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Board Independence Structure and Financial performance: Evidence from quoted Consumer Goods Firms in Nigeria

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ABSTRACT

The board of directors is charged with the responsibility of facilitating charges that support the mission of the organization to realize its vision. In the recent past, a number of organizations listed in the Nigerian Exchange Group have collapsed with the board of directors taking the blame. The aim of this study is to empirically explore the relationship between board independence and return on asset. The study adopted ex-post facto research design, this is because it is quantitative research based on positivist paradigm and used deductive reasoning. Data for this study were extracted from annual report of listed consumer goods firms and Nigerian exchange group, spanning from 2010-2020. The data collected were subjected to ordinary least square regression analysis, descriptive statistic, normality test, correlation matric, random effect, co-integration, unit root test and error correction model with the aid of E-view version 12. Empirical evidences from the hypothesis tested indicated that board independent significantly relate to return on asset and recommends that firms should make appointment of independent directors to determinate the appointment of inside executive directors so as to enable the firms to maximally reap the benefits of board independence. Also, independent directors are expected to carry out their duties in line with the specifications and directions of relevant Nigerian laws and codes governing their operations.

KEYWORDS

Board characteristics, Board Independence, Return on Asset, Consumer Goods Firms, Nigerian Exchange Group and organization.

Introduction

There is, near lack of basic infrastructures, corporate frauds, tax evasion, inexperience management, incessant changes in government macroeconomic and fiscal policies, communal and civil unrest, among others in Nigeria. Governments and host communities have ways of meddling with the affairs of firms. In some other cases, corporate owners and managers deliberately embark on acts that serve more of self than the overall wellbeing of the affected firms. *A priori*, weak business culture and poor corporate governance are capable of creating incentives for the appointment of wrong and dubious people into companies' boards (Ponnu, 2008). Whether or not a board composition comprising such people enhances corporate performance has remain an issue of empirical and theoretical debates. Essentially, results of previous studies confirm that the presence of suspicious individuals into a board can exacerbate governance problems facing the firm (Kajola, 2008). Bad corporate governance is capable of negatively influencing corporate performance and shareholders' value as revealed by the works of Ponnu (2008), Deutsch (2005) and Singh and Gaur (2008).

On the other hand, in an environment where regulations are incapable of preventing managers and board members from appropriating earnings for selfish gains, the selfish interests of these individuals entrusted with corporate management and control can actually be directed at profit maximisation goals. While theoretical positions on the above issues have been historically laid down, the practical validity of theories is yet to be reconciled with developments in some developing economies. Studies in emerging economies have shown that the advisory role of boards is likely to be more important than the oversight role due to several reasons (Ponnu, 2008). First, the traditional agency problems related conflict of interest between owners and managers are less of a concern in emerging economies due to the unification of ownership and control (Dharwadkar et al, 2000). As the potential of conflict between owners and managers reduces, so does the importance of the board's oversight role. Second, owners/managers of firms in Nigerian may view board independence as a mere statutory requirements and attempt to fill it by appointing people who considers their role ceremonial. The principle of board independence is thus followed in letters and not in spirit. This problem is accentuated because of weak external governance, which allows firms to get away with loose adherence to rules and regulations about board independence.

Based on these, policy formulation using studies in developed economies might be misleading, because those studies do not effectively take into cognizance developing economies institutional peculiarities. There has been a fair amount of governance research devoted to examining the relationship between board characteristics and financial performance, using empirical data for countries with a long history of implementing initiatives designed to improve corporate governance, but overall there is no consensus judgment that board characteristics improve financial performance; selected example include Graham, Leorg and Roberts (2015); Ararat, Aksa and Tensal (2018) Karinki, Namusanga and Orwa (2015), Fa, Singhol and Parkash (2016); Purwoh and Oko (2017), Creak, Kahn and Sahayon (2017); Ibrahim and John (2018); Kagzi and Guba (2018); Waguna & Nzulum (2019); Brown (2019); Shehu and Musa (2020); Nyatiabi (2021), Joseph and Ironkwe (2022). In reviewing these studies, Shehu and Musa (2020), suggested that there is no relationship between board characteristics and financial performance. As if to strengthen this view, Ibrahim and John (2018) found no significant relationship between board characteristics and return on equity, nothing that the relation is spurious. In addition, Joseph and Ironkwe (2022), drawing on a sample 21 banks, found that board characteristics has a negative effect on profitability and, moreover, that the negative effect is stronger in countries with weak shareholders protection, Nwaiwu and Amah (2021) find no supporting evidence regarding the positive relationship between board independence and financial performance. In sharp contrast to those findings, Wagnna and Nzulwu (2019) finds evidence of a

