Impact of Board Size and Firm’s Characteristics on the Profitability of Listed Companies in Nigeria

Ezekiel Oluwagbemiga OYEROGBA*
School of Business, Jomo Kenyatta University of Agriculture and Technology, Kenya

Florence MEMBA PHD
School of Business, Jomo Kenyatta University of Agriculture and Technology, Kenya

George Kamau. RIRO PHD
School of Business, Dedan Kimathi University of Technology, Kenya

Abstract

The impact of board size on the profitability of firm was empirically examined in this study for the listed companies in Nigeria for a period of ten years ranging from 2004 to 2013. Specifically, the study investigated the impact of board size, firm size and firm age on return on capital employed of the selected companies. The study relied on the secondary data extracted from the audited financial statement of a sample of 70 companies purposefully selected from the 198 listed companies in Nigeria. Both descriptive and inferential statistics were carried out. The results revealed that a significant positive relationship exists between the board size, firm size and return on capital employed. It was therefore recommended that listed companies should adopt the use of large board (12 members) to improve the profitability. It is also needful for the listed companies to increase the capital based as this was found to have positive impact on the profitability of listed companies in Nigeria while the policy makers are encouraged to provide adequate guidelines on the selection of board members.

Keywords: Return on Capital Employed, Board Size, Firm Size, Firm Age, Profitability

1. Introduction and Motivation

The relationship between board size and firm profitability was examined in this study for the listed companies in Nigeria. Corporate boards of directors play a central role in the corporate governance of modern companies, and hence understanding this relationship is very important to our understanding of corporate governance. While the regulatory authorities were bent on increasing the corporate board size (OECD, 2014; SEC 2011), most of the empirical studies on board size has centered on pressure for smaller board size. The line of thought was that although larger board size initially promotes key board functions, there comes a point when larger boards suffer from coordination and communication problems and thus, effectiveness of board (and firm profitability) declines (Lipton & Lorsch, 1992; Jensen, 1993). Majority of the empirical evidence appears to support this view, where most of them documented a significantly negative relation between board size and corporate performance. This implies that if larger board size indeed causes worse performance or profitability, then larger boards would represent inefficient governance that could possibly be improved through an improvement in the board size.

Similarly, previous studies have been heavily criticized for not adequately controlling for endogeneity problems (Wintoki, 2007). To address this, Wintoki (2007) employs a generalized method of moments (GMM) estimator that allows board size to adjust to past performance, and finds no relationship between board size and firm performance. Additionally, since board size is determined by firm specific characteristics, the impact of board size on performance may differ according to these characteristics. Consistent with this, Coles et al. (2008) find that the impact of board size on firm value is positive for large firms, and hence large board size may be an optimal value maximizing outcome for such firms.

In the light of the above argument, this study evaluated the impact of board size on firm profitability with a specific attention on the Nigeria listed companies. The specific objectives were to investigate the impact of board size on return on capital employed for a large sample of seventy Nigeria listed companies over a large period of ten years. The impact of firm characteristics such as firm size and firm age on return on capital employed was also investigated in this study.
This paper offers several contributions to the existing literatures on the subject matter. First, the large sample size of seventy companies and long panel data period of ten years ensures that the results are less likely to be biased by the particular time period under investigation and allows us to employ appropriate statistical package for data analysis. This will allow the generalization of the results obtained from the analysis. Second, the major criticisms of the existing literatures on negligence of the firm characteristics were taken care off in this study. This therefore led to the inclusion of firm size and age in the study model.

2.1 Legalistic Theory

Legalistic theory is a corporate governance theory that focuses on the roles of board of directors to mitigate agency problem and monitor the management of an organization. According to Zahra and Pearce (1989), Gopinath (1994) and Jonnegard (1997), this theoretical school recognized three generally accepted categories of the roles of the board of directors in an organization to include the service roles, the control roles and the strategic roles. The performance of these roles is tied to the size of the board of corporate organizations as these functions are to be delegated to various committees of the board of directors (Adwally, 2014).

