

**BOARD STRUCTURE, INTELLECTUAL CAPITAL, FINANCIAL REPORTING
QUALITY, AND FIRM VALUE AMONG COMPANIES LISTED ON
SECURITIES EXCHANGES IN EAST AFRICA**

**BY
VERONICA MUKYALA**

**A RESEARCH THESIS SUBMITTED TO MOI UNIVERSITY, SCHOOL OF
BUSINESS AND ECONOMICS IN PARTIAL FULFILLMENT FOR THE
AWARD OF DEGREE OF DOCTOR OF PHILOSOPHY IN BUSINESS
MANAGEMENT (FINANCE OPTION)
MOI UNIVERSITY**

DECEMBER 2021

DECLARATION

Declaration by the Candidate

I declare that this thesis is my original research work and it has not been presented before any institution for an academic award. No this piece of work should be duplicated whatsoever without prior permission from the author, and /or MOI University.

Signature_____ Date _____

Veronica Mukyala

SBE/D.PHIL/BM/14/2017

Declaration by the Supervisors

As University Supervisors, we have given our approval to this research thesis.

Signature_____ Date _____

Dr. Lucy Rono

Department of Accounting and Finance

School of Business & Economics

Moi University

Eldoret

Signature_____ Date _____

Prof. Lagat Charles

Department of Marketing and Logistics

School of Business & Economics

Moi University

DEDICATION

This work is dedicated to my employer Makerere University Business School for giving me an opportunity and facilitating me on this program. I dedicate this work to Prof. Waswa Balunywa, for the enormous support in molding my career and for all the support and guidance he gave during the pursuit of this PhD. To my very good longtime friend and colleague Dr. Bazinzi Nantamba for the academic support and for interesting me in pursuing a Ph.D. He initiated a collaboration between my institution and Moi University to see that many colleagues benefit and I was among them. And to my friends and family for their unreserved support, prayers, and inspiration, their spiritual, wise inspiration, mentorship, and academic foundation.

ACKNOWLEDGEMENT

My sincere thanks to my supervisors Prof. Charles Lagat and Dr. Lucy Rono for tirelessly guiding me to come up with this thesis. What a good journey it has been with you people! To my colleagues with whom we started the journey together thus my classmates, Rehema, Nahum, Mercy, Tanui, Mutwol, David, Fred, Xavier, Gabriel, God bless you for being the best course mates. I also thank my colleagues in Uganda for encouraging me to pursue my studies and come up with this thesis. I acknowledge the will of God in completing this PhD.

ABSTRACT

The primary objective of economic entities is to maximize shareholders' wealth. Therefore, the concept of firm value is of great concern among varied stakeholders. However, firms listed in East African Stock Exchanges (Nairobi Securities Exchange, Uganda Securities Exchange, Dar es Salaam Securities Exchange, and Rwanda Securities Exchange) continue to report low firm value and massive corporate governance lapses. Therefore, the objective of this research was to examine the link between board structure, intellectual capital, financial reporting quality, and firm value among companies listed on East African securities exchanges. Specifically, the study examined the effect of board structure (board size, board diversity, board independence, and board expertise) on firm value, the moderating effect of financial reporting quality, and the mediating effect of intellectual capital on the relationship between board structure and firm value. The research was grounded on agency and resource based view theories and the positivism paradigm. The study used an explanatory research approach. Data was for the period 2012 to 2020 and was extracted from published financial reports. After applying the inclusion and exclusion criteria the final sample comprised of 67 firms. The choice between the fixed effect and the random effect model was based on the Hausman test. The findings show that while board size ($\beta = -0.371$, $\rho < 0.05$) and board diversity ($\beta = -0.053$, $\rho < 0.05$) had a negative and significant effect on firm value, board independence ($\beta = 0.126$, $\rho < 0.05$) and board expertise ($\beta = 0.393$, $\rho < 0.05$) had a positive and significant effect. Additionally, financial reporting quality had a significant moderating effect on the relationship between board size ($\beta = -0.01$, $\rho < 0.05$), board diversity ($\beta = 0.02$, $\rho < 0.05$), board independence ($\beta = -0.02$, $\rho < 0.05$) and board expertise ($\beta = 0.04$, $\rho < 0.05$). Intellectual capital had a mediating effect on the relationship between board size ($\beta = -0.087$, $\rho < 0.05$), board diversity ($\beta = -0.028$, $\rho < 0.05$), board independence ($\beta = 0.037$, $\rho < 0.05$), board expertise ($\beta = 0.103$, $\rho < 0.05$) and firm value. Financial reporting quality moderated the indirect effect of intellectual capital on board independence ($\beta = 0.011$, $\rho < 0.05$) and board expertise ($\beta = -0.02$, $\rho < 0.05$) and firm value. Thus, management of listed firms should consider smaller and more diversified boards to enhance firm value. Besides, there is a need for mandatory intellectual capital disclosure and improve financial reporting quality to strengthen the effect of board structure on firm value. Finally, future research should look at the antecedent effect of other variables such as director tenure on firm value.

TABLE OF CONTENTS

DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
ABSTRACT.....	v
TABLE OF CONTENTS.....	vi
LIST OF TABLES	xi
LIST OF FIGURES	xii
ABBREVIATIONS	xiii
OPERATIONAL DEFINITION OF TERMS	xv
CHAPTER ONE	1
INTRODUCTION.....	1
1.0 Overview	1
1.1 Background of the Study	1
1.2 Statement of the Problem.....	8
1.3 Objectives of the Study	9
1.3.1 General Objectives.....	9
1.3.2 Specific Objectives	10
1.4 Research Hypotheses	12
1.5 Significance of the Study	14
1.6 Scope of the Study	15
CHAPTER TWO	17
LITERATURE REVIEW	17
2.0 Overview	17
2.1 Concept of Firm Value.....	17
2.2 Concept of Board Structure	19
2.2.1 Board size.....	23
2.2.2 Board diversity.....	24
2.2.3 Board Independence.....	25
2.2.4 Board Expertise.....	25
2.3 Concept of Intellectual Capital	26
2.4 Concept of Financial Reporting Quality	28
2.5 Theoretical Review	31

2.5.1 Agency Theory.....	31
2.5.2 Resource Based View Theory.....	34
2.6 Review of Empirical Literature	36
2.6.1 Board structure and Firm Value.....	37
2.6.1.1 Board Size on Firm Value.....	39
2.6.1.2 Board Diversity and Firm Value.....	41
2.6.1.3 Board Independence and Firm Value	43
2.6.1.4 Board Expertise and Firm Value.....	46
2.6.2 Intellectual Capital and Firm Value	48
2.6.3 Financial Reporting Quality and Firm Value.....	50
2.6.4 Board structure and Intellectual Capital	51
2.6.5 Board structure, Intellectual Capital and Firm Value of Firms	53
2.6.6 Board Structure, Financial Reporting Quality, and Firm Value	55
2.7 Control Variables	57
2.8 Conceptual Framework.....	57
CHAPTER THREE	60
METHODOLOGY	60
3.0 Overview	60
3.1 Research Philosophy.....	60
3.2 Research Design.....	61
3.3 Study Area	62
3.4 Study Population.....	63
3.4.1 Inclusion and Exclusion Criteria.....	63
3.5 Measurement of Variables	64
3.5.1 Measurement of Firm Value	64
3.5.2 Board Structure Measurement	66
3.5.3 Intellectual Capital Measurement	67
3.5.4 Financial Reporting Quality Measurement.....	70
3.5.5 Control Variables	71
3.6 Data Collection Instruments	71
3.7 Data Collection Procedures.....	72
3.8 Data Analysis	72
3.9 Test for Multivariate Assumptions	72
3.9.1 Normality Test	73

3.9.2 Homoscedasticity Assessment	74
3.9.3 Testing for Autocorrelation.....	75
3.9.4 Multicollinearity	75
3.9.5 Panel Stationarity Test	76
3.9.6 Levin-Lin-Chu Panel Unit Root Test.....	76
3.9.7 Im-Pesaran-Shin Unit Root Test.....	76
3.10 Selection of the Model	77
3.10.1 The Random Effects and Fixed Effect Model	78
3.10.2 Hausman Test.....	78
3.11 Model Specification	79
3.11.1 Model for a moderation effect	80
3.11.2 Testing for Panel Mediation.....	84
3.11.3 Model for Moderated Mediation.....	85
3.12 Ethical Considerations	85
CHAPTER FOUR.....	86
RESULTS AND DISCUSSION	86
4.0 Overview	86
4.1 Descriptive Statistics.....	86
4.1.1 Descriptive Statistics of Board Size along Countries	86
4.1.2 Descriptive Statistics of Board Diversity along Countries	87
4.1.3 Descriptive Statistics of Board Independence along Countries.....	87
4.1.4 Descriptive Statistics of Board expertise along Countries.....	88
4.1.5 Descriptive Statistics of Intellectual Capital along Countries	89
4.1.6 Descriptive Statistics of Financial Reporting quality along Countries	90
4.1.7 Descriptive Statistics of Firm Value along Countries.....	90
4.1.8 Descriptive Statistics of Variables along the Years	91
4.1.9 Summary Statistics.....	92
4.2 Diagnostic Tests of the Data	94
4.2.1 Normality	94
4.2.2 Heteroscedasticity	95
4.2.3 Unit root test	96
4.2.4 Autocorrelation	98
4.2.5 Multicollinearity	100
4.3 Correlation Analysis	102

4.4 Effect of the Control Variables on Firm Value.....	103
4.4.1 Direct Effect- Random Effect Model.....	105
4.4.2 Direct Effect- Fixed Effect Model.....	106
4.4.3 Model Selection Using the Hausman Test.....	107
4.5 Test of Hypotheses.....	109
4.5.1 Effect of Board Size on Firm Value of Listed Firms.....	109
4.5.2 Effect of Board Diversity on Firm Value.....	110
4.5.3 Effect of Board Independence on Firm Value.....	111
4.5.4 Effect of Board Expertise on Firm Value.....	112
4.6 Moderating effect of Financial Reporting Quality on the Relationship between Board Structure and Firm Value.....	113
4.6.1 Moderating effect of Financial Reporting Quality on the Relationship between Board Size and Firm Value.....	114
4.6.2 Moderating effect of Financial Reporting Quality on the Relationship between Board Diversity and Firm Value.....	115
4.6.3 Moderating effect of FRQ on the Relationship between Board Independence and Firm Value.....	115
4.6.4 Moderating effect of Financial Reporting Quality on the Relationship between Board Expertise and Firm Value.....	116
4.6.5 Modgraph For Moderating Effect Of Financial Reporting Quality on the Relationship Between Board Structure And Firm Value.....	118
4.7 Mediating effect of Intellectual Capital on the relationship Between Board Structure and Firm Value.....	121
4.7.1 Mediating effect of Intellectual Capital on the Relationship between Board Size and Firm Value.....	122
4.7.2 Mediating effect of Intellectual Capital on the Relationship between Board Diversity and Firm Value.....	123
4.7.3 Mediated effect of intellectual capital on the relationship between board structure and firm value.....	124
4.7.4 Mediated Effect of Intellectual Capital on the Relationship between Board Expertise and Value Listed Firms.....	125
4.8 Moderating effect of Financial Reporting Quality on the Indirect Effect of Intellectual Capital on the Relationship between Board Structure and Firm Value among Listed Firms in East Africa.....	126