positive relationship between board gender diversity and financial performance. Further empirical evidence of strong positive relationship between board characteristics and financial performance is offered by Velter (2017), Woschkowiak (2018), Vander berg (2021) for firms in USA and other industrialized economies. The principal aim of this empirical study is, therefore, to explore the relationship between board independence and financial performance of quoted consumer goods firms in Nigeria.

The remainder of the paper after the introduction is as follows. Section II is the review of related literature and hypothesis context. Section III is the methodology. Section IV presents the results and discussion of the findings. Section v wraps it up with conclusion and recommendation, limitation of the study and suggestion further study.

Theoretical Framework

The theoretical framework is generally seen as a bedrock on which knowledge is highly contracted for any research work. It provides a platform for understanding and guiding the discussions that underlie the study. While Agency theory assumes that principals and agents have divergent interests and that agents are essentially self-serving and self-centred, Stewardship theory takes a diametrically opposite perspective. It suggests that the agents (directors and managers) are essentially trustworthy and good stewards of the resources entrusted to them, which makes monitoring redundant (Donaldson 1990; Donaldson and Davis, 1991; Donaldson and Davis, 1994; Davis et al., 1997). Donaldson and Davis (1991:51) observe, ―organisational role-holders are conceived as being motivated by a need to achieve, to gain intrinsic satisfaction through successfully performing inherently challenging work, to exercise responsibility and authority, and thereby to gain recognition from peers and bosses‖.

The stewardship perspective views directors and managers as stewards of firm.

As stewards, directors are likely to maximise the shareholders' wealth. Davis et al. (1997) posit how stewards derive a greater utility from satisfying organisational goals than through self-serving behaviour. Davis et al. (1997) argue that the attainment of organisational success also satisfies the personal needs of the stewards. Stewardship theory suggests that managers should be given autonomy based on trust, which minimizes the cost of monitoring and controlling behaviour of the managers and directors. When managers have served a firm for considerable period, there is a ―merging of individual ego and the corporation‖ (Donaldson & Davis, 1991). Stewardship theory considers that manager's decisions are also influenced by nonfinancial motives, such as need for achievement and recognition, the intrinsic satisfaction of successful performance, plus respect for authority and the work ethics.

These concepts have been well documented throughout the organisational literature in the work of scholars such as Argyris (1964), Herzberg (1966), McClelland (1961), and Muth and Donaldson (1998). Davis et al. (1997) suggest that managers identify with the firm and it leads to personalisation of success or failure of the firm. Daily et al. (2003) argue that managers and directors are also interested to protect their reputation as expert decision makers. As a result, managers operate the firm in a manner that maximises financial performance, including shareholder returns, as firm performance directly impacts perception about managers' individual performance. Fama (1980) suggests that managers who are effective as stewards of the firm are also effective in managing their own careers. Supporting this view, Shleifer and Vishny (1997) suggested that managers who bring good financial returns to investors, establish a good reputation that allows them to re-enter the financial markets for the future needs of the firm. From the stewardship theory perspective, superior performance of the

firm was linked to having a majority of the inside (executive) directors on the board since these inside directors (managers) better understand the business, and are better placed to govern than outside directors, and can therefore make superior decisions (Donaldson, 1990; Donaldson and Davis, 1991). Stewardship theory argues that the effective control held by professional managers empowers them to maximise firm performance and corporate profits.