Boarden, Crison and Pop (n.d) posits that by having more strategic-orientated boards, one could easily expect to see directors acting with more care and being conscious about their actions and decisions. In this wise, it can be suggested that directors will consider more reasonable alternatives before setting the limits of their strategies and jumping to decisions. Second, directors that involve more on strategic tasks are more likely to collaborate with senior management and this cooperation will lead in the end to better corporate profitability (Judge &Zeithaml, 1992; Ruigroket, 2006). In like manner, Nadler (2004) argues that there might be even more advantages for the managers that decide to engage the boards in strategy as this will result in a better understanding of the company, an increase in satisfaction and a stronger ownership and support.

The control function as perceived by Mintzberg (1983) is carried out by the directors by developing a governance system for the organization which regulates the activities and decision of the management and particularly, the chief executive officer. Gregory, (1995) affirms that legalistic theory possesses the devices to maximize shareholder wealth when authority structures are unified and when boards are composed of a reasonable number of experienced executive directors who do not suffer from information asymmetries and unnecessary bureaucratic structures that may paralyze the strategic decision making processes of the corporations.

Furthermore, the service role of the board of directors manifests in the provision of fund for growth and expansion of the organization, establishment of contracts, promotion of the organization image as well as product branding (Kriger, 1988; Boyd, 1990; Boeker& Goodstein, 1991). Kremary (2013) posits that where provision of fund is considered crucial aspect of the directors’ duty, size can be a great factor. This theory is considered relevant to this study in that it explains how the board size affects the role of the board of directors in an organization which is very crucial to the overall profitability of the organization. The theory also made a significant contribution by encouraging the management to focus on problem solving rather than ordinary rendering of service. This will impact the firms’ profitability significantly owing to the proposition of (Adwerney, 1991) that people are willing to pay when their problems are solved.

2.2 Board Size and Firm Profitability

Board of directors is known to play an important role in improving the profitability of listed firms. The role of board of directors is to regulate the CEO and the management of a firm so that efficiency of a firm can be improved and thus improve the profitability. But, surprisingly, no consistent direction of a relationship between board size and firm profitability were documented in developed countries. A study by Yermack (1996) on a sample of 452 large industrial firms in the US between 1984 and 1991 using return on equity as a measure of profitability revealed a negative relationship between board size and firm value. Eisenberg (1998) criticize Yermack’s use of a sample consisting of only large firms and thereby used a sample of 879 small and medium sized firms from 1992 to 1994 to examine the relationship between board size and firm value. The results shows that ROA is negatively related to board size, which is consistent with Yermack’s result and implies that there is no difference in the result regardless of whether a sample of large or small companies are used to investigate the influence of board size on financial performance.

In addition, Guest (2009) presents evidence from a large sample of 2,746 UK firms from 1981 to 2002 consisting of both descriptive and inferential results with the use of primary and secondary data. The results revealed that board size has a significantly negative impact on profitability, Tobin’s Q and share returns. Another important study by Cheng (2008), who investigated the relationship between board size and firm value using a large sample of 2,980 US firms between 1996 and 2004, reported that firms with larger boards have lower annual profitability measured by accounting returns on assets.
Furthermore, a wider studies by Conyon and Peck (1998) focusing on a sample of five European countries examined the relationship between board size and return on equity (ROE) adopting quantitative research design and inferential statistics. Their finding indicates that larger boards impact negatively on firm growth and profitability as measured by return on equity. These studies showing a negative impact of a large board of directors on profitability implies that smaller boards of directors are more capable of running a firm successfully. A possible explanation for these results could be that interaction among directors in small firms is more cordial than that of a large board of directors (Lipton & Lorsch, (1992); Jensen, (1993); Yawson, (2006).

In contrast to the studies finding a negative relationship, empirical investigation by Haleblian and Finkelstein (1993) on the 47 listed firms on the US stock market revealed that firms with larger boards and management teams performed better than their smaller counterparts and reported higher returns on capital employed. This study focused on 47 US firms that major in gas and computer industries using data from 1978 to 1982. This study can be subjected to a number of criticisms. Apart from the use of a small sample, another key problem with their study is that it is restricted to only two sectors. Thus, the sample is not completely representative of all industries, which can lead to sample selection bias (Eisenberg, 1998).