CHAPTER FIVE	135
SUMMARY, CONCLUSION, AND RECOMMENDATIONS	135
5.1 Overview.....	135
5.2 Summary of Findings.....	135
5.2.1 Effect of Board Size on Firm Value	136
5.2.2 Effect of Board Diversity on Firm Value	137
5.2.3 Effect of Board Independence on Firm Value	138
5.2.4 Effect of Board Expertise on Firm Value	138
5.2.5 Moderating Effect of Financial Reporting Quality on the Relationship between Board Structure and Firm Value	139
5.2.6 Mediating Effect of Intellectual Capital on the Relationship between Board Structure and Firm Value	140
5.2.7 Moderating Effect of Financial Reporting Quality on the Mediating Effect of Intellectual Capital on the Relationship between Board Structure and Firm Value.....	142
5.3 Conclusion	142
5.4 Implications.....	145
5.4.1 Practical Implications.....	145
5.4.2 Policy Implications	146
5.4.3 Theoretical Implications	147
5.5 Limitation and Suggestions for Further Research	147
REFERENCES	148
APPENDICES	172
Appendix I: Effect of the Controls on Firm Value	172
Appendix II: Moderating Effect of Financial Reporting Quality on Board Structure and Firm Value- Output	173
Appendix III: Effect of Board Structure on Intellectual Capital.....	186
Appendix IV: Mediating Effect of Intellectual Capital	188
Appendix V: Moderating Effect of Financial Reporting Quality on the Indirect Effect of Intellectual Capital.....	191
Appendix VI: Test For Normality Output	194
Appendix VII: Autocorrelation Output.....	195
Appendix VIII: Data Collection Schedule.....	196

LIST OF TABLES

Table 3.1: Number of Companies Listed on the Stock Exchange Markets in East Africa per market	64
Table 3.2: Elements of Board structure Measurement –Structure of the Board of Directors.....	67
Table 4.1: Descriptive Statistics of Board Size along Countries	87
Table 4.2: Descriptive Statistics of Board Diversity along Countries	87
Table 4.3: Descriptive Statistics of Board Independence along Countries.....	88
Table 4.4: Descriptive Statistics of Board expertise along Countries	89
Table 4.5: Descriptive Statistics of intellectual capital along Countries	89
Table 4.6: Descriptive Statistics of Financial Reporting quality along Countries.....	90
Table 4.7: Descriptive Statistics of Firm Value along Countries	91
Table 4.8: Descriptive Statistics of Variables along the Years.....	92
Table 4.9: Summary Statistics	93
Table 4.10: Jarque-Bera test for Normality	95
Table 4.11: White's test for homoscedasticity	96
Table 4.12: Unit Root Test.....	98
Table 4.13: Wooldridge test for autocorrelation.....	99
Table 4.14: VIF Test for Multicollinearity	101
Table 4.15: Correlation Analysis	103
Table 4.16: Effect of the control variables on firm value- Fixed Effect.....	104
Table 4.17: Random-Effects GLS regression	106
Table 4.18: Fixed-Effects (within) Regression.....	107
Table 4.19: Model Selection Using Hausman Test	108
Table 4.20: Moderating effect of Financial Reporting Quality on the relationship between Board structure and Firm Value	117
Table 4.21: Mediating effect of Intellectual Capital on the Relationship between Board Structure and Firm Value	126
Table 4.22: Moderated Mediated effect of Intellectual Capital on the Relationship between Board Structure and Firm Value.....	132

LIST OF FIGURES

Figure 1: Conceptual Framework	59
Figure 2: Conceptual diagram for moderation analysis	80
Figure 3: Statistical diagram for moderation analysis	81
Figure 4: Hayes model 4	84
Figure 5: Modgraph for Moderating Effect of FRQ on the Relationship between Board Size and Firm Value.....	118
Figure 6: Modgraph for Moderating Effect of FRQ on the Relationship between Board Diversity and Firm Value.....	119
Figure 7: Modgraph for Moderating Effect of FRQ on the Relationship between Board Independence and Firm Value.....	120
Figure 8: Modgraph for Moderating Effect of FRQ on the Relationship between Board Expertise and Firm Value.....	121
Figure 9: Modgraph for Moderating Effect of FRQ on the Relationship between Intellectual Capital and Firm Value.....	128

ABBREVIATIONS

ATO	Assets Turnover Ratio
BODs	Board of Directors
CEOs	Chief Executive Officers
CIMA	Chartered Institute of Management Accountants
CMA	Capital Markets Authority
DSE	Dar es Salaam Securities Exchange
EA	East Africa
EAC	East Africa Community
EADB	East African Development Bank
ES	Enterprise Surveys
EV	Enterprise Value
FRQ	Financial Reporting Quality
FV	Firm value
GMI	Governance Metrics International
IC	Intellectual Capital
IPO	Initial public offering
MAR	Missing at Random
MCAR	Missing Completely at Random
MNAR	Missing not at Random,
MVA	Missing Value Analysis
NSE	Nairobi Securities Exchange
OECD	Organisation for Economic Co-operation and Development
Q-Q	Quantile–quantile
RBT	Resource-Based Theory

ROA	Return on Assets
ROE	Return on Equity
ROIC	Return on invested capital
RPED	Regional Program on Enterprise Development
RSE	Rwanda Securities Exchange
SMEs	Small and Medium Enterprises
SMMEs	Small to micro and medium enterprises
TEV	Total Enterprise Value
UK	United Kingdom
UMFSA	Uganda Merchant Finance and Stockbrokers Association Limited
US	United States
USE	Uganda Securities Exchange
VAIC	Value Added Intellectual Capital
WACC	Weighted Average Cost of Capital

OPERATIONAL DEFINITION OF TERMS

Board Diversity	The proportion of female board members in comparison to the total number of members of the board (Ilaboya & Lodikero, 2017).
Board Expertise	Proportion of the board members with financial professional knowledge to the sum of members of the board.
Board Independence	Proportion of directors who are non-executive to the total sum of directors (Ilaboya & Lodikero, 2017)
Board Size	is the total number of inside and outside directors on the board (Ilaboya & Lodikero, 2017)
Board Structure	is a governing body that represents shareholders (Cahan, Chua, & Nyamori, 2005)
Corporate Governance	denotes the protocols and blueprints that are employed in guiding and managing a firm's business operations towards improving success and corporate accounting with the end goal of attaining shareholder abiding value while considering the welfare of the other stakeholders
Financial Reporting Quality:	It is the accuracy with which financial reporting transmits data on the activities of the company or compliance with the accounting standards of a given nation, (Lambert, Leuz & Verrecchia, 2017).

- Firm Value:** Refers to the book value of the company from its equity (Hirdinis, 2019).
- Intellectual capital:** is a repertoire of fundamental company resources that make it possible for a firm to generate sustainable value (Chahal & Bakshi, 2016)
- Listed company:** it is a firm that has any of its securities charted on any renowned exchange market (Maina and Ishmail, 2014).
- Securities exchange market:** It is a market where securities are traded (Watundu *et al.*, 2015)

CHAPTER ONE

INTRODUCTION

1.0 Overview

The chapter introduces the study. The chapter provides an overview of the study's background, problem statement, study objectives, hypotheses to be tested, significance, and scope.

1.1 Background of the Study

The concept of firm value has for long attracted the interest of scholars and stakeholders like investors since the focus of investment is to achieve firm value (Dang, Vu, Ngo & Hoang, 2019). Simply put, firm value refers to a company's potential to maximize shareholder wealth (Bistrova & Lace, 2012). The goal of increasing company value is to increase profits. For its owners, the more profitable a firm is, the more valuable the company is (Dang, Vu, Ngo & Hoang, 2019). Firm value is important because it helps in providing better knowledge of company assets such that the picture of what to reinvest into the company and how much to sell is known (Damodaran, 2007; Mitchell, *et al.*, 2009). This in turn facilitates the expansion of a firm (Hessayri & Sahi, 2017). The liquidity of the preferred stock, market capitalization, debt, and total assets are all factors that influence the overall worth of a corporation. Consequently, the stock's purchasing power or the company's book value are generated from the equity of the corporation (Hirdinis, 2019).

Despite the role of firm value in promoting the growth of the company, trends on the global scene reveal that attaining stability in firm value has for long been a challenge. For instance, in the United States of America (USA), from the 1860s to the 1930s, firm value was high although most corporations remained small (as is still true), a

growing number of them became very large and operated nationwide and even multi-nationally (Dunlavy & Welskopp, 2007; Gomory & Sylla, 2013). While there was a decline during the Second World War period, the value of firms remained very high with corporations leading the world in production with higher per-capita production which continued through the 1950s and 70s. However, the 1970s saw a major slowdown and despite the rise in firm value from 1982 to early 2000, by the end of 2011 performance of firms in terms of share price, the number of shares, and the book value of the total assets barely changed from the levels reached in 2000 (Gomory & Sylla, 2013).

In Britain, there was high firm value of companies from the 1870s to 1960s, especially in the manufacturing firms which significantly contributed to the advancement of the economy augmenting effectiveness in other industries of the economy as well as coming by elevating standards of living. Nonetheless, the five decades that followed after 1960 experienced a fair degree of recession in the company value of the United Kingdom (UK) manufacturing industry in proportion to other industries that are part of the economy. Since 2007, the policy has been to strengthen Britain's manufacturing sector besides regions of cutthroat manufacturing in fields like pharmaceuticals and aerospace for instance (Kitson & Michie, 2014). Therefore, in the manufacturing sector of Britain, firm value has been low for a long time.

A study by the World Bank's Regional Program on Enterprise Development (RPED) shows that the value of almost a third of Africa's publicly traded firms is low which showed that African firms had very low value (Tvedten, Hansen & Jeppesen, 2014).

For instance, Nigeria, firm value as in the 1960s to 2010 and firm value (Ku, Mustapha & Goh, 2010).

In East Africa, several listed companies show a decline in firm value (Wanjau, Muturi & Ngumi, 2018). For instance, in Kenya, Kenya Airways formerly owned a public company that was privatised through the NSE is on the verge of demise (Orayo & Ombaba, 2017). In Kenya, the Stock market has continued to elicit inconsistency in volume traded. It is reported that there has been an upward and downward trend in NSE 20 share index (Nairobi Securities Exchange, 2014). For example, the NSE reported an annual NSE 20 share index of Ksh 173.6 billion in 2012, which was an 11% step up from the yearly approximate index witnessed in 2011. The NSE share index reduced by 8% in 2013 to Kshs 159.7 billion.