Consequently, insider-dominated boards are favoured for their depth of knowledge, access to current operating information, technical expertise and commitment to the firm. Similarly, CEO duality (i.e., same person holding the position of Chair and the chief executive) is viewed favourably as it leads to better firm performance due to clear and unified leadership (Donaldson and Davis, 1991; Davis, et al., 1997). Several studies support the view that insider directors (managers), who possess a superior amount and quality of information, make superior decisions (Baysinger and Hoskisson, 1990; Baysinger, Kosnick and Turk, 1991 and Boyd, 1994). Muth and Donaldson (1998) compared the predictions of agency theory with that of stewardship theory and found support for stewardship theory being a good model of reality. Bhagat and Black (1999) have also found that firms with boards consisting of a greater number of outside directors (representing agency theory perspective), perform worse than firms with boards with less number of outside directors. As such, some support exists for the stewardship perspective both conceptually (e.g., Davis et al., 1997) and also empirically (Bhagat and Black, 1999).

Conceptual Framework

Board independence refers to the state in which all or a majority of the members of a board of directors do not have a relationship with the company except as directors. According to Clifford and Evan (2017), an independent non-executive director is defined as an independent director who has no affiliation with the firm except for their directorship. There is an apparent presumption that boards with significant outside directors will make different and perhaps better decisions than boards dominated by insiders. Furthermore, Fama and Jensen (1983) concluded that non-executive directors play an important role in the effective resolution of agency problems of a firm and therefore their presence can lead to straightened and more effective decision-making in the firm.

According to Shamharir, Ishaka and Mohamad (2016), outside directors generally are viewed as professional referees who unbiasedly protect the shareholders interest, helping to prevent or detect any management opportunistic behaviour. Hermalian and Weishaeh (2021) found out that there is no relationship between financial performance and the proportion of outside directors.

VanNess, Miesing and Kang(2020) conducted a study, average board age and financial performance. The aim of this empirical study was to establish that there is no significant impact of average board age on financial performance. Ex-post facto research design was adopted and data were collected through secondary source and were analyzed using ordinary least square regression analysis. This is despite the assertion that younger board members are more amenable to change, have superior technical knowledge and greater receptivity to risk-taking. More over, younger board members are also said to be more innovative and more efficient in governance oversight which is expected to lead to improved financial performance. Older board members on the other hand are also argued to affect performance of a firm through their experience, enhanced independence, and long-term connections leading to stronger corporate performance. The study applied ROE as the measure of performance rather then applying the more robust return on asset which the current study applied. It is concluded that the exist a significant and positive effect of average board age and financial performance and

recommends that independent directors are expected to carry out their duties in line with the specifications and directions of relevant Nigerian laws and codes governing their operations.

Return on Asset

Over the years, different variables have been used to measure financial performance. This could be measured suing long term market performance measures and other performance measures that are non-market-oriented measured or short-term measures. Some examples of these measures include market value, growth, assets growth (Coles, McWilliams & Sen, 2021; Abdullah, 2022). In their study, (Deharene, Devuyst & Ooghe, 2021) used return n assets as proxy for financial performance in Belgium companies. Return on assets is used to measure firms' financial performance. Return on asset is an indicator of the financial performance of a firm's relative to its total assets. Return on asset gives an ideas as to how efficient management is at using its assets to generate earnings. Calculated by dividing a company's earnings by its total assets. Return n asset is displayed as a percentage. Sometimes this is referred to as "return on investment". The board should not prevent negative management practiced that many lead to corporate failures or scandals but also ensure that firms act on opportunities that enhance the value to all stakeholders. As a strategic resource, the board is responsible to develop and select creative options in the advancement of the firm. Given the increasing importance of boards, it is important to identify the board characteristics that make one board more effective from another to identify and examine the effect of board characteristics on financial performance of listed services firms in Nigeria.