Similarly, Kiel and Nicholson (2003) conducted a cross-sectional data analysis from 348 large Australian publicly-owned companies in 1996 with a particular focus on the determination of the impact of board size on the profitability of companies. They find that larger boards are helpful in improving both firm value and profitability, as measured by ROA and Tobin’s Q. In addition, Coles (2008) reported a positive relationship between board size and Tobin’s Q in a sample of 8,165 firms with observations from 1992 to 2001 in the US. In like manner, Wang (2012) uses unbalanced panel data from 1,618 firms from 1992 to 2004 to investigate the impact of board size on financial performance using profitability as a measure of performance. Wang (2012) finds that firms with smaller boards invest more heavily in risky assets which eventually led to loss of assets and reduction in profitability. These results therefore made a case for larger board for the listed companies in order to strengthen their investment decision making and improve the company’s profitability.

Furthermore, Zahra and Pearce (1989), posits from the results of the empirical study conducted on the 236 firms on the New York stock market that larger board has a range of expertise to make better decisions for a firm as the CEO cannot dominate a bigger board because the collective strength of its members is higher and can resist the irrational decisions of a CEO and thereby increase the value of a firm in a positive manner. It was reported also that larger board size will enable the firm to have adequate members of board of directors to serve on the board committees as required by the regulations.

Similar to what is obtainable in the developed economies; the findings from the developing countries suggest a positive, a negative or no significant relationship between the board size and profitability of listed companies. Haniffa and Hudaib (2006) find a positive relationship between board size and return on assets (ROA) from a study of 347 Malaysian listed firms using secondary data for a period of five years and with the use of both descriptive and inferential statistics. Similarly, Jackling and Johl (2009) conducted an empirical investigation on a sample of 188 firms listed on Indian stock market between 2001 and 2005 using both primary and secondary data which provided a result that Indian firms with large boards performed better and recorded higher profitability and growth during the period covered by the study.

Contrarily, the results of the study conducted by Mashayekhi and Bazaz (2008) on Iranian firms revealed that larger board size impact negatively on firm value. Specifically, they examine a sample of 240 Iranian firms for 2005 and 2006, and discovered that 195 firms with large boards have lower profitability as measured by return on assets (ROA), earning per share (EPS) and return on equity (ROE). Similarly, Sanda (2010) empirically examined the relationship between board size and firm performance among a sample of 93 listed firms in the Nigerian stock market from 1996 to 1999 and discovered that larger boards impact negatively on firm performance. In like manner, Hui (2012) conducted a study on a sample 318 Chinese listed firms and observed a significantly low profitability attributable to higher agency cost resulting from the board member’s allowance in the firm with large board size. It was further reported that return on equity (ROE) is negatively correlated to board size.

However, Mangena and Chamisa (2008) examine the effect of board size on the profitability of listed firms in South Africa. They use a sample of 81 firms listed between 1999 and 2005, with both secondary and primary data subjected to descriptive and inferential statistics and find that there is no significant relationship between board size and firm profitability as measured by earning per share and return on capital employed. Therefore, it
can be inferred that there is no significant relationship between the board size and the profitability of listed companies

3. Methodology

3.1 Research Design

This study adopted a descriptive research design which is described as a method of collecting information by interviewing or administering a questionnaire to a sample of individuals. Descriptive research design has been defined as an efficient way of gathering data on a wide range of sample to help address a research question (Adwally, 2013). This research design was appropriate for this study as it answers research questions who, what, where, when and how is the problem. Similarly, Joseph, Robert and David (2003) opined that descriptive research design is useful when the research objectives include the determination of the degree to which one variable called dependent variable is influenced by another variable known as independent variable. Since the main objective of this study was to investigate the impact of board size and firm characteristics on firm’s profitability in Nigeria, the choice of descriptive research design was considered appropriate.

