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The Effects of Board Structure Characteristics on Corporate Financial Performance in Developing Economies: Evidence from East African Stock Markets

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Abstract
This study examine the linkage between board structure characteristics and corporate financial performance in a developing market, East African stock markets. To achieve the objective of this study, we used a strongly balanced panel dataset of 240 observations including 30 non-financial listed firms in East African region covering the period from 2006-2013 (8 years period). Measures for corporate financial performance employed were return on assets (ROA) and return on equity (ROE) as dependent variables for econometric Model 1 and Model 2 respectively and explanatory (independent) variables for board structure characteristics were board size (BS), number of non-executive directors (NED), CEO duality (CD) and board and managerial shareholdings (BMS).furthermore, the effects of control variable such as firm size (SIZ) has been also examined. The panel corrected standard errors (PCSEs) and random effects (RE) regression models were employed for Model 1-ROA and Model 2-ROE respectively to analyze the data. Our results indicate a statistically significant positive effects of board size (BS), number of non-executive directors (NED) and CEO duality (CD) on East African listed firm's financial performance while board and managerial shareholding (BMS) has a statistically significant negative effects on East African listed firm's financial performance at 5% significance level. Finally, the study recommends East African listed firm's to adopt a larger size of board of directors , large proportion of non-executive directors in the board, CEO-Chair position in their organization structure and a small portion of board and managerial shareholding on their ownership structure in order to improve their financial performance, but also securities markets regulatory authorities in East African region such as East African member states securities regulatory authority (EASRA) and their respective countries securities markets regulatory authorities to stimulates new efforts towards better corporate governance practices especially board structure characteristics due to its statistically significant effects on companies financial performance and future research can be extended after considering other board structure characteristics which were not included in this study like board meeting, board attendance, biography of board members and existence of the position of chief financial officer (CFO) in board of directors (BOD).
Keywords: Board Structure Characteristics, Corporate Financial Performance, Panel Data, Developing Economies, East African Stock Markets.

1. Introduction

The Board of Directors (BOD) is charged with oversight of firm management on behalf of shareholders. In general terms, the board of directors must assume an effective oversight function so as to protect the interest of firm shareholders (Priya and Nimalathasan, 2013). The Board of directors is one of the key significant element of corporate governance. During the past decade there has been an increasing awareness of corporate governance practices issues in East African region, therefore it become mandatory for firms operating in the region to comply with corporate governance principles.

Corporate governance (CG) has become one of the hot and most debated topic in business administration due to accounting manipulation's and collapse of some big listed public firms like Enron, WorldCom, and Parmalat etc. There is ongoing reform process on corporate governance practices after financial crisis, therefore sound corporate governance practices such as board characteristics are foundation upon which investors and lenders trust are built (Agyei and Owusu, 2014)

However, until to date the effects of board structure characteristics on corporate financial performance is still questionable, and this is due to the fact that academician and researchers are not speaking the same language as the effects of board characteristics on corporate financial performance is concern. Their results from empirical studies are still contradictory and mixed. Some researchers and academician documented positive effects of board structure characteristics on corporate financial performance, other researchers documented negative effects while the rest researchers and academician said there is no any significant effects between board structure characteristics and corporate financial performance. Therefore, the effects of board structure characteristics on corporate financial performance is still a puzzle.

The objective of this paper is to explore the effects of board structure characteristics on corporate financial performance in East African stock markets context. This study will add value to the body of knowledge in both accounting and finance literature especially in developing economies like East African region. To the best of my knowledge there is no any empirical evidence about the effects of board structure characteristics on corporate financial performance for East African region context and this paper is the first to consider the influential effects of board structure characteristics on corporate financial performance in the East African stock markets context, this paper consider East Africa region due to the several reasons such as (i) To fill the research gap in existing accounting and finance literatures relating to board structure characteristics and corporate financial performance due to the reason that, there is no any empirical research as to date on East African region while the region is recently experiencing a rapid stock market developments. (ii) To help shareholders of firms in East African region to make appropriate decisions regarding board of directors structure characteristics {iii} To help Securities markets regulatory authorities in East African region such as East African member states securities regulatory authority (EASRA) and their respective country members authorities (like CMSA in Tanzania, CMA in Kenya and CMA in Uganda) to formulate policies relating to corporate governance practices especially board of directors characteristics sub-index.{iv}The results of this study will therefore, provide a platform for future research in board structure characteristics and corporate financial performance especially for East African region and developing economies in general.

The rest of this paper is organized as follows: Section 2 presents relevant literatures review and research hypotheses, Section 3 is about research methodology applied in this study, Section 4 presents study results and discussion and lastly Section 5 concludes the paper and give out recommendations.

2. Relevant Literatures Review and Research Hypotheses

2.1 Theoretical Perspective

The influence of board structure characteristics on corporate financial performance might be related to some dominants theories. This study will limit its discussion on the most three {3} dominant theories such as Agency theory, Stewardship theory and Resource Dependence theory.