Strikingly, return on asset as a method for measuring financial performance profitability ratios are on indicator of the firms overall efficiency. It's usually used as a measure of earnings generated by the company during a period of time-based on its level of revenue (sales), assets, capital employed net worth and earnings per share. Profitability ratios measure the earning capacity of the firm, and it is considered as an indicator for its growth, success and control. Creditors, for example, are also interested in profitability ratio since they indicate the company's capability to meet interest obligations. Shareholders also interested in profitability. It will indicate the progress and the rate of return on investments. The ratios of the return on assets (ROA) and the return on owners equity are the most used profitability ratios in the analysis. Return on assets ratio. Net profit after taxes/Total assets. This ratio is calculated as net profit after tax divided by the total assets. This ratio measure for the operating efficiency for the company based on the firm's generated profits from its total assets. Return on asset (ROA) is on indicator of the value of a firms relative to its total assets. Return on asset gives an idea as to how efficient management is at using its assets to generate earnings. Calculated by dividing a company's annual 11 earnings by its total assets, return on asset is displayed as a percentage. Sometimes this is referred to as return n investment.

Ongore, K'obonyo, Ogutu and Bosire (2015) investigated the effects of board composition on financial performance. Using multivariate regression analysis on panel data, with return on asset, return on equity, dividend yield as performance indicators, the study found out that independent board members had an insignificant effect on financial performance, but gender diversity did, in fact, have a significant positive effect on financial performance. Board size, on the other hand, had an inverse relationship with financial performance. These results are largely consistent with the conceptual and empirical literature on corporate governance with respect to small board size (5 to 7) that is sufficiently divers in terms of gender, skill, experience, industry networks, among other important attributes. The study findings appear to contradict the long-held traditional view that outsider confer superior performance to the board.

Empirical Review

Many studies have been conducted by various researchers on the impact of board compositions and profitability (using different measure of performance) in different part of the world. It can therefore be deduced that there exists a relationship between board composition and profitability as well as board size and firm market value. Some of these studies include studies conducted in both developed and developing economies.

Merendino (2022) conducted a study on Italian listed firms which sought to establish the relationship that exist between the board of directors and firm performance. The justification for the study was that previous empirical studies had focused more on the emerging markets of Asia. Anglo-American countries and a few European countries. Few studies had been conducted in Italy even though it is considered on interesting case due to the diversity of its corporate governance model which borrows from both the Asian and American models. The study is based on the agency theory and applied econometric modeling. The study specially sought to establish the effect of board composition (the preparation of independent, executive and non-executive directors) on financial performance of firms listed in the star exchange in Italy. This study applied to measures of financial performance; Tobin's Q (Market value) and return on equity (ROE). The empirical study established that there is no relationship or effect of board composition on financial performance. The study concluded that firm financial performance is not influenced by increase or decrease of non-executives decrease of non-executives directors. These findings therefore did not concur with the agency theory (Randoy, 2013). These studies were conducted in Italy which has different political, legal and social characteristics from Kenya. Moreover, the study focused on independence only where as the current study focused on other board characteristics and recommended that board members should be highly be independent of their entity.

Kamdem and Asah (2021), examined the effect of board composition on financial performance of commercial banks in Cameroon. The aim of this study was to investigate the effect of board composition on financial performance foe commercial banks in Cameroon. Ex-post facto research design was adopted for the study. The data used for this study was secondary data collected from the audited financial statements of the selected registered commercial banks in Cameroon. A five years period from 2015-2019 was the period of concentration. Data collected was analyzed using panel data regression analysis. Findings revealed that the board composition which is the proportion of non-executive directors to the executive directors on the board recorded a **mem** of 75%. This means that an average of 75% of the board members are outside directors (non-executive directors) in Cameroon based banks. Also, the regression analysis indicated that there exist a negative (-.463) correlation between board composition (proposition of non-executive directors) and the financial performance of commercial banks in Cameroon as measured by ROA. This empirical result was equally significant at t = .6.052 and p = .000. The negative sign observed here means that an increase in the non-executive directors on the board o directors will lead to a corresponding decrease in the financial performance of commercial banks in Cameroon. The study therefore recommended that commercial banks in Cameroon should strike a fair balance between the proportion of non-executive directors on their board for improve performance.