3.2 Population and sample selection

The population for this study consists of the 196 companies listed on the Nigeria stock exchange within the period of 2004 to 2013 financial years. This period was appropriate because the period witnessed the recent crises that affected the global economy as well as Nigeria listed companies that led to the constant review of code of corporate governance in Nigeria. The sample for this study consisted of the seventy (70) listed companies that were selected from six industries (Banking, Food and Beverages, Breweries, Healthcare, Automobile and Industrial/Domestic products) out of the twenty four (24) industries in which the listed companies in Nigeria are classified. The seventy one (71) companies consisted of twenty one listed banks, fourteen listed food and beverages, seven listed breweries, ten listed health care companies, six listed automobile companies and twelve listed industrial/domestic product companies. The six industries were chosen based on the fact that they constituted the major employers of labour in Nigeria and they also have the largest stock on the Nigeria stock exchange (Badmus & Oguntuga, 2009).

3.3 Data description

The data for the study were extracted from the audited financial statement of the selected companies. The dependent variable was profitability which was measured by return on capital employed while independent variable was board size. This study adopted return on capital employed as a measure of profitability for two important reasons. First, there appears to be a lack of consensus in the literature about the optimal measurement to profitability (Sweden, 2012). Therefore, ROCE was focused on since is more commonly used in corporate governance literatures than the rest of profitability measurements (Love & Klapper, 2004; Hudaib & Haniffa, 2006; Gupta, 2009). Thus, adopting this measurement of profitability will enable comparability of this study with existing literatures (Ademulegun, 2009; Druno & Claessens, 2010; Renders, 2010; Price, 2011; Macauley & Randoy, 2013). Secondly, the use of accounting and market-based measures of profitability will provide a comprehensive check for the results (Hanison & Hudalis, 2006; 2012; Ntim, 2012). Therefore, ROCE as proxies for company’s profitability help in measuring the impact of board size on both accounting and market performance.

ROCE is used to measure how a firm’s profitability is relative to their capital which is the efficiency of management in utilizing the company’s capital to generate earnings (Hanison & Hudalis, 2006). It is calculated as the earnings before interest and tax divided by total assets less total liabilities (Yermack, 1996; Munisuk & Randoye, 2013). From an agency theory perspective, higher ROCE indicates effective use of company capital in achieving the greatest return for shareholders (Hanison & Hudalis, 2006).

Furthermore, the use of ROCE ratio has a number of advantages. According to Lev and Sunder (1979), when profitability is expressed in the form of ratios, it acts as a control for the systematic effect of size on the variables being examined. Similarly, Mangenonos (2010) posits that ROCE is a more powerful operating profitability measure than other accounting measures, such as return on equity (ROE), because ROCE possesses distributional properties. For instance, a firm’s capital employed is strictly positive, but equity can be negative or zero.

The total number of board members represented the board size which includes the executive directors, non executive directors and independent directors for the years under consideration. The firm’s size was measured
using the total stock and average numbers of employee in line with Mallen (2013) model. The stock was fixed at fifty million ordinary shares while the average number of employees was fixed at 50 (Mallen, 2013). Only the firms who satisfied this minimum requirement were considered for the analysis which reduced the sample size to 70 from 71 as one firm did not meet the basic requirement. The age of the firm was measured using the years of listing on the Nigeria stock exchange. Firms who have been listed before 2004 that was the base year for the study and maintained their listing to the period of the study were considered for the analysis. These were done in line with previous studies (Mak & Shakir, 2008; Yermack, 1996; Kusnadi, 2005; Mak & Li, 2001; Mak & Shakir, 2008)

3.4 Data Analysis
The data analysis covered the descriptive and inferential statistics. Descriptive statistic was done using trend analysis and multiple comparison of mean of the variables. Inferential statistics on the other hand included the Pearson product moment correlation coefficient and regression analysis. The correlation coefficient was used to establish the type of relationship that existed between dependent variable and the independent variables while the multiple linear regression analysis was used to ascertain the amount of variations in the dependent variable which can be associated with changes in the value of an independent or predictor variable in the absence of other variables with the use of T-statistic. T- statistic refers to the ratio between the model mean square divided by the error mean square. The significance of the model was tested at 95 percent confidence level. The p-value of the F-statistic was used in determining the robustness of the model. In other word, when the p-value was less than 0.05, it was inferred that the model was significant.