2.1.1 Agency Theory

Agency theory originally focused on the relationship between owners (principal) and managers (agents), from this relationship there will be a conflict of interest between owners (principals) and managers (agents).Managers must work for the best interest of owners but manages must be monitored and institutional arrangements must provide some checks and balances for assurance that managers (agents) do not misuse their power (Bushra and Mishra, 2014).All resulting costs from managers(agents) misusing their power plus all costs of monitoring and disciplining them so as to prevent misuse of power are knows as agency cost (Blair,1996). A good corporate governance practices like board structure will minimize agency cost.

2.1.2 Stewardship Theory

The idea under the stewardship theory is managerial motivation alternative to agency theory. This theory argues that shareholders interest are maximized by shared incumbency of these roles. The idea of management team is to perform a very good job, to be a good steward of the company's assets (Donaldson, 1990).Ideally, the good stewards are those work towards owner's interests with assurance of high profits margin and high shareholder's return (Donaldson and Davis, 1991)

Stewardship theory is totally different from agency theory with regards to the motive of management, generally under stewardship theory there is no conflict of interest between managers and shareholders and this is due to the fact that, managers who are good stewards of the firm, decides to work with their best effort on behalf of shareholders.

2.1.3 Resources- Dependence Theory

According to this theory, board of directors are the key persons for providing access to all required resources needed by the firm. This theory explained about organizational strategies in aspects like board members structure, production strategies and external relations (Pfeffer and Salancik, 1978). Board of directors are the ones who link between the firm and its external stakeholders. The Board of directors' ability to provide resources to the firm will depends much on board size and board composition (Bodaghi and Ahmadpour, 2010).

Furthermore, according to (Pleffer and Salancik,1978) directors usually brings four (4) benefits to the firm such as information either counsel and advices, access of information that link between the firm and environmental contingencies , resources accessibility and legitimacy (Ngan,2013).

2.2 Empirical Evidences relating to the relationship between Board Structure Characteristics and Corporate Financial Performance

The effects of board structure characteristics (board size, board independence, CEO duality, board committee and board and managerial shareholding) on corporate financial performance is a very controversial issue in academic literatures. Prior empirical studies which mainly focused on developed and emerging economies with

very few in developing economies suggested different results that make this topic to be a researchable one in finance literature especially in developing economies like East African stock markets.

2.2.1: Board Size and Corporate Financial Performance

The board of directors' core function is to manage the overall company including its operations. The relationship between board size of the firm and financial performance is still questionable. There are number of prior researches which provide an empirical evidence supporting a positive relationship between board size and financial performances like Wen et al., (2002) who found a positive relationship for Chinese listed firms, Abor (2007) for Ghanaian listed firms, the possible reason which support their positive relationship is a view that, larger boards are better for firm financial performance because they have a range of expertise in terms of skills, knowledge and experience to help make better decisions and also they are harder for management including a powerful CEO to dominate. On the other hand, other researchers found a significant negative relationship between board size and financial performance like Jensen (1993) and the possible reason toward their negative relationship is the fact that larger boards are less effective, so it's not easy to co-ordinate, hence encourages free riding and poses a lot of problem. Others researches found no relationship at all between board size and firm financial performance like Kaymak and Baktas (2008).

H1: There is a positive statistically significant effects of board size on corporate financial performance

2.2.2: Non-Executive Directors and Corporate Financial Performance

Number of non-executive directors in the board of directors is a good measure for board independence, this is due to the fact that non-executive directors are not part of management team, and hence there decisions will not be influenced by management team. Several researchers provides a positive relationship between non-executive directors and corporate financial performance like Pombo and Gutierrez (2011) and Arosa et al., (2010) and their possible reason is the fact that, existence of non-executive directors in the board will be an effective monitoring of management team functions. On the other hand, other researchers found a negative influence of non-executive directors on corporate financial performance such as Erickson et al., (2005) and the possible reason for this is due to the fact that non-executive directors are less informed and are not familiar with firm operations as compared to executive directors so this will effect there decision making as a results firm financial performance might also negatively affected. However, other researchers did not found any significant effects of non-executive directors on firm financial performance like Duchin et al., (2010).

H2: There is a positive statistically significant effects of non-executive directors on corporate financial performance

2.2.3: CEO Duality and Corporate Financial Performance

The influence of CEO duality on firm financial performance is still a controversial issue in finance literatures for years now. CEO is the chief executive officer of the firm and his the key person in management team for the managerial responsibilities while the chairman is the key person in board of directors for the overall supervision responsibilities. Several researchers contributed a positive link between CEO duality and firm financial performance like Guillet et al., (2013) on their study for restaurant sector, the possible reason to support this positive link is due to the argument that, CEO duality decreases communication conflicts and hence creates a clear sense of centralized decision making. On the other hand, other researchers contributed a negative link between the two variables, CEO duality and firm financial performance like Chen et al., (2005) and the possible reason is due to the fact that, the board of directors will be less effective in executing their functions because in real life situation boards chairs are the ones who influence setting of board agendas than the rest members of the board, hence if CEO is also the chair of the board then the overall board of directors discussions will base on the agendas of his own interest .Furthermore, other researchers did not found any significant effects of CEO duality on firm financial performance like Amaral-Bapaista et al., (2011).