Festus (2021) conduct emphasized study, board composition and financial performance. The aim of the study were to review extent literature on board composition and financial performance in Nigeria. It become imperative to conduct this study following the series of quest to observe which form of board composition enhances financial performance in Nigeria. The study is conceptual paper in which a holistic review of literature was done on the impact of board composition on financial performance

of Nigeria which provided a theoretical frame of reference for the study. The study also compared past studies to show their weaknesses and strength. For review, related material were gathered from the internet and research gate database, the paper combines empirical findings on the relationship between selected dimensions of board composition and firm performance. The paper identifies shortcoming of past studies and concluded by offering some avenues for further researches in this promising area of empirical research.

Farhan et al.,(2020). The current study aims to assess the effect of board of directors' composition on the profitability of Indian pharmaceutical companies. The analysis is based on 82 companies, analyzed over ten years, from 2008 to 2017. The least squares regression model is used for analysing the data. One accounting based measure (return on assets, ROA) and one marketing-based measure (Tobin Q) are used as proxies for firms' profitability. Leverage, firms' size and age are used as control variables. The findings reveal that board of directors' composition as measured by the percentage of independent board members negatively and significantly affects firm's profitability measured by ROA. On the other hand, board of directors' composition positively and significantly affects profitability measured by Tobin Q. Furthermore, firms' size and age positively and significantly impact profitability.

Abdulrahman and Musa (2020). Indeed conducted a study on determinants of financial performance of listed consumer goods firms in Nigeria. The aim of this study is to assess the determinant of financial performance of listed consumer goods firms in Nigeria. The study covered the period, 2013 to 2018 using a sample of nine firms. Panel data were used which consists of 54 year observation analyzed using multiple regression model. Ordinary least square model was employed to test the effect of firm size, liquidity, board size and audit committee size on firm performance proxy by return on assets (ROA). The outcome of the analysis is also significant at 1% (p= 0.000) with 0.15 as coefficient and board size has a coefficient of 0.011 which is significant at 5% (p =0.031). However, the coefficient of audit committee size is not significant at all (p=0.131). These results show that firm size, liquidity and board size are determinants of firms' performance; however, liquidity is the most determinant of firms performance of listed consumer goods firms in Nigeria from the finding, the study recommends, among others, the management of consumer goods firms in Nigeria should maintain increase the amount of their current assets (especially costs) in order to meet current obligations since liquidity is a good determinant of firms performance.

Research Question and Hypothesis Context

The targeted question and hypothesis context of this study is a derivative of the foregoing discourse, leading to predict apriori a negative relationship between board independence and financial performance of quoted consumer goods firms in Nigeria.

This study provides answer to the following research question (RQ).

RQ_1: How does board independence relate to financial performance of consumer goods of quoted consumer goods in Nigeria?

Strikingly, the question above gives rise to a hypothesis stated in the null form as thus:

H_{01}: Board Independence does not significantly relate to return on asset of quoted consumer goods in Nigeria.

Methodological Structure

This study adopted the ex-post facto research design. Ex-post facto research design assists is quantitative research based on a positivist paradigm and used deductive reasoning assists in providing answers to the what, when, where and how questions connected to a specific study problem. In order to examine the consumer goods firms, eleven selected consumer goods annual reports and accounts were collected as panel data for the study design. The data collected were analyzed using ordinary least square regression analysis, descriptive statistics, co-integration, unit root test, random effect and error correction model with the aid of E-view version 12.

Model Specification

The regression model was adopted from Eni-Eguru, Madukwe and Ezeilo (2022), Nwaiwu and Benvolio (2022), Nwaiwu (2003), with modifications made to fit the study variable. The following is the formulation of the model in the functional form as thus:

ROA_{it}: $f(BOI_{it})$ (i)

Expanding the functional form into econometric as thus:

$ROA_{it} = \lambda_o + \lambda_1 BOI_{it} + \mu_{it}$ (ii)

Where: ROA = Return on Asset for the period of time

BOI_{it} = Board Independence for the period of time

λ_o = Constant for the period of time

λ_1 = Regression slope for the period of time

μ_{it} = Eror Term for the period of time

it = Period of time.