It is an assertion by the Nairobi Securities Exchange (2014) that as of 2014 there emerged a development from the year before given that the volume traded was boosted by 17% to Kshs 186.7 billion. In 2015, the NSE 20 share index recorded a decline of 21.15% from 4,040.75 to close at 3,186.21 points at the closing trading day in December 2016 and 2017, it rose by 16.5% (NSE, 2016; 2017). This inconsistency in volume traded and 20 share indices is a manifestation that attaining stability in firm value is a challenge in Kenya.

In Uganda, the Stock market is still nascent and small with the USE established in 1997 and becoming operational in 1998. By the end of 2018, there were only 18 listings of domestic and East African Companies in the stock market (Akileng *et al.*, 2018; Mwijuka, 2016) which is still the position even to date (USE, 2021). In a study by Kayiza (2014) on the financial performance of companies listed on the Uganda Stock Exchange, Uganda Clays limited one of the companies listed on the Uganda

Stock Exchange exhibited very low firm value. The cash flows from operating activities were far below those of the earlier years and were decreasing over time. In 2007 and 2008, cash flow investment recorded negative values in both consecutive years in that order - 3,640,499 lei in 2007 and - 12,824,529 lei in 2008. The negative numbers prove that the investment activities made were not completely self-financing, hence resulting in other sources. Turyahikayo (2015) indicates that in Uganda the rate at which firms die out stands at 50% annually because of low firm value.

DSE was established in 1996 as a limited liability company with no share capital, according to its profile. In April of 1998, it was put into use. The DSE is a non-profit organization established to assist the government in implementing reforms and, in the future, to enable more people to own shares in Tanzania's privatized and public corporations. The exchange had seven equity listings in February 2005, up from six the previous month. Cross-listing constraints were eased by the DSE in May 2003, allowing companies headquartered in EAC partners Kenya and Uganda to list on the exchange. The first company to cross-list on the DSE was Kenya Airways in December 2004. Government-issued bonds already dominate Tanzania's tiny bond market.

According to World Bank Indicators (2012), the market capitalization of listed firms on Tanzania's stock exchange is USD 1,180,030,000. With 17 listed companies in 2012, the market capitalization of listed companies (as a percentage of GDP) was 6.4 percent. However, as one of Africa's leading financial markets, the DSE has faced difficulties in driving economic development in Tanzania. In Tanzania, although the Dar es Salaam Securities Exchange commenced operation about seventeen years ago,

few companies were listed that by August 2015, there were only twenty-one companies that were listed (Munisi, 2017).

As a result of corporate scandals in the Western world, the value of many Western corporations has declined (Cheffins, 2015). He claims that corporate governance emerged in the 1970s as a response to and assessment of corporate scandals that resulted in a loss of firm value. According to Shleifer and Vishny (1997), corporate governance is a collection of approaches to achieving economic efficiency attributed to the influence it has on the option of benefactors to fund the firms. According to Lakshan and Wijekoon (2012), the government's board of directors is legally mandated to represent the interests of the establishment rather than those of the company's management.

All of these functions are essential to corporate governance, so it's clear that the board of directors' composition is critical to its ability to monitor and supervise the company's executives as well as provide advice to the company's top management. Managing a company is a complex task, and it is widely accepted that corporate boards play a critical role in corporate governance, strategic planning, and prioritization (Agyemang *et al.*, 2014). According to the agency theory (Jensen and Meckling), the information asymmetry that exists between stakeholders and the administration can be minimized by board structures (board expertise, board diversity, board size, and board independence). However, there is no consensus as to what the optimal board structure should be (Agyemang & Castellini, 2013).

Based on the resource-based view of the firm, intellectual capital is pertinent to firm value since an organisation requires valuable, rare, inimitable, and in line with the organisational requirements resources. For instance, Dashti *et al.*, (2016), and Tui *et*

al., (2017) indicated that intellectual capital positively affects value. A board that has the relevant expertise and can appropriately use the financial reports is capable of making informed firm decisions since they have the required knowledge and this ultimately influences firm value. If a company's board structure is based on good management of intellectual resources, it can increase its value (Robiyanto *et al.*, 2021).

Making sure that self-employed people's three intellectual resources are utilized effectively creates a superior intellectual asset in the company. As a result of the firm's intellectual capital, all stakeholders, including investors, will be satisfied (Robiyanto *et al.*, 2021). It is expected that investors in the capital market will begin to recognize the superiority of the firm's intellectual capital, which will lead to a rise in the firm's value. Because of this, it is assumed that the relationship between board structure and firm value will be mediated by intellectual capital. But there is no proof that intellectual capital acts as a buffer between board structure and firm value.

These findings are consistent with those of scholars who have examined whether the board's composition has an impact on company management (Borlea *et al.*, 2017; Cavaco *et al.* 2017; Cavaco, Crifo & Roudaut 2017; Farag & Mallin 2017; Korent and Dundek 2014; Marinova & Plantenga 2016; Terjesen, Barbosa & Morais 2016). When examining the board of directors' structure, it is important to note that the findings in the literature aren't conclusive, so new evidence is needed to strengthen our understanding of the questions raised in this work, such as whether or not the board of directors prioritizes the duties of oversight and/or governance advice and how it affects the value of a company.

The transaction between reliability and relevance of financial information is pertinent and there is a possibility for it to be viewed as a value predictor. Financial information is relevant if it is reliable, free from errors and biases. According to Jonas and Blanchet (2000), financial reporting quality determines the functionality of financial information in the reviews provided to subscribers. Gassen and Schwedler (2010) suggest that the least relevant values happen to be the least reliable and the reverse is also true. The Board of directors base on the reports reported to make informed decisions that are geared towards the achievement of firm value. When the financial reports are of quality and reported in a reliable and timely manner, the board directors are able to make financial decisions and therefore it can be postulated that financial reporting quality buffers the would be influence of board structure on firm value since the financial reports are used by the board for making financial decisions. This argument is consistent with the argument of prior scholars who have revealed that the quality of financial reports helps to provide managers with information that is complete and fair to make the right investment decisions to achieve firm value (Anis, 2016; Hesayyiri & Saihi, 2017). However, there is a dearth of knowledge regarding the moderating effect of financial reporting quality on the relationship between board structure and firm value.

The research was conducted on listed companies on four East African Securities Exchanges. East African securities exchanges have founded rules and guidelines that listed companies must adhere to. A listed company must publish its annual financial reports, have a board of directors that includes both non-executive and executive directors, have an audit committee, implement well-thought-out strategies and protocols for timely and clear disclosure of all primary information as stipulated by all rules, standards, and guidelines, and comply with the Securities Exchange Markets in

East Africa codes of board structure (NSE, DSE, RSE & USE Annual Reports, 2017). However, several other listed companies have found negative share prices and low market capitalization, calling the impact of board structure on firm value into question (Listed Companies Annual Reports, NSE, 2017).

1.2 Statement of the Problem

The primary goal of a firm is to increase the wealth of its shareholders by increasing its value and attracting other parties' interests to join the company (Shuaibu, Ali, & Moh'd Amin, 2019). Recognizing the significance of the value of the firm, companies listed on securities exchanges are forced to integrate mechanisms to promote firm value (CMA, 2002). As a result, firms must have a board structure that increases firm value (NSE Listing Profile, 2016).

The concepts of firm value and board structure have been of interest to both scholars and practitioners. Despite the effort made in structuring boards of directors, firms continue to exhibit low firm value as determined by negative share prices and low market capitalization among most of the companies listed in East African securities exchanges (Kizito, 2017). Most of the firms listed in East Africa securities exchanges have faced severe fluctuations in the market price of shares explained by fluctuations in the share indices, low share volumes traded (CMA, 2012; 2013; 2014; 2015; 2016; 2017; 2018; 2019). Such movements are witnessed in other periods under review. A lower share price means low capitalization, lower or negative return on invested capital and hence the low value of the firms, and a drop in the share index is explained by a drop in the share price and is used as a measure of how well a company listed is performing (CMA, 2019; Kayizi, 2014). Corporate scandals especially in board

structuring are some of the factors that might affect firm value (Turyahebwa *et al.*, 2013; Anyanzwa, 2019).

Scholars have emphasized the role of board structure in increasing firm value (Kobumanzi, 2018; Mardnly, Mouselli & Abdulraouf, 2018). Boards can be set up in a random or perverse manner. Boards that are inefficient will not increase firm value but will allow managers to extract private benefits from shareholders at their own expense, which is not ideal. However, previous studies on board structure and firm values have yielded mixed findings with others findings revealing a significant relationship (Kabir *et al.*, 2019; Jackling *et al.*, 2009; Babatunde *et al.*, 2016) while others reveal insignificant relationship between board structure and firm value (Marinova *et al.* 2015) and are directed to a particular country. In addition, there is a dearth of knowledge regarding the mediating effect of intellectual capital and the moderating effect of financial reporting quality on the relationship between board structure and firm value. These empirical gaps make it imperative for this study in the context of firms listed on the Stock Exchange Markets in East Africa to further examine the factors affecting firm value looking at board structure and the moderating and mediating effects of financial reporting quality and intellectual capital.

1.3 Objectives of the Study

The objectives of the study were categorized into general and specific objectives

1.3.1 General Objectives

The main objective of the study was to examine the moderating effect of financial reporting quality and the mediating effect of intellectual capital on the relationship between board structure and firm value of companies listed on Securities Exchanges Markets in East Africa.

1.3.2 Specific Objectives

Specifically, the study sought to.