H3: There is a positive statistically significant effects of CEO duality on corporate financial performance

2.2.4: Board and Managerial shareholding and Corporate Financial Performance

The extent to whether board and managerial shareholding (insider ownership) influence firm financial performance is still a hot topic attracting scholars and academicians concern. Several prior researches provided a positive influence of board and managerial shareholding on firm financial performance like Park and Jang (2010) and the possible reason for this situation is due to the fact that, when insiders (Board members and managers) owns shares they will be part of owners and these will automatically boost their performance. On the other hand, other studies found a significant negative relationship between board and managerial shareholding and corporate financial performance like McConnell and Servaes (1990), the possible reason for this due to the fact when insiders (board and managers) are holding a large portion of firm ownership it implied that outsiders (For example institutions) are holding a small portion of firm ownership then after firm monitoring will not be easy implemented and management will not work for the best interest of shareholders and therefore firm financial performance will also be adverse affected. However, other researchers found no relationship at all between the two variables like Brick et al., (2005), Demsetz and Villalonga (2001), Loderer and Martin (1997),Seifert et al.,(2005),Vafeas and Theadorou (1998) and Cho (1998).

H4: There is a positive statistically significant effects of board and managerial shareholding on corporate financial performance

3. Research Methodology

3.1 Scope, Population and Sample Size

Our study uses all publicly listed firms on East African stock exchanges during the period of 2006-2013. East African region comprises of six {6} countries such as Tanzania, Kenya, Uganda, Rwanda, Burundi and South Sudan. We excluded Rwanda, Burundi and South Sudan due to unavailability of data for our study timeframe (i.e. 8 years). Therefore, the population for this study will includes only three {3} stock market such as Dar es Salaam stock exchange (DSE) in Tanzania, Nairobi securities exchange (NSE) in Kenya and Uganda securities exchange (USE) in Uganda.

The listed companies were then screened from the three {3} stock markets against several factors such as {1} All financial institutions, including all banks and insurance companies listed in East African stock markets were excluded from the study, due to the fact that, the capital structure of these financial institutions is highly regulated by central banks and respective insurance regulatory authorities. Moreover, cash is trading assets of bank and hence the levels of cash holding are expected to be significant higher than for firms in other sectors (Mwangi et al.,2014) {2} The mining listed companies were also excluded from the study due to their big different in capital structure and nature of operations as compared to other listed companies (Mwambuli,2015){3}All newly listed firms and delisted firms during the period of this study were also excluded so as to remove any anomalies (Mwambuli,2016a){4} The study eliminated some listed East African companies due to unavailability of data. Finally our sample size consisted of 30 non-financial listed firms.

3.2 Data Sources

Our study used secondary data which was extracted from various sources, such as OSIRIS database and supplemented with East African stock market websites and firms websites {including annual reports} for the whole period of our study 2006-2013. The study also consisted a critical review of academic literatures from financial journals, books and articles to form a foundation of the study.

3.3 Data Analysis

Our study used both descriptive and inferential statistics during data processing. Descriptive statistics of study variables were computed for whole timeframe from 2006-2013 (8 years period), then the study measured the extent of relationship among variables with correlation analysis and lastly panel multiple regression models were employed to identify the most significant and influential independent variables on dependent variable. The panel methodology was done by using E-VIEWS 8 and STATA 10 statistical packages and 240 observations applied on this panel dataset.

3.4 Corporate Financial Performance and Board Structure Characteristics Variables Measurement (Proxy) and References

The study uses two {2} dependent variables, four {4} independent variables and one {1} control variable to analyzing the effects of board structure characteristics on corporate financial performance for East African stock market listed firms. The study used book values for all of these variables in calculations because our study is based on firms annual reports (i.e. financial statements) (See also Khan et al., 2014; Mwambuli, 2016a).