And the apriori expectation is $\beta_1 > 0$

Results and Discussions

Descriptive Statistics of Data

Aggregating the Quoted consumer goods firms in Nigeria, the descriptive statistics of the various economies are presented as follows;

Table 1: Return on assets (ROA, Board independence (BOI of selected consumer goods firms in Nigeria over the period of 2010 to 2020.

	ROA	BOI
Mean	0.066818	1.000000
Median	0.040000	1.000000

Maximum	0.890000	1.000000
Minimum	0.010000	1.000000
Std. Dev.	0.106993	0.000000
Skewness	5.624606	0.000000
Kurtosis	38.85756	0.000000
Jarque-Bera	6473.086	0.000000
Probability	0.000000	0.000000
Sum	7.350000	110.0000
Sum Sq. Dev.	1.247786	0.000000
Observations	110	110

Return on assets (ROA) mean value of 0.066818shows that, on an average level, the consumer goods firms earn about 6.68% return on invested assets annually over the study period. The Board Independence value of 6.25 which can be approximated to 6 shows the presence of board members in every sitting annually across the various consumer goods firms. Mean board independence of 1 shows a significant level of board independence close to 1.

The skewness statistics is positive for all various except for board independence. This shows that, while other variables possess tendencies of increasing, board independence has been decremental overtime. All employed variables shows very high Jarque-Bera statistics with low p-value. This shows distortions in the employed panel trend, and therefore mandates the use of the stationarity test to determine the viability and trends of employed data.

Panel Stationarity Test

Within the panel unit root-testing framework, there are two generations of tests. The first generation of tests assumes that cross-section units are cross-sectionally independent; whereas the second generation of panel unit root tests relaxes this assumption and allows for cross-sectional dependence. In this context, we summarize the first and second generation of panel unit root tests that are often used in panel studies. The summary is presented as follows;

Table 2: Panel Stationarity Test Summary of Employed Variables At Level (0)

Variable		Levin, Lin & Chu t*	Im, Pesaran and Shin W-stat	ADF - Fisher Chi-square	PP - Fisher Chi-square	Decision
ROA	Stat	-2.72081	-4.78852	114.601	95.1732	Stationary at Level (0)
	Prob	(0.0033)	(0.0052)	(0.0011)	(0.0044)	
BOI	Stat	-3.30726	-2.49991	130.758	179.786	Stationary at Level (0)
		(0.0056)	(0.0062)	(0.0021)	(0.0000)	

The study employs the summary stationarity test of Levin, Lin & Chut, Im, Pesaran and Shin W-stat, ADF - Fisher Chi-square, and PP - Fisher Chi-square. The summary statistics values of the employed variables at their respective probability levels is used as a yardstick to determine the presence or absence of unit root in the panel trends. The probability values shows that; Return on assets (ROA), Board independence (BOI) were observed to be stationary at level as they showed probability levels lower than 0.05 across the various employed T-statistics. This shows that they could be used at level for estimation purposes.

Table 3: Panel Stationarity Test Summary of Employed Variables AT First Difference (1)

Variable		Levin, Lin & Chu t*	Im, Pesaran and Shin W-stat	ADF - Fisher Chi-square	PP - Fisher Chi-square	Decision
D(ROA)	Stat	-	-	-	-	-
	Prob					
D(BOI)	Stat	-	-	-	-	-
	Prob					

Due to the lack of stationarity at level in terms Board Independence (BOI), there stationarity test is estimated at the first difference. The above variables showed statistically significant stationarity level at first difference. This therefore shows that the employed variables are seen to have trends that are suitable for estimation purposes. In light of the observation of stationarity test at level and first differencing which shows a fractional integration among the variables, the study therefore proceeds to employ the Panel ARDL test (Nkoro& Uko, 2016). Although, the undertaking of the Panel ARDL requires the determination of the optimal model for the ARDL test. To do this, the study would determine the optimal model between the fixed effect, random effect and pooled effects using the; Likelihood Ratio Test, Hausman Specification Test, and the Hausman Specification Test output.