1. Determine the effect of board structure on firm value of firms listed on the securities exchanges in East Africa.
 - a) Determine the effect of board size on firm value of firms listed on the securities exchanges in East Africa
 - b) Determine the effect of board diversity on firm value of firms listed on the securities exchanges in East Africa
 - c) Determine the effect of board independence on firm value of firms listed on the securities exchanges in East Africa
 - d) Determine the effect of board expertise on firm value of firms listed on the securities exchanges in East Africa

2. Examine the moderating effect of financial reporting quality on the relationship between board structure and firm value for firms listed on the securities exchanges in East Africa
 - a) Determine the moderating effect of financial reporting quality on the relationship between board size and firm value for firms listed on the securities exchanges in East Africa
 - b) Determine the moderating effect of financial reporting quality on the relationship between board diversity and firm value for firms listed on the securities exchanges in East Africa
 - c) Determine the moderating effect of financial reporting quality on the relationship between board independence and firm value for firms listed on the securities exchanges in East Africa

- d) Determine the moderating effect of financial reporting quality on the relationship between board expertise and firm value for firms listed on the securities exchanges in East Africa.
3. Determine the mediating effect of intellectual capital on the relationship between board structure and firm value for firms listed on the securities exchanges in East Africa.
 - a) Determine the mediating effect of intellectual capital on the relationship between board size and firm value for firms listed on the securities exchanges in East Africa
 - b) Determine the mediating effect of intellectual capital on the relationship between board diversity and firm value for firms listed on the securities exchanges in East Africa
 - c) Determine the mediating effect of intellectual capital on the relationship between board independence and firm value for firms listed on the securities exchanges in East Africa
 - d) Determine the mediating effect of intellectual capital on the relationship between board expertise and firm value for firms listed on the securities exchanges in East Africa
4. Determine the moderating effect of financial reporting quality on the indirect effect of intellectual capital on the relationship between board structure and firm value for firms listed on the securities exchanges in East Africa.
 - a) Determine the moderating effect of financial reporting quality on the indirect effect of intellectual capital on the relationship

between board size and firm value for firms listed on the securities exchanges in East Africa

- b) Determine the moderating effect of financial reporting quality on the indirect effect of intellectual capital on the relationship between board diversity and firm value for firms listed on the securities exchanges in East Africa
- c) Determine the moderating effect of financial reporting quality on the indirect effect of intellectual capital on the relationship between board independence and firm value for firms listed on the securities exchanges in East Africa
- d) Determine the moderating effect of financial reporting quality on the indirect effect of intellectual capital on the relationship between board expertise and firm value for firms listed on the securities exchanges in East Africa

1.4 Research Hypotheses

H₀₁: There is no significant effect of board structure on the firm value

H_{01a}: There is no significant effect of board sizes on firm value

H_{01b}: There is no significant effect of board diversity on firm value

H_{01c}: There is no significant effect of board independence on firm value

H_{01d}: There is no significant effect of board expertise on firm value

- H₀₂: There is no moderating effect of financial reporting quality on the relationship between board structure and firm value
- H_{02a}: There is no significant moderating effect of financial reporting quality on the relationship between board size and firm value
- H_{02b}: There is no significant moderating effect of financial reporting quality on the relationship between board diversity and value
- H_{02c}: There is no significant moderating effect of financial reporting quality on the relationship between board independence and firm value
- H_{02d}: There is no significant moderating effect of financial reporting quality on the relationship between board expertise and firm value
- H₀₃: There is no mediating effect of intellectual capital on the relationship between board structure and firm value
- H_{03a}: There is no mediating effect of intellectual capital on the relationship between board size and firm value
- H_{03b}: There is no mediating effect of intellectual capital on the relationship between board diversity and firm value
- H_{03c}: There is no mediating effect of intellectual capital on the relationship between board independence and firm value

H_{03d}: There is no mediating effect of intellectual capital on the relationship between board expertise and firm value

H₀₄: There is no moderating effect of financial reporting quality on the indirect effect of intellectual capital on the relationship between board structure and firm value

H_{04a}: There is no moderating effect of financial reporting quality on the indirect effect of intellectual capital on the relationship between board size and firm value

H_{04b}: There is no moderating effect of financial reporting quality on the indirect effect of intellectual capital on the relationship between board diversity and firm value

H_{04c}: There is no moderating effect of financial reporting quality on the indirect effect of intellectual capital on the relationship between board independence and firm value

H_{04d}: There is no moderating effect of financial reporting quality on the indirect effect of intellectual capital on the relationship between board expertise and firm value

1.5 Significance of the Study

Firm value is important as far as companies in an economy are concerned. Therefore, the findings of the study are important to policy makers, boards of directors of companies, managers of organisations, improvement of finances of companies, growth of the economy, and body of knowledge as follows:

To policy regulators, the findings of the study could provide a platform for the design of standard operating procedures and guidelines for the inclusion of firms on the securities exchanges.

To the shareholders, the study findings could guide in the design of the appropriate mix of Board of Directors that creates value addition to the company.

To listed companies, the study findings could provide information that helps firms to implement a board structure that improves the firm value of the companies.

To research and theory, the study contributes to the body of knowledge by providing researchers and academicians with more information on board structure, financial reporting quality, intellectual capital, and firm value.

1.6 Scope of the Study

The scope of the study is examined from three perspectives namely academic, geographical, and time scope. Academically, the study is in the field of finance, narrowed down to the valuation of firms. Consequently, the study concentrated on firm value, board structure, Intellectual capital, and financial reporting quality. For board structure, the study focused on board diversity, board size, and board independence as supported by (Ilaboya & Lodikero, 2017; Kankanamage, 2015). Intellectual capital was employed in this study as mediating variable while financial reporting was moderating variable. A focus on these variables is expected to generate new knowledge in terms of mediation moderation between them.

The geographical scope of the study was the stock exchange markets delimited to companies listed on the Stock Exchange Markets in East Africa. The use of the Securities Exchange Markets in East Africa is expected to generate knowledge that

gives a general view of firm value in all four stock markets. Time-wise, the study was limited to companies traded consistently from 2012 to 2019. Choice of this period is based on the Stock Exchange Markets in East Africa bulletins of 2012, 2014, 2016, 2017, 2018, and 2019 which document an upward and downward movement in the share indices, market capitalisation for companies listed on the Securities Exchange Markets in East Africa.

CHAPTER TWO

LITERATURE REVIEW

2.0 Overview

The chapter first introduces the concepts of Firm value, Board structure, Intellectual capital, and financial reporting quality. It presents a theoretical review, empirical review of literature, and develops the conceptual framework.

2.1 Concept of Firm Value

A company's primary objective is to maximize shareholder wealth by building a high firm value. Firm value maximization means increasing shareholder prosperity, as well as attracting other parties' interests to join the company (Shuaibu, Ali & Moh'd Amin, 2019). Firm value is the sum of the actual market value of the company's common stock and the approximations of the markets for preferred stock and debt (Abdullah, Ali, & Haron, 2017). When a company's common stock is traded on the open market, investors can get an idea of the company's investment, dividend, and financial decisions. If a company's value is high, it indicates that the company is financially strong and that it has good prospects for new investors (Rajhans, 2013). According to Bhullar (2017), a firm's value is comprised of the company's past, present, and future performance, as well as the wide range of benefactors' interests (shareholders and stakeholders).

As a sign of public confidence in a company, firm value is an indicator of how long the company has been active, from the time it was founded to the present. Increased value for the company is a goal that the owners have set for their agent, the manager, who has been entrusted with this responsibility by the owners, and this is a success in the eyes of the owners (Purwani, 2019). The manager's policy will be crucial in

achieving optimal results to increase the firm value. Therefore, managers must be able to determine policies that can effectively increase the firm value. Tobin's Q as a measurement of firm value illustrates that the higher the Tobin's Q the higher the firm value, so that investors are getting more is interesting (Purwani, 2019).

According to Sartono (2010) companies who have a long-term goal of increasing sales and expanding shareholder capital are more likely to maximize their value (firm value). According to Winarto (2015), a business will benefit from the rise in firm value in a number of ways, including being able to access capital markets financing or selling at a competitive/high price in the event of emergence. According to Hermuningsih (2013), firm value is vital because it can be a symbol of an organization's growth and one of the key factors influencing the investor option of the company. Corporate worth is an economic metric that represents a company's corporate value. It can be calculated by tracking the secondary market share price fluctuations; in other words, as the share price rises, so do the corporate worth. Because of the improved market prices, the market has a higher level of confidence and conviction in a business, resulting in consumers being able to spend more in the hope of a high return.

Accordingly, stakeholders pour in money that has reaped with speculations of earning optimum returns upon the completion of the holding period of the asset (fixed deposits, stocks, bonds, savings account as well as certain investment assets). The intention of stakeholders is an attempt at reducing their opportunity cost by accruing the optimum rate of return. Indeed, there is not one benefactor that seeks to make a larger payment for the stock than its actual value.

Firm value has been measured in various ways by different scholars. Nonetheless, the concept of value is at times intrinsic and often relates to perceptions of security based on a company attribute not related to market price (Hitchner, 2017). Consequently, firm value has mainly been measured through proxies. Most scholars have previously used stock price as the proxy for measuring firm value (Ebenezer *et al.*, 2019; Ficici & Aybar, 2012).

However, the entire market value needs to be determined rather than relying only on equity value, which has seen enterprise value grow in stature as a proxy for firm value (Bhullar & Bhatnager, 2013). According to Bhullar and Bhatnager (2013) besides showing how a firm performs in terms of taking care of the long-term interests of investors, firm value also represents the performance of a firm over time. Firm value is manifested in the ability of the firm to generate profits which is the essence of investment. In deciding to invest, investors take risks and therefore expect high returns which can compensate for the risks taken.

According to Endri and Daeli (2018), a company's value is the present value of a future cash flow cycle that the company will generate. One way to determine how valuable an organization is is by comparing its stock price to the value of its assets, and Tobin's Q ratio is used as a market ratio in this comparison.

2.2 Concept of Board Structure

The concept of board structure is measured in terms of the composition of the board based on gender, age, tenure, functional background, and educational background (Campbell & Minguéz-Vera, 2007; Tarus & Aime, 2014, Berger *et al.*, 2012; Srivastay, 2015). Petersen (2000) and Timmerman (2000) state that board structure is commonly described in two general directions. It is subdivided into two, diversity

structure observable, such as gender and age; second, cognitive diversity which is unnoticeable and is represented by education and values.

Javid (2009) asserts that board structure covers a broad spectrum of demographic attributes and characteristics in the boardroom. Ostegaard *et al.* (2015) further posit that the diverse characteristics of the top managers appear to influence growth, risk-taking productivity, and revenues since it influences their decisions, strategy, and responsiveness to change. By reducing the risk of 'groupthink', managing and controlling risks, and better understanding the needs of the company's customers, a diverse board is thought to be able to make better decisions.

Directors are in charge of formulating long-term plans by conducting thorough research and utilizing sound problem-solving techniques. As a result of groupthink, boardroom decision-making is plagued by an inability to critically evaluate alternative ideas because of the group's cohesiveness and lack of conflict resolution. It is expected that combining the contributions of a group of people with a variety of talents, viewpoints, and experiences would enable top management committees to address challenges from a wider spectrum of viewpoints, ask more provocative questions, and argue more vigorously. This type of multi-perspective problem analysis can alter boardroom dynamics and result in higher-quality decisions than decisions made in a groupthink environment (Hussain, 2011).

A representative board can help a company's image by demonstrating to internal and external customers that the company values diversity and does not discriminate against minorities when it comes to scaling the corporate ladder. This may imply a level playing field in terms of work and the management's eagerness in positioning the organization as socially responsible (Powell, 2000).

Bernile *et al.* (2016) further identify six distinct dimensions of board diversity structure, including observable and readily accessible demographic and cognitive tests. Sex, age, race, educational background, financial experience, and board competence are only a few of the factors to consider. Most scholars agree that boards of directors are responsible for hiring and supervising CEOs on behalf of shareholders (Carter & Lorsch, 2004; Thomsen, 2008). This means that when it comes to the formation of a board, there are a few things to keep in mind in order to make sure that the members are on the same page, well-versed in the subject, and committed to the project at hand. According to Bhren and Strm (2008), Carter and Lorsch (2004), Becht *et al.* (2003), Hermalin and Weisbach (2003), and Hermalin and Weisbach (2004), a board should be chosen that aligns the interests of the board members (principals and agents), provides information for monitoring and guidance, and facilitates decision-making efficiency.