3.4.1 Dependent Variables

Our paper uses two {2} dependent variables as measures of corporate financial performance such as Return on assets (ROA) and Return on Equity (ROE).The study uses these two {2} common accounting measure of financial performance because of several reasons: {1}East African stock markets as among of developing economies their capital markets are relatively under developed and are not active this make accounting measures of financial performance as good as appropriate to measure firm's performance as compared to market measures of financial performance (Mwambuli,2016a) {2} To make our results significant and comparable with prior studies, because these accounting measures of financial performance were mostly employed in previous empirical studies (Mwambuli,2016a).The measurements of dependent variables and their respective references are shown here below

Return on Assets(ROA)=Net Profit / Total Assets
(Mwambuli, 2016a, Alam et al., (2014), Pouraghajan et al., (2012) and Zeitun and Tian (2007))

Return on Equity (ROE)=Net Profit / Total Equity
(Mwambuli, 2016a, Chang et al., (2014), Soumadi and Hayajneh (2012) and Onaolapo and Kajoka (2010))

3.4.2 Independent Variables

Our study used four (4) independent variables such as board size (BS), number of non-executive directors (NED), CEO duality (CD) and board and managerial shareholding (BMS) as measures of board structure

characteristics .This study used these variables because prior literatures suggests these four (4) items as the core items for board structure characteristics but also in order to make our results comparable with prior empirical results conducted on board structure characteristics arena. The measurements of independent variables and their respective references are shown here below.

BS= Total number of board members

(See Chitiavi et al., (2013)

NED= is the number of non-executive directors divided by total number of directors.

(See Ahmadpour et al., (2012)

CD= is a dummy variable, it is taken as 1 if CEO is chairman; otherwise it is taken as 0.

(See Agyei and Owusu (2014)

BMS= Is measured as number of shares held by CEO, directors and their family and child divided by total number of shares.

(See Rahman et al., (2010)

3.4.3 Control Variable

Our study used firm size (SIZ) as a control variable in order to control the differences in firm's operating environment. The reason behind this choose of a control variable is due to the fact that prior literatures suggested that firm size is likely to influence its financial performance, hence larger firms have a greater variety of capabilities and can enjoy economies of scale which may affect the results and inferences (See Ramaswamy (2001), Frank and Goyal (2003), Jermias (2008); Ebaid (2009)).

Firm Size (SIZ) =Natural logarithm of total assets

(Mwambuli (2016a), Smith et al., (2012), Dewalheyns and Van Hule (2012) and Ebaid (2009))

3.5 Model Specification

This study tested the effects of board structure characteristics on corporate financial performance of firms listed in East African stock markets by the following regression models.

Model 1-Return on Assets (ROA)

$$ROA_{it} = \beta 0 + \beta 1 BS_{it} + \beta 2 NED_{it} + \beta 3 CD_{it} + \beta 4 BMS_{it} + \beta 5 SIZ_{it} + \varepsilon_{it}$$

Model 2-Return on Equity (ROE)

$$ROE_{it} = \beta 0 + \beta 1 BS_{it} + \beta 2 NED_{it} + \beta 3 CD_{it} + \beta 4 BMS_{it} + \beta 5 SIZ_{it} + \varepsilon_{it}$$

Where:

ROAit= Return on assets of firm i at time t

ROEit= Return on equity of firm i at time t

BSit= Board size of firm i at time t

NEDit= Number of non-executive directors of firm divided by total number of directors of firm i at time t

CDit= CEO duality of firm i at time t

BMSit= Board managerial shareholding of firm i at time t

SIZit= Size of firm i at time t

β0=Intercept coefficient

B1-β5=Coefficients of the concerned independent variables and control variable

εit =Error term of firm i at time t

4. Result and Discussion

4.1 Descriptive Statistics

Descriptive measures of variables used in this study were presented on Table No 1 below. The results showed that ROA and ROE had a mean of 10.37% and 28.93% respectively, these values presents poor financial performance for listed firms in East African stock markets during 2006-2013.The average number of board members in East African listed firms is 9 directors while the minimum number of board members is 4 directors and the maximum number of board members is 12 directors. The average proportion of non-executive directors is 66.09% of the total number of board of directors, which shows that many board of directors of listed firms in East African stock markets are independent because the average proportion of non-executive directors is higher compared to executive directors during the period of study. The average value for CEO Duality stand at 0.15 and this show that 15% of listed firms in East African stock markets are having the same person who is holding both positions as firm CEO and also chairman of the board of directors whereas 85% of listed firms in East African stock markets had independent CEO. On the average the board managerial shareholding is approximately 3.90%, which suggest that the large portion of firm ownership for listed firms in East African region is on the hand of outsiders with an approximately shareholding of 96.10%.The firm's size of listed firms in East African region had a mean of 22.44, this result suggest that size of the firm is key firm-specific driver of firm performance and East African firms are large firms in average as measured in terms of total assets..