To determine the best model to employ in the ARDL model, the study proceeds to evaluate various shorten model and select the best, upon which other models will be built. In light of this, the study presents the following;

Pooled Effects Regression (Model)

To evaluate for joint influence of employed variables on the criterion, the table above which represents the pooled effect shows that;

Return on assets (ROA)

Table 4: Pooled Effects Regression Output for model – Return on assets (ROA).

Dependent Variable: ROA

Method: Panel Least Squares

Date: 01/07/22 Time: 23:29

Sample: 2010 2020

Periods included: 11

Cross-sections included: 10

Total panel (unbalanced) observations: 110

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	26.60042	1.036296	25.66876	0.0000
BOI	0.005589	0.019726	0.283316	0.7770
R-squared	0.271732	Mean dependent var		22.02354
Adjusted R-squared	0.668171	S.D. dependent var		14.69053
S.E. of regression	13.39845	Akaike info criterion		8.033275
Sum squared resid	208780.0	Schwarz criterion		8.059266
Log likelihood	-4689.449	Hannan-Quinn criter.		8.043078

F-statistic	48.22689	Durbin-Watson stat	0.048603
Prob(F-statistic)	0.000000		

From the pooled effect as presented in table 4 above, it can be seen that Board Independence (BOI), showed negative effect on the return on assets which is against our apriori expectation. All employed predictor variables had significant influence on Return on assets (ROA), with the exception of Board independence (BOI). This therefore shows consequential effect of the various board composition operations in the selected Consumer goods firms. The model is seen to be generally dysfunctional as the R-squared is very low (0.271732 i.e. 27.17%). The f-statistics is significant based on its probability level of 0.00000 which is less than the 0.05 significance level, but the Durbin Watson test shows presence of positive serial correlation based on its statistical value of 0.048603. We therefore proceed to other models.

Fixed Effect Model

The study proceeds to evaluate the Fixed Effect Model in the following tables below as follows.

Table 5. Fixed Effects Regression Output for model – Return on assets (ROA).

Dependent Variable: ROA

Method: Panel Least Squares

Date: 01/07/22 Time: 23:29

Sample: 2010 2020

Periods included: 11

Cross-sections included: 10

Total panel (unbalanced) observations: 110

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	21.86610	0.783297	27.91545	0.0000
BOI	0.007074	0.012230	0.578449	0.5631

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.894223	Mean dependent var	22.02354
Adjusted R-squared	0.889591	S.D. dependent var	14.69053
S.E. of regression	4.881356	Akaike info criterion	6.050553
Sum squared resid	26663.12	Schwarz criterion	6.267144
Log likelihood	-3486.548	Hannan-Quinn criter.	6.132247
F-statistic	193.0574	Durbin-Watson stat	1.657389
Prob(F-statistic)	0.000000		

Similar to the pooled model, Table 5 above shows that the fixed effect contravenes the apriori expectation in the light of the negative effect of Board Independence (BOI) on the Return on assets (ROA). Overall, this model appears richer than the pooled effect model, as the predictor variables jointly account for up to 89.42% of variation in Return on assets (ROA) followed by the significant f statistics value of 0.00000 which is lower than the 5% (0.05) significant level. The Durbin Watson statistics value of 1.657389 is substantially within acceptable range and within the negative autocorrelation realm. We further proceed to the Random effect to check for the common mean value of employed variables and their influence on the criterion variable.

Random Effects Model

The random effect model is carried out below as follows;

Table 6: Random Effects Regression Output for model – Return on assets (ROA).