Corporate governance is a collection of techniques from which external investors safeguard themselves against requisition by internal members. Corporate governance gives a clear picture of the complete group of affiliations that exist in the administration of a company, its investors as well as particularly involved parties. It issues the system that informs the formulation of company goals in addition to the strategies to be adopted in the achievement of the said goals and auditing expected performance (Canh, Kim & Yi, 2014).

According to Canh *et al.* (2014), corporate governance assumes the structure of the external and internal board as well. Internal corporate governance is focalised on the board of directors as well as the shareholders' welfare. It is an assertion by Emeagwali (2017) that top standard disclosure on a firm's board structure in addition to enhanced

openness to the market avails knowledge to benefactors their investment adjudications as well as providing positional merits for firms and more permissibility in the view of stakeholders and society at large. Board structure in corporate governance codes makes companies have a stronger board structure and quickly offer more information to market participants.

It is up to the market to force or attract companies to improve their corporate governance and disclosure practices (Duh, 2017). Board structure codes can be developed at the national, company, and international levels (Zattoni & Cuomo, 2008). To address board structure specifics in a country and to improve the national corporate governance system, Biswas (2015) explains that governments on their own or with stock exchanges together with employer associations can develop governance codes.

Managers are more likely to follow the letter and spirit of the law and act ethically when they are part of a board structure. The Board structure's framework encourages resource efficiency while also requiring managers to be accountable for how those resources are being used. Shareholders, boards of directors, and management comprise three of the most important elements of corporate governance (Aggarwal, 2013). Having a well-structured board of directors allows for effective monitoring and control of the company.

Board structure helps the firm perform better through quality decision-making (Goel, 2018). Blowfield and Murray (2014) contend that an efficient board structure ensures that companies consider the needs of a diverse variety of stakeholders, as well as the societies in which they exist and that their boards of directors are accountable to the company and its shareholders

The laws guiding board structure have been found to have effects on the value of firms. Previous studies have associated board structure with includes high performance (Sanda *et al.*, 2005). Ruparelia and Njuguna (2016) point out that the need for board structure in developing economies informed the development of these guidelines. The guidelines took cognisance of the critical role played by good board structure in capital formation, shareholder value maximization, corporate performance, and investors' rights protection. The basic tenet behind the guidelines was to give strength to practices adopted in board structure and to promote standards of self-regulation to be consistent with international trends (Ruparelia & Njuguna, 2019). Consequently, through these guidelines, companies are expected to adopt, nurture and embolden best practices. Moreover, directors of listed companies are expected to comply with minimum requirements. The importance attached to compliance is reflected in the disclosure obligations which require that listed companies should disclose a statement of compliance with guidelines in annual reports (Ruparelia & Njuguna, 2016). Based on the discussion above, the study used four components of board structure which include; board size, board diversity, board independence, and board expertise.

2.2.1 Board size

The size of the board refers to the total number of directors on the company's board of directors. There are both executive and non-executive directors on the board. For each company, the ideal board size is different. While it is widely held that board size affects the quality of decisions, more information sharing builds vast links with the external environment and procures more scarce assets, it also leads to communications and coordination issues, higher free-loader obstacles and knowledge sharing costs, and less expression of notions and thoughts (Goel & Sharma, 2020).

The appropriate board size varies depending on the board. There is no such thing as a one-size-fits-all solution. Based on its objective and vision, each board must determine its optimal capacity (Kalsie & Shikha, 2016). A larger board will result in higher agency expenditures, and issues such as communication and coordination will become much more costly as the board grows in size (Ahmad *et al.*, 2017). More non-executive directors can better monitor managers with a larger board of directors, and a larger board of directors will include more specialists from other professions. High-quality boards from various backgrounds might help the board make better decisions.

2.2.2 Board diversity

Diversity of boards refers to gender, age, race, ethnicity, religion, and level of education and background knowledge of board members in a business (Cimerovaa, Dodd & Frijnsa, 2014). Gender diversity on the board has recently been one of the main business governance issues and its role in firm performance (Ararat, Aksu & Tansel, 2015). Diversity in boards is a key to improving corporate governance practices in an enterprise (Wang *et al.*, 2015) because gender diversity in the board room promotes better decision-making and contributes to creativity in organizations.

When boards are more diverse in gender, they have more power to control and strategize (Kang *et al.*, 2010). For example, the presence of female board members could improve corporate governance mechanisms, such as transparency and accountability, because of their contribution to reducing fraud. (Capezio & Mavisakalyan, 2016). As Loukil *et al.* (2020) demonstrated that women executives have a positive impact on corporate transparency and disclosure, especially in family-owned businesses. Additional research has shown that informed women executives can reduce CEO compensation anomalies and the likelihood of a financial restatement

(Mobbs *et al.*, 2021). The support of female directors alleviates agency issues and could encourage firm innovation by providing effective supervision (Chen *et al.*, 2018).

2.2.3 Board Independence

"Independent directors," "non-executive directors," and "outside directors" are all terms that are used interchangeably. Non-executive directors, on the other hand, cannot all claim to be objective (Rashid, 2018). Shareholders are entitled to expect the board of directors to act in their best interests. To protect the company's shareholders' interests, the board must have a mix of executive and non-executive directors. Non-executive directors on the board must be independent of management and capable of making unbiased business decisions to be effective (Wang *et al.*, 2021). Shareholders have confidence in independent directors to represent their interests, and having more of them on the board will help to reduce conflicts of interest. Furthermore, the Code of Corporate Governance and regulators recommend that the board's composition be balanced and comprised of independent members. Simply following the recommendations will not suffice if the independent directors fail to carry out their duties in an efficient manner. The presence of independent directors on the board enhances the board's ability to monitor management and exercise control in the best interests of shareholders (Rajpal, 2012).

2.2.4 Board Expertise

Financial experts on the board help oversee management's capacity and aptitude to make financial decisions, as well as provide policy reviews based on experience (Wu MengYun *et al.*, 2021). They can also serve as mediators between external and internal auditors to reduce agency conflict within the company. Because they have the

knowledge to grasp financial processes and reports, directors are more effective fraud monitors (Whitler, Krause & Lehmann, 2018). Additionally, recent research has demonstrated that directors with management, marketing, or operational skills can favorably influence firm performance by applying their domain-specific knowledge (Khanna *et al.*, 2014; Krause *et al.*, 2013).

2.3 Concept of Intellectual Capital

Intellectual capital refers to Intangible resources that generate value for an organization. Intellectual capital is a collection of fixed assets such as resources, expertise, and skills that not only improve an organization's efficiency but also add value to its creation (Chahal & Bakshi, 2016). Intellectual capital is a portfolio of strategic firm resources that allow a company to create long-term value. Human capital, relational capital, and structural capital are all examples of intellectual capital (Molodchik, Shakina & Bykova, 2012). Human capital, according to Ashiboe-Mensah, Adinyira, and Fugar (2013), is the attribute, skills, knowledge, and competence embodied in people that aid in the creation of economic, personal, and social well-being. According to Marimuthu, Arokiasamy, and Ismail (2009), human capital is a result of human capital in terms of Processes relating to the preparation, schooling, and other technical programs to improve an employee's experience, expertise, talents, beliefs, and social attributes, resulting in employee happiness and success, and ultimately company performance. According to Obeidat *et al.* (2017), intellectual capital in one organization differs from that of another, giving it the characteristics of being unique, rare, and irreplaceable. However, human Capital is distinct from the other tools present in the company because it is not entirely managed by the firm. As a result, organizations should invest in their human capital regularly to enhance their competitive edge.

Under the close contact of the spouses, relationship capital relates to the degree of reciprocal confidence, loyalty, respect, and friendship (Zhang & Wang, 2018). Relational capital concerns the relationship of an organisation with internal and external associates. Customers, employers, vendors, corporate partnership partners, stakeholders, and trade unions are also examples of external associates (Raza, 2012). Relational capital is a mutually beneficial partnership between independent businesses that is rooted in a social network in order to build trust, deliver knowledge, and solve challenges together. It is based on the promise and demand for reciprocity (Zhang & Wang, 2018). According to Obeidat *et al.* (2017), relational capital is based on the idea of connecting internal intellectual resources with external stakeholders in order to influence a company's ability to create value. Relational capital is critical for realizing human and structural capital's wealth-creation potential. Consequently, generating and upholding relational capital is crucial for having successful organisations.

When workers go home, structural capital applies to the non-thinking properties or all that remains. Databases, client reports, manuals, trademarks, organizational layout, organizational maps, operation manuals, strategies, schedules, and everything else whose importance to the enterprise is greater than its mammalian value are both examples of structural resources. Good institutional capital organizations will have a positive community that encourages workers to do new ideas, develop new skills, and practice them (Rahim, Kamal & Mat, 2011).

Organizational processes, information systems, organizational culture, internal organizational structure, and administrative systems all contribute to the effective construction of structural capital (Gogan, Duran & Draghici, 2015). According to Hejazi, Ghanbari, and Alipour (2016), it is only structural capital that belongs to the

organization and can be reproduced or shared. Accordingly, structural capital not only creates systems for knowledge acquisition but also provides a mechanism for collecting and integrating the acquired knowledge enhancing firm value.

This study seeks to answer the question of whether corporate governance affects intellectual capital, which in turn affects firm value. In other words, does corporate governance influence firm value via the influence of intellectual capital in the securities exchanges under consideration in the study?

2.4 Concept of Financial Reporting Quality

Financial reporting is the process of formally reporting the company's financial activities (Al-Dmour *et al.*, 2018). Following accounting rules and having an independent accountant attest to the financial report are two broad dimensions of financial reporting quality. According to the International Accounting Standards Board (IASB), a company's financial reporting quality is based on the accuracy and completeness of its financial statements. These qualitative characteristics enhance the ease with which financial reports can be assessed for their usefulness, leading to a high level of quality in the reporting process. Financial reporting must be accurate, comparable, verifiable, timely, and understandable in order to reach this level. Since transparency and user-friendliness are of the utmost importance, as well as the importance of accuracy and predictability, financial reporting quality is emphasized (Gajevszky, 2015). The first aspect of financial reporting quality is about fulfilling the set of accounting rules or standards of a firm. This is because accounting standards dictate when, how much, and where economic activity gets reported in financial statements (Gnanarajah, 2017). Independent accounting also includes gathering evidence to support management's financial statements, such as inventory counts,

property and equipment inspections, and checking bank records for customer cash receipts (Barrios, Lisowsky & Minnis, 2019).

