Breusch-Pagan/Cook-Weisberg test for heteroscedasticity was carried out to determine if the variance of the residual is constant. The null hypothesis of homoscedasticity was rejected, and the alternative hypothesis of heteroscedasticity was accepted. This was because the test statistic of 439.29 with a probability value of 0.000 is less than the 5% level of significance.

To determine the cross-sectional dependence between the selected listed firms, the Pesaran CD test was used. The statistic of 8.09 and with a probability value of 0.000 is statistically significant at 5% level of significance. This implies that the selected listed firms in Nigeria are cross-sectionally dependence.

However, because of the presence of serial correlation, heteroscedasticity and cross-sectional dependence, the model corrects for the random effect model by using the Driscoll-Kraay regression.

Model:

$$ROA_{it} = \beta_0 + \beta_1 FD_{it} + \beta_2 FS_{it} + \mu_{it}$$

$$ROA_{it} = 1.980 + 18.696 FD_{it} - 0.435 FS_{it}$$

$$T\text{-test} \quad 1.170 \quad 4.607 \quad -2.657$$

From the results in Table 2, there is evidence that female director on the board has positive relationship with return on asset of the selected listed manufacturing companies in Nigeria, while firm size has a negative relationship with return on asset of the selected listed manufacturing companies in Nigeria.

In addition, there is evidence that female director on the board and firm size have significant relationship with return on asset of the selected listed manufacturing firms in Nigeria ($FD = 18.696$, $t\text{-test} = 4.058$, $p < 0.05$ and $FS = -0.435$, $t\text{-test} = -2.657$, $p < 0.05$). This implies that female director on the board and firm size are significant factors influencing changes in return on asset of the selected listed manufacturing firms in Nigeria.

Concerning the magnitudes of the estimated parameters 1 unit increase in female director on the board will lead to 18.696 increases in the return on asset of the of the selected listed manufacturing firms in Nigeria, while 1 unit increase in firm size will lead to a fall of 0.435 in the return on asset of the of the selected listed manufacturing firms in Nigeria.

The Adjusted R^2 which measure the proportion of the changes in the return on asset as a result of changes in female director on the board and firm size explains about 27 per cent changes in the return on asset of the of the selected listed manufacturing firms in Nigeria, while the remaining 73 per cent were other factors explaining changes in the return on asset of the of the selected listed manufacturing firms in Nigeria but where not captured in the model.

Decision Rule

The Wald-test Statistic of 211.66 with a probability value of 0.000 is significant at 5 per cent level, this implies that the null that there is no significant effect of board diversity and firm size on the return on asset of the of the selected listed manufacturing firms in Nigeria was rejected and the alternative hypothesis that there is significant effect of board diversity and firm size on the return on asset of the of the selected listed manufacturing firms in Nigeria was accepted.

DISCUSSION OF FINDINGS

This study examined the effect of board diversity on the financial performance in listed manufacturing firms in Nigeria. This result conforms to the following prior studies. For example, Vafaei, *et al.*, (2015) show that there is a positive association between board diversity and financial performance in top 500 Australian companies. Also, Alabede (2016) concluded that there is positive relationship between board diversity and operating performance in UK listed companies.

Meanwhile, Chauban, *et al.*, (2017) revealed that gender diversity does not matter for Indian firms because of it is a patriarchal society where women encounter more problems if elected on the board. Also, Aladejebi (2021) reveals a weak relation between the number of female directors on board and banks' performance. This might be an indication that Nigerian banks need to improve on their board gender diversity culture.

CONCLUSION AND RECOMMENDATIONS

Following the discussion of findings in the preceding section, the finding provides strong empirical evidence that board diversity i.e. inclusion of female director on board has a significant effect on return on asset of manufacturing companies in Nigeria. Therefore, the implications that emerge from these findings infer that inclusion of female director on board can help management in the improvement of the Return on Asset which is in the best interest of the shareholders. This finding supports the agency theory that requires the management (agent) to deliver superior financial performance to their principal (shareholders)

The study recommends that the shareholders should increase the participation of women on board as it enhances the financial performance of firms.

LIMITATIONS AND FUTURE DIRECTIONS

This study has limitation in the collection of data usage. Further studies may examine other proxies for board diversity such as ethnicity, religion, and profession. Also, further investigations using different proxies of financial performance such Profit After Tax and Net Profit Margin would add more value to future research.

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