Table No 1: The Descriptive Statistics

	ROA	ROE	BS	NED	CD	BMS	SIZ
Mean	0.103724	0.289298	8.966667	0.660931	0.154167	3.903600	22.44209
Median	0.073330	0.166420	9.000000	0.714286	0.000000	0.025400	22.44028
Maximum	0.450609	23.88259	20.00000	1.000000	1.000000	66.15000	25.93936
Minimum	-0.960864	-2.330425	4.000000	0.000000	0.000000	0.000000	15.43107
Std. Dev.	0.131173	1.560710	3.162101	0.223048	0.361863	9.144252	1.453908
Observations	240	240	240	240	240	240	240

Source: E-Views 8 Analysis of Data

4.2 Preliminary Analysis

4.2.1 Testing for Multicollinearity (Correlation Analysis)

The correlation coefficients between independent variables used in our study were presented below on Table No 2.The results present the lowest correlation coefficient of +0.04 between number of non-executive directors and board and managerial shareholding while the highest correlation coefficient of +0.55 between board size and firm size, therefore this results suggest absence of multicollinearity problem between our independent variables because multicollinearity problem arises when the correlation coefficient between independent variables is +/- 0.80 or higher (Lewis-Beck, 1993, Hossain. I and Hossain. A, 2015; Mwambuli, 2015, Mwambuli, 2016a).

Table No 2: The Pearson Correlation Matrix

	SIZ	BS	NED	CD	BMS
SIZ	1.000000	0.554819	0.049183	-0.239699	-0.255877
BS	0.554819	1.000000	-0.173958	-0.229515	-0.134923
NED	0.462456	0.500846	1.000000	-0.142012	-0.089497
CD	-0.239699	-0.229515	0.049251	1.000000	0.045074
BMS	-0.255877	-0.134923	0.038949	0.045074	1.000000

Source: E-Views 8 Analysis of Data

4.2.2 Unit Root Test

The econometric model will produce non-sensible or spurious regression results relating to relationship between dependent and independent variables if non-stationary data were used. Non-stationary data is when a data series does not have a constant mean, variance and auto-covariance at various lags over time (Gujarati, 2007, Hossain. I and Hossain. A, 2015, Mwambuli, 2015, Mwambuli, 2016a).

We run unit root test as proposed by Levin-Lin- Chu (LLC) because our dataset is strongly balanced panel dataset. The following hypothesis was considered for this test.

Null hypothesis (Ho): Panel data contains unit root [non-stationary].

Alternative hypothesis (H1): Panel data is stationary.

Table 3 below presents the results of LLC test. The results suggest that our variables were stationary at both individual intercept and individual intercept and trend. We run this unit root test and p-value is significant at 5% significance level, therefore our study rejected our null hypothesis and we accepted our alternative hypothesis that our strongly panel dataset were stationary.

Table No 3: The Unit Root Test results-Levin, Lin and Chu (LLC) test

Null: Unit root (assumes common unit root process)

	(With individual intercept)			(With individual intercept and trend)		
Variable	t-statistic	Probability	Process	t-statistics	Probability	Process
ROA	-3.75813	0.0001	Stationary	-16.0440	0.0000	Stationary
ROE	-7.5493	0.0000	Stationary	-15.9945	0.0000	Stationary
BS	-5.18393	0.0000	Stationary	-5.78166	0.0000	Stationary
NED	-6.18010	0.0000	Stationary	-6.21554	0.0000	Stationary
CD	-1.50082	0.0067	Stationary	-2.54901	0.0015	Stationary
BMS	-3.95968	0.0314	Stationary	-4.22984	0.0091	Stationary
SIZ	-9.91547	0.0000	Stationary	-14.5134	0.0000	Stationary

Source: E-VIEWS 8 Analysis of Data

4.2.3 Hausman Test Fixed Effects versus Random Effects Model

Our study used strongly panel dataset, for this case there is a possibility of having cross sectional effects on firms or group of firms. Therefore, we undertake the Hausman test to choose between fixed effects model versus random effects model which one will be appropriate for this study. The following hypothesis will be applied for our econometric models {i.e. Model 1-ROA and Model 2-ROE}.

Null hypothesis (Ho): Random effects model is appropriate.

Alternative hypothesis (H1): Random effects model is not appropriate.

For {Model 1-ROA}-See Table No 4 below, the Hausman test statistics presents significant p value (0.0188) at 5% significance level and indicates the fixed effects model is more efficient and should be used in our econometric model in order to make sure that results are consistent

Table No 4: The Hausman test results-Model 1 (ROA)
Correlated Random Effects - Hausman Test
Equation: ROA
Test cross-section random effects

	Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Model 1	Cross-section random	13.543722	5	0.0188

Source: E-VIEWS 8 Analysis of Data

For{Model 2-ROE}-See Table No 5 below, the Hausman test statistics presents insignificant p value (0.7935) at 5% significance level and indicates the random effects model is more efficient and should be used in our econometric model in order to make our results consistent.

Table No 5: The Hausman test results-Model 2 (ROE)
Correlated Random Effects - Hausman Test
Equation: ROE
Test cross-section random effects

	Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Model 2	Cross-section random	2.386497	5	0.7935

Source: E-VIEWS 8 Analysis of Data

4.2.4 Heteroskedasticity Test

We use Breusch –Pagan-Godfrey test to check for the presence of heteroskedasticity in our econometric models. This test is appropriate because the presence of heteroskedasticity in our dataset will lead to inaccurate values of t-test and F-test hence our results will be misleading. Heteroskedasticity arise when errors do not have constant variance, Gujarati (2007). The following hypothesis will be applied for our econometric models {i.e. Model 1-ROA and Model 2-ROE}.