Further, the management mechanisms used by businesses to monitor transactions and file financial records are also examined and tested by independent accountants. Product flow is usually the primary focus of auditors (i.e., are ordered, received, paid for, placed into production, and ultimately sold and delivered). All in all, the auditor certifies to the company's management that the financial statements accurately depict its financial situation and operating performance according to the set of accounting principles used by the company (Barrios, Lisowsky & Minnis, 2019). Relevance, faithful representation, understandability, comparability, verifiability, and timeliness are all qualitative characteristics of financial reporting quality (Herath & Albarqi, 2017).

Relevance is another aspect of FRQ. The term's usefulness and materiality are closely linked to its relevance. Relevance demonstrates the ability of users to make their own decisions. Unfortunately, financial reporting information has the quality of relevance when it influences users' economic decisions. This information is also useful when it aids users in assessing, correcting, and verifying current and past events.

One of the most important aspects of financial reporting quality is its ability to be trusted. Information in financial reporting must be trustworthy in order to be useful. When information that users rely on is free of bias and material errors, this quality is achieved. The qualities of faithful, verifiable, and neutral information are used to assess the reliability (Cheung, Evans & Wright, 2010).

A financial statement's comparability is the ability of users to compare the financial position, cash flow, and performance of an entity. Comparing across time and with other companies in the same period is made possible by this comparison tool. To put it succinctly: According to Cheung, Evans, and Wright (2010), 'compatibility requires that identical events in both situations be reflected by identical accounting facts and figures, while different events are represented by different accounting facts and figures that quantitatively reflect those differences' (Cheung *et al.*, 2010). To emphasize this point, financial report notes should disclose and explain all changes in accounting policies and their implications, as well as the importance of applying accounting policies and principles consistently. A comparison of this year's financial performance against previous years is also possible. Finally, the presentation of financial index numbers and ratios aids in the comparison of one company to another (Beest *et al.*, 2009).

One of the most important qualities of information in financial reports is the ability to comprehend it. Effective communication is the key to achieving a high level of comprehension. Consequently, the more users understand information, the better quality will be achieved (Cheung, Evans & Wright, 2010). Data quality will improve if it is presented and classified clearly and adequately. It's easier for users to understand what they want from annual reports that are well-structured (Beest, Braam & Boelens, 2009). The use of graphs and tables aids in the presentation of information and makes technical language and jargon easier to understand.

Another important quality is the ability to meet a deadline on time. Information must be available to decision-makers in a timely manner to avoid losing its powerful and beneficial effects. Timeliness is evaluated in an annual report based on how long it

took for the auditor to sign and issue their report following year-end financials, which is the period of days following year-end financials (Beest, Braam & Boelens, 2009).

For investors and those with vested interests, such as lenders and consumers, accurate reporting is essential for efficient capital markets. Increased transparency in corporate reporting aids in the flow of capital (Uyar, 2016). Investors can better control their investment decisions and avoid unnecessary and wasteful investments if financial reporting quality is improved, according to Al-Dmour *et al.* (2018). Financial reporting quality may have an impact on the company's performance and economic decisions because managers may be more likely to engage in activities that are not beneficial.

The choice of the moderator is that the study seeks to investigate firms with high-quality reporting increase their value or do financial reporting quality enhance their firm value through corporate governance in The Stock Exchange Markets in East Africa

2.5 Theoretical Review

The study was anchored on two main theories namely agency theory and resource-based view theory (RBT).

2.5.1 Agency Theory

The bounded judgment of the shareholders (that is principal) brings forward a platform for the prospective behavior of directors of a firm owing to different intentions (that is agent). This brings to light a discrepancy that exists between the information requirement by shareholders and the degree of confidence they have in the standards of financial reports since is through these actual reports that an

evaluation of the firms' performance by investors as well as other external parties is made possible. Additionally, the agency theory highlighted that when the principal had sufficient knowledge to evaluate the operations and overall performance of the agent, the agent in question will be more inclined to proceed in support of the principal. Consequently, in addition to previous occurrences of financial controversies both locally and global societies have negatively commented on the quality of financial reviews which influences their investment tendencies as seen in the stock values of a firm (Orlando, 2010)

According to Agency theory which was advanced by Alchian and Demsetz (1972) and later developed by Eisenhardt (1985, 1989), Jensen, and Mekling (1976), managers and shareholders have asymmetric information because of the separation of ownership from control in firms. They further argue the opportunistic behavior of managers creates several agency costs. Theory suggests that in an agency association, the deeds of a single person have an impact on both his wellbeing as well as that of another individual in a direct or prescribed affiliation. Muchoki and Were (2016) concedes that the person who performs the deed is the agent while the one whose wellbeing in terms of finance is impacted by the actions of the agent is referred to as the principal.

The relationship between the shareholder and corporate management has been the most frequently cited. Increasing the value of the company is the goal of shareholders, while the manager's goal is to increase his or her personal wealth and benefits from the company. The agency problem, which results in agency costs, is caused by this kind of disparity in goals. Due to the fact that the principal is responsible for paying the agency costs because the agent's predispositions are not congruent with the

principal's, the principal is responsible for paying the agency costs (Gaffikin, 2008). In this study, one would argue that the principle are the share-holders whose interest is to maximise value and the agents are the board of directors who have their personal interests against the will of the shareholders.

Gaffikin (2008) cites some examples of monitoring costs to include the need to have a board of directors who are diverse, independent, have the professional financial knowledge, and have a relatively large board size. He further gives other costs associated with the agent/agent/principal association that may be experienced are the political costs, costs related to bonding in addition to residual loss costs. It can clearly be indicated that the various costs associated with the agent/agent/principal relationship differences arise from the opportunistic behavior of the managers.

Using board structure as a means of dealing with agency issues and preventing opportunistic tendencies is a common practice in an agency theory context. Putting in place systems to audit and regulate management culture is the best way, according to Burton (2000), to control agency costs. Such systems necessitate a board of directors that is both diverse and knowledgeable in financial matters (Dalton *et al.*, 1999). According to the agency theory, the board's efficiency and effectiveness could be affected, which would have a negative impact on the company's value. High firm value is associated with a higher number of directors, for example (Dalton *et al.*, 1999). Reduced agency costs and easier access to capital markets are the primary motivations for including independent and female directors (Brenman & McDermott, 2004).

The agency perspective, in which firms used governance mechanisms to align the interests of both shareholders and corporate management in order to alleviate agency

conflicts in firms, motivated board structure studies. According to research, good governance within a company is important in reducing conflicts of interest and administrative opportunism, as well as reducing threats and thus increasing the company's value.

According to Sloan (2001), financial information is the primary source of impartial and precise correspondence concerning the performance of a firm and its administrators. In essence, this shifts the focus to financial reporting as the key appeal to board structure influence on firm value. Most studies in board structure, financial reporting quality, and firm value use agency theory as the theoretical anchor for their research propositions (Arieftiara, *et al.*, 2018; Ahmed, Anwer & Duellman, 2007; Lara, Osma & Penalva, 2007; Ruddock, Taylor & Taylor, 2006).

However, the weakness of the Agency Theory is that it is inequitable since it negatively embodies a person's agent's moral and general behavior as self-indulgent and focalised on attaining wealth and power, dismisses employee loyalty, pride, and affiliation with the firm's mission and objectives and excludes opportunistic behavior by principals (Van Slyke, 2006). Nonetheless, the Agency theory most significantly points out those managers of firms may not act in the interest of firm owners (shareholders). This calls for board structure and financial reporting quality to constrain the managers. The Agency Theory was thus the basis for relating the board structure and financial reporting quality to firm value

2.5.2 Resource Based View Theory

Resource-Based View was developed by Barney (1991) to explain the connection between intellectual capital and firm value. From Penrose's (1959) concept of a company as a unified bundle of resources, RBT was born (Sciarelli, 2008).

Accounting, finance, economic and strategic management kinds of literature are beginning to accept resource-based theory because of the positive linkages between firm resources and measures of performance such as firm value in terms of assets, equity, and debt (Canibano *et al.*, 2000; 2002). The idea is that a company can use its own internal resources to gain a long-term competitive advantage (Alonso & Kok, 2018).

By owning or controlling tangible and intangible strategic assets, a firm can maintain a long-term competitive advantage and generate superior profits, according to the resource-based view of the firm (Sciarelli, 2008). An asset is a resource owned and controlled by an individual or firm from which probable future benefits that involve competency or independently or in conjunction with other assets to explicitly or implicitly to future net cash inflows (IASB Framework). And strategic assets are those assets that an organisation controls and are rare, irreplaceable, valuable, and indistinctly imitable. Such wherewithal can be considered groups of tangible as well as intangible assets that have been incorporated by the firm and used effectively and efficiently to not only lower costs but also gain higher firm value (Peteraf, 2001; Barney, Wright & Ketchen, 2011; Kamasak, 2017).

Financial capital, machines, and land have traditionally been considered tangible physical assets in RBT evaluations. The strategic value of both tangible and intangible assets is considered. The resource-based view of the firm's intangible assets (such as its intellectual capital) is becoming more widely accepted in the literature on accounting, economics, and strategic management as a result of successful connections between the firm's resources and performance metrics (Michalisin, Kline & Smith, 2000). The RBV recognizes the “value of talented people” in an

organizational system. In this study, the intellectual capital is the financial knowledge owned by the board of directors which enables them to take financial decisions that increase firm value. In recent times, IC has been established as a valuable resource and motivator of institutional performance in addition to value creation. Wu *et al.* (2006) asserted that IC has demonstrated relevance to companies for not only achieving but maintaining competitive edge earning appeal among both scholars and administrators (Edvinsson & Malone, 1997). This modern knowledge demonstrates that the administration and formation of IC bring about a higher competitive edge, therefore, enhancing the performance of a firm. As a result, IC has taken the place of tangible physical assets as well as capital as the fundamental foundation of establishing the value (Wu *et al.*, 2006). The perfect mix of the well-balanced elements of IC suggests great value generation prospects and speculated future revenue (Hermans & Kauranen, 2005). Therefore, IC within an RBT system elevates a company's competitive edge as a result of the higher value generated by its specific wherewithal and efficiency.

The more unique combination of resources the organisation possesses, the better the ability of the organisation to deliver on its goals (Theriou *et al.*, 2009). Thus, firm value of a firm is significantly enhanced when its strategies include acquiring intangible resources in terms of intellectual capital that include human capital, relational capital, and structural capital. Therefore, RBT Theory formed the basis for relating intellectual capital and firm value.

2.6 Review of Empirical Literature

The study viewed empirical studies on the relationship between board composition and firm value, the size of the company's board and firm value, board diversity and

firm value, board independence and firm value, board expertise in relation to firm value, as well as on the relationship between firm value, intellectual capital, and financial reporting quality.

2.6.1 Board structure and Firm Value

A number of academics have studied board structure and firm value. For example, Ammann, Oesch, and Schmid (2011) studied the relationship between board structure and firm value using a dataset from Governance Metrics International (GMI) that included firm-annual perceptions from first-world nations between 2003 and 2007. The characteristics of the board of directors were discovered to have a positive and significant impact on firm value. Bhat, Chen, Jebran, and Bhutto (2018) investigated how board structure instruments impacted firm value in Pakistan using data from the state- and non-state-owned enterprises from 2010 to 2014. Board independence, on the other hand, was found to have a significant and positive relationship with firm value only for state-owned companies, while all other variables were found to have an insignificant relationship.