Therefore, to determine the impact of board size on profitability, the following regression model was estimated.

$$\text{ROCE} = \beta_0 + \beta_1(\text{BSIZE}_t) + \beta_2(\text{FIRM SIZE}_t) + \beta_3(\text{FIRM AGE}_t) + \varepsilon_t$$  \hspace{1cm} (1)

Where:

$\beta_0$ = represents the constant

$\beta_1, \beta_3$ = represents the coefficient of the independent variables

ROCE= returns on capital employed in time t

BSIZE= board size in time t

FIRM SIZE= firm size in time t

FIRM AGE= firm age in time t

$\varepsilon_t$= is the error term assumed to be normally distributed with zero mean and constant variance.

4. Results

4.1 Descriptive Results

4.1.1 Trend Analysis for Return on Capital Employed

The results of the trend analysis for the return on capital employed on yearly basis revealed that there was a slight increase between 2004 and 2005 and a significant fall occurred from 2005 to 2007. There was another sharp rise between 2007 and 2008 and that level was maintained between 2008 and 2010 while a significant fall was also experienced between 2010 and 2012 as presented in figure 4.1. The trend however recorded a slight increase in 2013. The fall in earning per share between 2005 and 2007 can be attributed to the global financial crises which occurred within that period as well as the financial market reform that took place in Nigeria within that period. However, the positive macroeconomic policies put in place by the government might be responsible for the rise in those years following the fall.
The trend analysis results for the board size revealed a gradual increase in the board size of listed companies in Nigeria during the period under consideration. The average size of the board of the listed companies between 2004 and 2008 was between 10 and 11. The size increased to 11.5 between 2008 and 2010 while the average board size rose to 13.5 in 2011 and that figure was maintained till 2013. This increase may be associated with OECD (2014) recommendations which advocated for larger board for effective discharge of directors’ duties. The result was presented in figure 4.2.

4.2 Inferential Results
To statistically determine the relationship between the independent variables and the dependent variable, a multiple linear regression analysis was carried out. From table 4.3, the regression results show that R=0.931 and R-Square =0.867. The R-Square indicates that the explanatory power of the independent variables was 0.867. This implies that the combined effects of board size, firm size and firm age explains 87% of the variations in the
profitability of listed companies in Nigeria while the remaining 13% can be attributed to the other factors not captured in this study.

**Table 4.3 Model Summary**

<table>
<thead>
<tr>
<th>R</th>
<th>R Square</th>
</tr>
</thead>
<tbody>
<tr>
<td>.931</td>
<td>.867</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Board Size, Firm Size, Firm Age

The analysis of variance (ANOVA) test in Table 4.4 shows that the significance of the F-statistic was 0.000 which was less than 0.05 meaning that null hypothesis is rejected and conclude that there is a relationship between all independent variables jointly (board size, firm size) and return on capital employed.

**Table 4.4 Analysis of Variance Results**

<table>
<thead>
<tr>
<th>Sum of Squares</th>
<th>Df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>440.812</td>
<td>3</td>
<td>88.162</td>
<td>24.155</td>
</tr>
<tr>
<td>Residual</td>
<td>1514.718</td>
<td>697</td>
<td>3.650</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1955.530</td>
<td>700</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: Return on Capital Employed
b. Predictors: (Constant), Board Size, Firm Size, Firm Age

A further test on the beta coefficients of the resulting model was carried out to determine the significance of each independent variable. Board size was found to be positively correlated with return on capital employed where beta coefficient was 0.248 and p value of 0.029 which was less than the value of 0.05. This implies that profitable listed companies in Nigeria maintained a larger board size. This result supports the findings of Lupu and Nichetean (2014) which suggests a positive relationship between the board size and profitability. Similarly, the relationship between the firm size and return on capital employed was positive and significant. The beta coefficient was 0.314 while the p-value was 0.009 which was the less that the value at 0.05. This implies that a unit increase in the explanatory variable firm size causes 38% increase in the profitability of listed companies in Nigeria. This result was in agreement with the postulation of Bnaduri, (2003) who argued that large firms enjoys higher penetration into the market and thus experience higher return on their capital. Large firm also enjoy the benefit associated with economic of scale (Ibrahim, Rehman, & Raoof 2010).