Null hypothesis (Ho): Absence of heteroskedasticity
Alternative hypothesis (H1): Presence of heteroskedasticity

For {Model 1-ROA}-See Table No 6 below, the Breusch-Pagan-Godfrey test statistics presents insignificant p value (0.3076) at 5% significance level and indicates the model is not facing heteroskedasticity problem (absence of heteroskedasticity).

Table No 6: Heteroskedasticity test results-Model 1 (ROA)
Heteroskedasticity Test: Breusch-Pagan-Godfrey

	Model 1
F-statistic	1.197132
Prob. F(5,234)	0.3113
Obs*R-squared	5.986018
Prob.Chi-Square (5)	0.3076
Scaled explained SS	51.62585
Prob.Chi-Square (5)	0.0000

Source: E-VIEWS 8 Analysis of Data

For {Model 2-ROE}-See Table No 7 below, the Breusch-Pagan-Godfrey test statistics presents insignificant p value (0.2925) at 5% significance level and indicates the model is not facing heteroskedasticity problem (absence of heteroskedasticity).

Table No 7: Heteroskedasticity test results-Model 2 (ROE)
Heteroskedasticity Test: Breusch-Pagan-Godfrey

	Model 2
F-statistic	1.229410
Prob. F(5,234)	0.2960
Obs*R-squared	6.143286
Prob.Chi-Square (5)	0.2925
Scaled explained SS	608.0106
Prob.Chi-Square (5)	0.0000

Source: E-VIEWS 8 Analysis of Data

4.2.5 Test for Autocorrelations

Our study used Breusch-Godfrey Serial correlation LM test to check for autocorrelation in the models, the reason behind this test is due to the fact that, our study used strongly balanced panel dataset hence the possibility of

having autocorrelation cannot be ignored . Autocorrelation {Serial correlation} arises when errors associated to a given time period carry over into future time periods, hence presence of autocorrelation will lead to misleading results in our econometric models. The following hypothesis will be applied for our econometric models {i.e. Model 1-ROA and Model 2-ROE}.

Null hypothesis (Ho): Absence of autocorrelation

Alternative hypothesis (H1): Presence of autocorrelation

For {Model 1-ROA}-See Table No 8 below, the Breusch-Godfrey Serial correlation LM test statistics presents significant p value (0.0000) at 5% significance level and indicates the model is facing autocorrelation problem (presence of autocorrelation).

Table No 8: Autocorrelation test results-Model 1 (ROA)

Breusch-Godfrey Serial Correlation LM Test:

	Model 1
F-statistic	52.39210
Prob. F(2,232)	0.0000
Obs*R-squared	74.67158
Prob.Chi-Square (2)	0.0000

Source: E-VIEWS 8 Analysis of Data

For {Model 2-ROE}-See Table No 9 below, the Breusch-Godfrey Serial correlation LM test statistics presents insignificant p value (0.7834) at 5% significance level and indicates the model is not facing autocorrelation problem (absence of autocorrelation).

Table No 9: Autocorrelation test results-Model 2 (ROE)

Breusch-Godfrey Serial Correlation LM Test:

	Model 2
F-statistic	0.236399
Prob. F(2,232)	0.7897
Obs*R-squared	0.488106
Prob.Chi-Square (2)	0.7834

Source: E-VIEWS 8 Analysis of Data

4.2.6 Panels Corrected Standard Errors (PCSEs) and Random/Fixed Effects Regression Models

We used Panel Corrected Standard Errors (PCSEs) model for model 1 (ROA) instead of fixed effects model as proposed by Hausman test (See Table No 4 above) because model 1 (ROA) is facing autocorrelation problem, Therefore the PCSEs model will correct the problem automatically and hence the model 1 (ROA) will present reliable best estimates for all variables. For model 2 (ROE),we used random effects model as proposed by Hausman test (See Table No 5 above) because this model is free from heteroskedasticity problem with or without autocorrelation problem. According to Kmeta (1997), Panel Corrected Standard Errors (PCSEs) as an alternative to the Feasible Generalized Least Square (FGLS) for fitting the panel data models when the errors are not independent and identically distributed; rather the errors are either heteroskedastic across panels or heteroskedastic and contemporaneously correlated across panels, with or without autocorrelation (Hossain. I and Hossain. A, 2015, Mwambuli, 2016a).