Dogru (2018) investigated the impact of board structure on the value of publicly traded hotel companies in the United States with the Standard Industrial Classification (SIC) code 7011 between 1993 and 2013. The findings revealed that the shareholder board structure had a positive correlation with the firm's value. Ficici and Aybar (2012) investigated the value implications of a good board structure in Asia, Eastern Europe (EU), and Latin America for emerging market firms (EMFs). According to the findings, board structure structures affected market value. Gherghina's (2015) research found a link between board structure ratings and firm value. Returns on equity (ROE), including returns on assets (ROA), and market-linked company value

in terms of earnings per share was used to assess the value of Bucharest Stock Exchange (BSE) listed companies in 2011. There was no statistically significant relationship between firm value and the international governance rating, according to the researchers.

Jo and Harjoto (2011) used risk metrics to investigate the effects of internal and external board structure on board leadership, board independence, and institutional ownership. They published their findings in 1993, 1995, 1998, 2000, 2002, and 2004. According to the findings, board structure played a relatively minor role in increasing firm value. Lauterbach and Shahmoon (2010) investigated how the quality of board structure affected the market value of Israeli business firms. They created the first index for ranking the quality of board structure in Israeli firms in their study. Their findings revealed a significant positive correlation between the firm's relative value and its board structure quality index. In addition, Lei and Song (2012) investigated board structure and firm value in a growing market with a small number of shareowners, as well as family affairs, using a specific Hong Kong (HK) panel dataset from 2001 to 2009. Their findings revealed that companies with non-governed board bodies have higher company value and are statistically and economically significant; additionally, board structure was the most significant among the key board structure measures.

Mardnly, Mouselli, and Abdulraouf (2018) investigated the relationship between Syria firm board structure and firm performance. According to the findings, the only significant board structure aspect influencing firm performance is ownership structure. Mwesigwa *et al.* (2014) conducted a cross-sectional study in Uganda to determine whether board structure, accountability, and managerial competencies were

related to the financial performance of commercial banks in Uganda. Board structure, accountability, and managerial competence were found to have a significant influence on commercial banks in Uganda's financial sector. Paminto (2015) investigated the relationship between board structure and firm value by analyzing data from Indonesia Stock Exchange companies listed between 2009 and 2014. Financial performance, for example, was positively influenced by board structure, whereas risk was negatively influenced by board structure.

Tusubira and Nkote (2013) conducted a cross-sectional study of private universities in Uganda to investigate the relationship between board structure and financial performance. According to one study, board structure variables had a negative impact on financial performance. Yameen, Farhan, and Tabash (2019) discovered that board structure practices have an impact on the performance of firms in the Indian tourism sector. The study relied on a panel dataset of hotels listed on the Bombay Stock Exchange from 2013/2014 to 2015/2016. (BSE). According to the findings, the number of board directors and the size of the audit committee have a negative impact on results. A strong board of directors, an effective audit committee, and a large share of foreign ownership, on the other hand, boosted performance. Zhussupova, Onyusheva, and El-Hodiri (2018) conducted an investigation into the impact of Kazakhstan's board structure system. According to the study's findings, there is no strong correlation between board structure and firm financial performance.

2.6.1.1 Board Size on Firm Value

Nguyen and Faff (2007) conducted an initial examination of the relationship between firm market value, board size, and gender diversity for publicly traded Australian companies. Researchers discovered that smaller boards are better at representing the

interests of shareholders because they have a greater impact on the company's value. The relationship between board size and firm value is not linear; as board size increases, so does the decline in firm value. Furthermore, according to the study's findings, the presence of female directors is associated with higher firm value, demonstrating that gender diversity benefits shareholders.

Kumar and Singh (2013) examined the effects of board size and promoter ownership on firm value in a sample of Indian companies. The board structure of a sample of 175 companies listed on the Bombay Stock Exchange was examined using linear regression analysis. A large board of directors has been shown to increase a company's value. Above a 40% degree of propriety, proponents' concerns are more likely to align with those of the company, resulting in a positive effect on the company's value.

Akileng and Kobumanzi (2019) investigated the financial performance of publicly-traded Ugandan companies. Non-executive directors (board independence), directors' shareholding, and board size were all evaluated while firm size and leverage were taken into account. The study was conducted over a four-year period using a cross-sectional design and panel data from listed Ugandan companies. Data on financial and board characteristics were gathered from each company's annual reports. According to the study's findings, the independence of non-executive directors on large boards increases the company's value.

Tarus (2020) conducted a study on the impact of board size and firm size on environmental accounting disclosure for the Nairobi Securities Exchange in Kenya. The specific goals of the study were to investigate the impact of board size and firm size on environmental accounting disclosure. Based on stakeholder theory, a

longitudinal research design was used in the study. The study examined 27 different publicly traded companies from 2008 to 2017. According to the findings, while board size had a negative impact on environmental disclosure, firm size had a positive impact on environmental disclosure. As a result, it was determined that firms with larger boards are less likely to disclose environmental accounting information, whereas large firms are more likely to release environmental reports.

A study by Handriani and Robiyanto (2019) investigated the impact of institutional ownership, an independent board, and large board size on firm performance by looking at 293 publicly traded Indonesian companies between 2010 and 2015, using data panel regression. Tobin's Q was used to predict firm performance. According to the study findings, only Tobin's Q was found to be positively influenced by institutional ownership, board independence, and board size.

2.6.1.2 Board Diversity and Firm Value

According to Agyemang *et al.* (2019) whose study was conducted to determine whether the inclusion of more women on corporate boards of financial institutions in the United Kingdom (Board Gender Diversity) had any effect on the company's value. The second goal of this study was to establish whether having female directors on the boards of UK financial institutions affected their value before and after the global financial crisis. 'Over a 12-year period, DataStream was used to collect information on 63 financial institutions. The random effect and fixed-effect models were used in the study to test the robustness of the results. An empirical study discovered that having more women on a company's board increases its value.

Greene *et al.* (2020) investigated how the stock market responded to California Senate Bill No. 826 (SB 826), the country's first mandated board gender diversity quota.

There is a strong relationship between announcement returns (-1.2%) and the use of various strategies. The returns are more negative when the difference between the pre-SB 826 number and the instructed number of female managers is greater. These negative consequences are less severe for companies that report a higher number of female candidates, as well as those that can replace male managers with female managers more quickly. A small business board augmentation has an annual direct cost of 0.76 percent of the market value, which is negligible. Companies significantly increase female board representation, according to SB (Senate Bill) 826, and the expansion is greater for companies in California than for those in other states.

Inua *et al.* (2019) sought to shed light on the relationship between the gender diversity of boardrooms in publicly traded Nigerian firms and their EVA (Enterprise Value Added). The study was based on time series data collected between 2007 and 2016. To address the study's endogeneity issue, the researchers used contributory variables in conjunction with Two-Stage Least Square regression analysis methods to obtain more consistent, non-biased estimates. According to the study's findings, there was no correlation between gender diversity and firm value. According to the Blau Index, an increase in female board representation has a significant negative impact on the value of selected Nigerian companies, indicating that an increase in female board representation reduces firm value.

Manyaga and Taha (2020) conducted research to provide a framework for understanding how board diversity can impact a company's success. The research was founded on the theory of agency. To establish the link between board diversity and company performance, a number of studies and existing publications were consulted. While this study provides a broad picture of board diversity, it also provides a more

detailed picture that allows us to assess the significance of board diversity and its relationship to a company's performance, which in turn affects firm value.

Tyrowicz *et al.* (2020) investigated the national and sectorial institutional drivers of the rise of female administrators and supervisors in private and public sector organizations using data from 41 developed and developing European economies. Over a two-decade period, a database of over 20 million companies was used in the study. Despite the fact that women continue to constitute the majority of board members, the study discovered that overall board diversity has increased. As a result of the lack of women on European company boards, approximately 70% of their superintendence boards and 60% of their management boards lack women managers. Gender diversity in management and supervisory boards of public and private institutions is influenced by institutional and resource reliance systems, which determine that only a few systematic elements are associated with broader gender diversity. Members of the management board may be associated with the same aspect or vice versa. According to these findings, gender equality at the national level and in cultural organizations has varying correlations with the presence of female administrators on management and supervisory boards. Furthermore, the study discovered that the presence of women on either board of directors in any set of companies is structurally linked to sector-level competition and innovation.

2.6.1.3 Board Independence and Firm Value

According to Zhu *et al.* (2016), a study on Chinese board composition, independent directors, and the firm's value was conducted. Using the formula for Chinese directors' entry as a board hierarchy, the study found that board power was distributed amongst the board members. For the study, it was expected that independent director

classifications would be absolutely congruent with firm value based on existing evidence that independent directors add a great deal on firm value and that authorized persons have an additional effect on collective decision-making. On financial reporting issues, in particular, the study discovered that independent directors ranked higher are more likely to vote against management. Higher independent directors are also associated with lower management compensation.

An investigation by Jenwittayaroje *et al.* (2019) sought to find out if the value of financial firms could be increased by the presence of independent firm directors. Companies may require more and recovering advice to help them deal with the crisis when they are in extremely difficult times, according to the argument. Such solutions can be provided by independent directors from outside the company. According to the results of the study, independent directors are extremely beneficial in times of crisis because they are able to provide solutions and remedies.

According to Kabir *et al.* (2019), board structure mechanisms may have an impact on the value of Nigerian manufacturing firms. According to the study, the economic value added (EVA) ratio of firm value was used from 2012 to 2016. It was determined that board size, board independence, and foreign ownership all have an impact on a company's value. The 89 listed manufacturing companies in Nigeria provided the data for the analysis. OLS panel data regression and multiple regression models were used to examine the relationship between panels corrected standard error and panel corrected standard error. It has been shown that a firm's value is positively statistically related to its ownership concentration, the board size, and independence.

Board structure and company performance in India were studied by Jackling and colleagues (2009). The importance of independent directors in these companies was

widely discussed. Non-executive directors of a company are entrusted by its shareholders with the responsibility of representing and assisting them in times of need. According to the findings of the study, having independent directors is advantageous for a company. The reason for this is that they provided the firm with the objective and unbiased judgment that helped solve serious issues.

Board structure and profitability in Nigerian firms were examined by Babatunde *et al.* (2016) from the year 2004 to 2014, 60 companies listed on the Nigerian Stock Exchange were studied for their time series data. The relationship between board independence, board characteristics, the audit committee, growth, size, and profitability, as well as profit variability, of the firms were studied. The results of the multiple regression analysis showed that all of the variables under study were statistically significant.