Furthermore, consistent with the findings of Mohammed, (2009) on a sample of 182 listed companies in Malaysia which perceived a significant positive relationship between firm age and return on capital employed, a positive and significant relationship was found between the firm’s age and return on capital employed. The beta coefficient was 0.135 while the p-valve was 0.044 as against the value at 0.05 indicating that profitability of listed companies in Nigeria increase as they advance in age. The increase in profitability associated with firm age can be explained in the light of the learning curve theory. The learning curve theory is a relationship between unit production time and the cumulative number of units produced. As individuals or organizations collectively repeat a particular process, they gain skill or efficiency from their experience and production time improvements occur (Mak & Shakir, 2008). An improvement in production time will therefore results in reduction in production cost and increase in profitability.

**Table 4.5 Overall Regression Model Coefficients**

<table>
<thead>
<tr>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>T</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>Board Size</td>
<td>.248</td>
<td>.113</td>
<td>.287</td>
</tr>
<tr>
<td>Firm Size</td>
<td>.314</td>
<td>.119</td>
<td>.336</td>
</tr>
<tr>
<td>Firm Age</td>
<td>.135</td>
<td>.066</td>
<td>.155</td>
</tr>
</tbody>
</table>

a. Dependent Variable: Return on Capital Employed
5. Conclusions and Recommendations

The aim of this study was to determine the impact of board size on the profitability of listed companies in Nigeria. The study also sought to investigate the impact of firm characteristics such as firm size and firm age on the profitability which was measured using return on capital employed. Secondary data extracted from the audited financial statement of the selected companies was used for the study. A variety of statistical test and analysis including descriptive statistics, correlation analysis and regression analysis were carried out and conclusion drawn in relation to the objectives of the study and the theoretical framework for the study.

Findings from descriptive statistics indicated that the listed companies in Nigeria have recorded significant fluctuations in profitability in the last ten years as measured by capital employed. However, a slight increased occurred from 2012 to 2013 which was the year following the review of corporate governance mechanisms by the security and exchange commission. Accordingly, there was an increasing trend in the size of the board of listed companies during the period of the study.

Inferential statistics also revealed a significant relationship between the explanatory variables and profitability indicator. Specifically, higher return on capital employed was associated with increase in board size. Although, most recent studies emphasizes the cost of maintaining the large board as the peril of having larger board but that does not undermine the role of larger board towards the growth of any organization. Companies with large board benefits from the professional experience of the board members and enjoy higher accessibility to capital. It can therefore be concluded that board size have significant impact on the profitability of listed companies in Nigeria.

For the firm size, the conclusion was that, it is a significant factor for the growth in profitability of listed companies in Nigeria. It was established that listed companies have intensify effort towards ensuring the growth of the listed firms in the recent time as about through an increase in the capital base of listed companies which was achieved through merger and acquisition. Thus, the increase in profitability could be attributed to the growth in firm size since the regression results revealed a significant relationship between the size of the board and return on capital employed.

Concerning the firms’ age, the regression result suggests an existence of positive relationship between the firm age and return on capital employed. The positive correlation between the firm age and return on capital employed suggest an improvement in the management activities through experience which in one was could have led to reduction in production cost and an increase in profitability as cost and profitability have been found to be directly associated with one another.

In conclusion, the overall regression result revealed a significant relationship between return on capital employed and the three explanatory variables which includes the board size, firm size and firm age. It was therefore recommended that listed companies should adopt the use of large board (12 Members board) to improve the profitability. It is also needful for the listed companies to increase the capital base as this was found to have positive impact on the profitability of listed companies in Nigeria. Further studies can consider the use of both primary and secondary for easy comparison.

References