4.3 Regression Analysis

4.3.1 Model 1-Return on Asset (R0A)

Table No 10: Panel Corrected Standard Errors (PCSEs) model results-Model 1

```
Linear regression, correlated panels corrected standard errors (PCSEs)

Group variable:    code                          Number of obs      =       240
Time variable:     year                          Number of groups   =        30
Panels:            correlated (balanced)         Obs per group: min =         8
Autocorrelation:   no autocorrelation                           avg =         8
                                                                max =         8
Estimated covariances      =       465          R-squared          =    0.0825
Estimated autocorrelations =         0          Wald chi2(5)       =     22.25
Estimated coefficients     =         6          Prob > chi2        =    0.0005
```

roa	Panel-corrected Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
bs	.0075288	.0022771	3.31	0.001	.0030659	.0119918
ned	.0762416	.0211987	3.60	0.000	.0346929	.1177904
cd	.0247094	.0147823	1.67	0.095	-.0042634	.0536822
bms	-.0033992	.0011291	-3.01	0.003	-.0056122	-.0011862
siz	-.0127914	.0038477	-3.32	0.001	-.0203328	-.0052501
_cons	.2823517	.0680925	4.15	0.000	.148893	.4158105

Source: STATA 10 Analysis of Data

4.3.2 Model 2-Return on Equity (R0E)

Table No 11: Random Effects (RE) model results-Model 2

```
Random-effects GLS regression                 Number of obs      =       240
Group variable: code                          Number of groups   =        30

R-sq:  within  = 0.0000                       Obs per group: min =         8
       between = 0.1840                                      avg =       8.0
       overall = 0.0182                                      max =         8

Random effects u_i ~ Gaussian                 Wald chi2(5)       =      4.34
corr(u_i, X)       = 0 (assumed)              Prob > chi2        =    0.5018
```

roe	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
bs	.0102371	.0398462	0.26	0.797	-.0678601	.0883343
ned	.1856496	.4687868	0.40	0.692	-.7331556	1.104455
cd	.5840306	.2900669	2.01	0.044	.01551	1.152551
bms	-.00234	.0114573	-0.20	0.838	-.0247959	.0201159
siz	.0249662	.0880941	0.28	0.777	-.1476951	.1976274
_cons	-.5663926	1.808936	-0.31	0.754	-4.111842	2.979056
sigma_u	0					
sigma_e	1.5848409					
rho	0	(fraction of variance due to u_i)				

Source: STATA 10 Analysis of Data

4.3.4 Discussion of regression results for Model 1- (ROA) and Model 2- (ROE)

Table No 10 above presents the results from the panel regression (Panel Corrected Standard Errors - PCSEs) for Model 1-(ROA).The results indicate that board structure characteristics such as board size (BS), number of non-executive directors (NED) and board and managerial shareholding (BMS) has a statistically significant effects on corporate financial performance as measured by ROA at 5% significance level. The coefficients of board size (BS), number of non-executive directors (NED) and board and managerial shareholding (BMS) were +0.0075288, +0.0762416 and -0.0033992 respectively and the p values were 0.001, 0.000 and 0.003 respectively. It shows that the board size (BS) has a statistically significant positive effects on ROA, hence the firm with large board of directors are profitable as measured by ROA, the possible reason to support this results is due to the fact that, larger boards have a diverse range of expertise to assists making better firm decisions but also its easy for large board to monitor the powerful CEO and his management team. Our results also indicates a statistically significant positive effects of number of non-executive directors on ROA, this implied that profitable firms in

East African region are the ones with large proportion of non-executive directors on their board, possible reason is the fact that, existence of non-executive directors in the board will be an effective monitoring of management team functions. However, for board and managerial shareholding (BMS),the results report a statistically significant negative effects on ROA, hence the firm with small percentage of insiders ownership are profitable as measured by ROA, the possible reason for this due to the fact when insiders (board and managers) are holding the large portion of firm ownership it implied that outsiders (For example institutions) are holding a small portion of firm ownership then after firm monitoring will not be easy implemented and management will not work for the best interest of shareholders and therefore firm financial performance will also be adverse affected .Furthermore the results indicates statistically insignificant effects between CEO duality (CD) with corporate financial performance as measured by ROA at 5% significance level. The coefficients of CEO duality (CD) was + 0.0247094 and the p value was 0.095. The results also indicate a statistically significant effects of firm size (i.e. control variable) on corporate financial performance as measured by ROA with p values of 0.001 at 5% significance level. Table No 10 above also reported the prob>chi2 of 0.0005 at 5% significance level, suggesting that our model (Model 1-ROA) is statistically significant.