Dependent Variable: ROA

Method: Panel EGLS (Cross-section random effects)

Date: 01/07/22 Time: 23:30

Sample: 2010 2020

Periods included: 11

Cross-sections included: 10

Total panel (unbalanced) observations: 110

Swamy and Arora estimator of component variances

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	22.06792	2.120869	10.40513	0.0000
BOI	0.006721	0.012134	0.553896	0.5798

Effects Specification

	S.D.	Rho
Cross-section random	13.25521	0.8806
Idiosyncratic random	4.881356	0.1194

Weighted Statistics

R-squared	0.098430	Mean dependent var	1.587064
Adjusted R-squared	0.094554	S.D. dependent var	5.126357
S.E. of regression	4.877993	Sum squared resid	27673.37
F-statistic	25.39446	Durbin-Watson stat	0.344666

Prob(F-statistic)	0.000000		
	Unweighted Statistics		
R-squared	0.124013	Mean dependent var	22.02354
Sum squared resid	220808.3	Durbin-Watson stat	0.043196

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The random effect similarly shows poor viability of its model as seen from the R-Squared output of 0.098430 i.e. 9.8430, followed by the low Durbin Watson statistics value of 0.043196. The idiosyncratic random Rho shows a value of 0.1194. This value is observed to be relatively low and as such shows a disconnect between employed variables and their inherent residuals. And it is discovered that Board Independence (BOI) shows a negative effect on Return on assets (ROA).

Table 7: Likelihood ratio test output for model – Return on assets (ROA).

Redundant Fixed Effects Tests			
Equation: Untitled			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	173.706728	(11,03)	0.0000
Cross-section Chi-square	2405.801671	44	0.0000

The above likelihood ratio test which shows the predominance between the pooled and fixed effect is seen to show a cross-section F-statistics of 173.706728 at a probability level of 0.0000 which is seen to be below the 0.05 significance level. This leads to the rejection of the null hypothesis (the null hypothesis supports the pooled model). The alternate hypothesis which is accepted favors the fixed effect. The study therefore upholds the fixed effect over the pooled effect. We therefore proceed to evaluate the better model between the fixed and random model.

Hausman Specification Test

To compare the random effect model with the fixed test model. The null hypothesis favours the random effects model i.e. z_i are uncorrelated with the explanatory variables (Its null hypothesis is that the random effects model is appropriate while the alternative hypothesis is the fixed effects model is appropriate).

Table 8: Hausman Specification Test output for model – Return on assets (ROA).

Correlated Random Effects - Hausman Test			
Equation: Untitled			
Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	8.399680	5	0.0086
Cross-section random effects test comparisons:			

Drawing from Table 8 above, the Hausman specification test output via its cross section random chi square statistics of 8.399680 at a probability level of 0.0086 leads to the rejection of the null hypothesis (the null hypothesis supports the random effect). The alternate hypothesis thus upholds the effect of the fixed model. Therefore, the validity of empirical output of the fixed model stands and is binding on employed variables in the short run.

Test of Hypothesis One

H_{01}: Board independence has no significant relationship with Return on assets of selected quoted consumer goods firms in Nigeria.

H_{A1}: Board independence has a significant relationship with Return on assets of selected quoted consumer goods firms in Nigeria.

From table above, the Panel Bounds Test shows that Board independence showed a negative coefficient value of -0.003385 and a t-statistics value of -3.841571 which is seen to be greater than the standard tabulated value of ± 1.98/2. This is also confirmed by the probability value of 0.0001, which can be observed to be less than the 0.05(5%) significance level. This therefore, leads to the rejection of the null hypothesis and the acceptance of the alternate hypothesis that, Board independence has a significant relationship with Return on assets of selected quoted consumer goods firms in Nigeria.

Conclusion and Recommendations

Based on the empirical findings of the analysis, we conclude that the exist a strong positive relationship between board independence and financial performance of quoted consumer goods firms in Nigeria. In line with the empirical findings and conclusion, we recommend that;

(i) Firms should make appointment of inside executive directors so as to enable the firms to maximally reap the benefits of board independence.

(ii) Also, independent directors are expected to carry out their duties in line with the specifications and directions of Nigerian laws and codes governing their operations.

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