The effects of board structure characteristics on corporate financial performance as measured by ROE were presented by Table No 11 above as per random effects regression model. The results indicates only CEO duality (CD) as a measure of board structure characteristics has a statistically significant effects on corporate financial performance as measured by ROE at 5% significance level. The coefficient of CEO duality (CD) was +0.5840306 and the p value was 0.044. It shows that the CEO duality (CD) has a statistically significant positive effects on ROE, hence the firm with the combination of the CEO-Chair positions are profitable as measured by ROE, and the possible reason to support this results is due to the argument that, CEO duality decreases communication conflicts and hence creates a clear sense of centralized decision making. However, the results indicates statistically insignificant effects between other board structure characteristics such as board size (BS), number of non-executive directors (NED) and board and managerial shareholding (BMS) with corporate financial performance as measured by ROE at 5% significance level. The coefficients of number of board size (BS), non-executive directors (NED) and board and managerial shareholding (BMS) were +0.0102371, +0.1856496 and -0.00234 and the p values were 0.797, 0.692 and 0.838 respectively. The results also indicate a statistically insignificant effects of firm size (i.e. control variable) on corporate financial performance as measured by ROE with p values of 0.777 at 5% significance level. Table No 11 above also reported the prob>chi2 of 0.5018 at 5% significance level, suggesting that our model (Model 2-ROE) is statistically insignificant.

In Summary, the results shown on Table No 10 and Table No 11 indicates the effects of board structure characteristics on East African listed firm's financial performance at 5% significance level. The results indicate a statistically significant positive effects of board size (BS) on corporate financial performance, which suggest that an increase in number of board directors will result to an increase in corporate financial performance {ROA}, our results are consistent with previous empirical results reported by Wen et al., (2002) and Abor (2007), hence we accepted the hypothesis H1. Number of non-executive directors (NED) has also statistically significant positive effects on corporate financial performance, implied that an increase in number of non-executive directors in the board will lead to an increase in firm financial performance (ROA), our results are consistent with empirical results reported by Pombo and Gutierrez (2011) and Arosa et al., (2010), hence we accepted the hypothesis H2.However the results indicates a statistically significant positive effects of CEO duality (CD) on corporate financial performance, which suggest that a firm with CEO-Chair position will result to an increase in corporate financial performance {ROE}, our results are consistent with previous empirical results reported by Guillet et al., (2013) ,hence we accepted the hypothesis H3.Board and managerial shareholding (BMS) has a statistically significant negative effect on corporate financial performance, which suggest that a firm with small portion of insiders shareholding will result to an increase in corporate financial performance {ROA}, our results are consistent with previous empirical results reported by McConnell and Servaes (1990) ,hence we rejected the hypothesis H4

5. Conclusion and Recommendations

Our study investigate the effects of board structure characteristics on corporate financial performance of listed non-financial companies in East African stock markets. To our knowledge this is the first study to undertake such an analysis for the East African region, therefore this study fill the gap in finance and accounting literatures.

This study used strongly balanced panel dataset of 240 observations including 30 non-financial listed firms in East African region (i.e. Firms listed at Dar es Salaam stock market (DSE), Nairobi securities exchange (NSE) and Uganda securities exchange (USE) for a period of 8 years (i.e. 2006-2013). We used return on assets (ROA) and return on equity (ROE) as dependent variables (measures for corporate financial performance) for econometric Model 1 and Model 2 respectively, on the other hand we used board size (BS),number of non-executive directors (NED),CEO duality (CD) and board and managerial shareholding (BMS) as independent

variables (measures for board structure characteristics),furthermore firm size (SIZ) as a control variable in our econometric models (i.e. Model 1-ROA and Model 2-ROE)

We conducted preliminary tests before estimating our econometric models, we found that our dataset were free from multicollinearity problem, then we found also all variables were stationary at both individual intercept and individual intercept and trend, we then found that our models (Model 1-ROA and Model 2-ROE) are not facing heteroskedasticity but Model 1-ROA was facing autocorrelation while Model 2-ROE was not facing autocorrelation. Hausman test suggested for fixed effects model and random effects model for Model 1-ROA and Model 2-ROE respectively but we employed Panel Corrected Standard Errors regression model for Model 1-ROA because this model was facing autocorrelation then Panel Corrected Standard Errors regression model used so as to correct autocorrelation on the panel dataset.

Our results indicate a statistically significant positive effects of board size (BS), number of non-executive directors (NED) and CEO duality (CD) on East African listed firm's financial performance while board and managerial shareholding (BMS) has a statistically significant negative effects on East African listed firm's financial performance at 5% significance level. Although the East African listed firms stills have poor corporate governance practices compared to firms in developed economies, this empirical findings suggest that board structure characteristics playing an important role in deciding the corporate financial performance for East African listed firms

The study recommends East African listed firm's to adopt a larger size of board of directors, large proportion on non-executive directors on their board , CEO-Chair position in their organization structure and a small portion of board and managerial shareholding on their ownership structure in order to improve their financial performance, but also Securities markets regulatory authorities in East African region such as East African member states securities regulatory authority (EASRA) and their respective countries securities markets regulatory authorities to stimulates new efforts towards better corporate governance practices especially board structure characteristics due to its statistically significant effects on companies financial performance, furthermore future research can be extended after considering other board structure characteristics which were not included in this study like board meeting, board attendance, biography of board members and existence of the position of chief financial officer (CFO) in board of directors .

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