Using Pakistan as a case study, Bhat *et al.* (2018) examined how board structure instruments affect firm value. Researchers looked at both state- and non-state-owned businesses to see if the impact of board structure on firm value varies across different ownership types. The panel regression model was used in the study's longitudinal research design. The Hausman test was used to determine whether to use a fixed or random effect model. The Hausman test was used to select a fixed effect model. Board independence has a positive and significant impact on firm value when applied to state-owned corporations, according to the findings of the study. For both state- and non-state-owned enterprises, the results showed that market capitalization, as well as the return on asset, had a significant and positive association with firm value."

It was found that the composition of the board had an impact on the capital structure of a Kenyan company. From 2004 to 2012, the study relied on time series data from

companies listed on the Nairobi Securities Exchange. It was found that board composition had a significant impact on capital structure and that the term of the CEO had a significant impact on the relationship. Board composition has an important impact on capital structure decisions, according to the study results Leverage was positively linked to director independence while CEO duality and tenure were negatively and significantly associated with leverage. In addition, the CEO's collaboration has a positive effect on the company. Independent directors' influence on capital structure decisions diminishes as a chief executive officer's tenure grows. Long-tenure boards, on the other hand, use a smaller amount of leverage in their capital structure when they have a long-serving CEO.

2.6.1.4 Board Expertise and Firm Value

Meng and Tian (2020) investigated the impact of board expertise on executive incentives and firm value in the context of project investment. To increase the likelihood of project success, the CEO performs a series of tasks, beginning with gathering information to evaluate a potential project, then reporting his valuation of the project to the board, and finally executing the project if it is invested in. According to the study, if the board and the CEO reach an agreement, the CEO will be paid more. Although the managerial power perspective may interpret it as evidence that more powerful CEOs are compensated more, such a compensation arrangement is the result of optimal contracting. Board expertise in project evaluation motivates the CEO to gather information, but it may also reduce the CEO's incentives to complete the project correctly. As a result, having a more knowledgeable board of directors can either increase or decrease a company's value. Furthermore, the study discovered that when the board's expertise is high enough, CEOs have an incentive to underreport their assessment of a project.

Schmidt (2019) investigated two additional factors: the educational level of female directors and mandatory gender quotas on the board. The study used a sample of 454 European companies. The study gathered data over a seven-year period. According to the research, there is a link between board gender diversity and company performance. Furthermore, the results show that educational levels and gender quotas on boards have no effect on this relationship. Firm performance is affected by whether or not judicial procedures or deliberate creativity are in place. Rather than legislative quotas, charitable creativity improves the company's performance.

According to the findings of Faleye *et al.* (2018) having members with relevant industry experience on a board can improve its effectiveness. According to research, a company's value increased significantly if its board of directors had extensive industry experience. The study sought to find other ways to maximize the value of the investment by investigating the influence of industry expertise on internal modernization and attainment. The study discovered that industry experts contribute to firm value by facilitating investments in improvement. Industry expertise on boards has a positive impact on innovation, but it is unrelated to acquisition performance. First, industry expertise on the board is also strongly linked to CEO dismissal and incentives that encourage investment in innovation. Finally, the extent to which board industry know-how contributes to higher firm value is determined by the importance of corporate innovation in the value chain of the firm.

Fauver *et al.* (2019) focused on the impact of corporate board reforms on company value in 41 countries. According to the study, after the board of directors approves changes, the firm's value rises. Expansions in valuation are linked to both the intensity and key reform elements such as an audit committee, board independence, and the

separation of chairman and CEO duties. The study of these changes has also revealed that they have a significant impact on nations with a less competent law enforcement system. According to the findings of the study, exogenous governance introduces reforms that benefit shareholders, particularly in countries with low institutional quality and for reforms with a comply-or-explain methodology.

2.6.2 Intellectual Capital and Firm Value

According to some research, a company's value is linked to the quality of its intellectual capital. Cheng, Hwang, and Chen (2005) used data from Taiwanese listed companies to examine the relationship between financial performance, value creation efficiency, and firm market valuations. The findings showed that the financial and market value performance of a company was positively impacted by its intellectual capital. They studied the impact on firm value of firm size and intellectual capital disclosure (relational capital disclosure, human capital disclosure, and structural capital disclosure) in Indonesia's publicly traded utility, transportation, and infrastructure companies from 2013 to 2017 in a five-year period from 2009 to Wedysiage, Hatane, Saptura, and Angeline. Relational capital, on the other hand, had a negative impact on firm value, according to the findings.

Human capital and organizational capital were used by Li and Zhao (2018) to examine the dynamic relationship between intellectual capital and firm value in Chinese listed companies. Human capital has no significant impact on firm value, but organizational capital has a positive impact. Nafiroh and Nahumury (2017) also studied the impact of intellectual capital on company value using data from companies listed on the Indonesian Stock Exchange (IDX) between 2010 and 2014, which they examined. According to the findings, a company's value was influenced

by its intellectual capital. It was found that firms in the Indonesian Stock Exchange as enumerated by Subaida, Nurkholis, and Mardiaty (2018) study that analysed the impact of intellectual capital, financial performance, and intellectual capital disclosure on companies listed in the Indonesian Stock Exchange between 2011 and 2015. In the end, the researchers found that intellectual capital had no bearing on the value of a company at all.

A firm's profitability, productivity, market valuation, and growth are all indicators of how intellectual capital affects the firm's value. Manufacturing companies listed on the Indonesian Stock Exchange were used in Suhendra's study from 2011 to 2013. According to the findings, a company's profitability, market value, and growth are all impacted by its intellectual capital. Despite this, productivity and firm value were unaffected significantly by intellectual capital. According to Tripathy, Sar, and Sahoo (2015), the relationship between intellectual capital efficiency and the market value of Indian listed companies was examined using data from Indian listed companies. The results showed that the value of companies was positively influenced by the efficiency of intellectual capital (physical capital efficiency, human capital efficiency, and structural capital efficiency). Finally, Xu and Wang (2018) studied the impact of intellectual capital on financial performance and long-term growth in the Korean manufacturing sector. Between 2012 and 2016, the researchers examined manufacturing firms listed on the Korean Stock Exchange. A study found that intellectual capital had a positive effect on financial performance and long-term growth for businesses.

2.6.3 Financial Reporting Quality and Firm Value

There are different scholars that have investigated the relationship between financial reporting quality and firm value. Esfesalari and Zarei (2013) studied the effect of voluntary disclosure adjustments on firm value in companies listed on Tehran Stock Exchange Hypothesis test results indicated that an increase in voluntary disclosure led to a positive and significant increase in value of a firm. Hessayri and Saïhi (2017) investigated the influence of financial reporting quality and shareholder governance on firm value using firms listed in three emerging markets namely, Morocco, South Africa, and Turkey. The findings revealed that financial reporting quality reduced information asymmetries between more informed and less informed investors influencing their investment decision leading to firm performance. Kajüter, Klassmann, and Nienhaus (2019) analysed the capital market effects of mandatory quarterly reporting using listed firms in Singapore. Using regression, analysis revealed that mandatory financial reporting quality had an insignificant effect on the value for money of firms. The results showed a 5% reduction in firm value, this corresponds to the thinking that required quarterly reporting is a net burden for small firms.

Keliwon, Shukor, and Hassan (2018) carried out a quantitative measurement for internet financial disclosure to establish its relationship with firm value using Malaysian listed firms in the year 2012. Their regression analysis showed that financial disclosure had a positive association with firm value. Loh, Thomas, and Wang (2017) investigated the relationship between sustainability reporting and firm value using companies listed in Singapore. The results revealed that sustainability reporting is positively affiliated with firms' market value. It is apparent that this association was free of sector or company eminence for instance government

affiliated corporations as well as family-owned enterprises. Nurkumalasari, Restuningdiah, and Sidharta (2019) examined the benefits of financial reporting quality on a firm value using a non-financial public company in the Asian region that published integrated reporting as of December 31st, 2015-2017. The results showed financial reporting quality did not affect the value of the company.

Between 2005 and 2009, Ojeka, Mukoro, and Kanu (2015) examined the relationship between annual reports' disclosures of financial reporting quality and the performance of Nigerian-listed manufacturing firms. In terms of timing, board size, the type of auditors' report, and the percentage of value-added retained for expansion in relation to return on equity, disclosure was examined (ROE). The findings show that financial reporting disclosures have a significant impact on financial performance.

In his work, Restuningdiah (2016) provides an in-depth assessment of how financial reporting quality impacts or otherwise influences the association between board structure strategy and the stock price of the consumer commodities sector that appeared at Indonesia Stock exchange. Using Path Analysis, the study showed that financial reporting quality had no direct effect on stock prices.

2.6.4 Board structure and Intellectual Capital

Several scholars have related board structure and intellectual capital. For example, Al-Sartawi (2018) examined the relationship between board structure and intellectual capital in the Gulf Cooperation Council Countries. Regression findings showed that there was a weak negative relationship between board structure and intellectual capital. Also, Arifin (2017) assessed the impact board structure, as well as intellectual capital, has on the firm value of the Bank industry firms that were listed on the

Indonesia Stock Exchange during the period of 2008 and 2012. The results established that board structure had no significant effect on intellectual capital.

A study by Hassan and Yaacob (2019) looked at the relationship between board structure (CG) mechanisms and intellectual capital (IC) efficiency using large companies from Bursa Malaysia's main board for 2014. There was a significant and positive association between board size and the frequency of audit committee meetings and intellectual capital efficiency, but there was no correlation between board composition and role duality. On their part, Hatane, Tertiadjadi, and Josuatarigan (2017) analysed the direct effect that board structure has on firm value in addition to its implicit influence through the intervention of Intellectual capital. From 2010 to 2015, the Indonesia Stock Exchange and Bursa Malaysia were used as sources of data for the study. Both countries had a significant impact on intellectual capital, but it was positive in Indonesia and negative in Malaysia, according to the results of the study. Furthermore, in Indonesia, board size and composition had no effect on intellectual capital, whereas, in Malaysia, they did.

Further, Hidalgo, García-Meca, and Martínez (2011) analysed the internal mechanisms of board structure (board of directors and ownership structure) that influenced voluntary disclosure of intangibles using a sample of Mexican listed firms during the period 2005. The results revealed that board structure had a negative influence on intellectual capital. Relatedly, Jamei (2017) investigated the relationship between some board structure and intellectual capital approaches in firms enlisted on Tehran stock exchange for the period of 2011-2015. The findings established that there existed a positive significant linkage between the size of non-duty affiliates, organisational ownership as well as Intellectual capital, there was however no

significant linkage between the number of board members, managerial ownership, and intellectual capital. In the same way, Makki and Lodhi (2014) sought to determine the prevalence of crucial systematic associations among intellectual capital efficiency, financial performance, and board structure by use of companies in Pakistan. The results revealed that a company that has excellent board structure strategies is guaranteed improved intellectual efficiency ultimately generating more return on investment, return on equity, and net profit.

On the other hand, Nurlis (2018) studied the impact of a well-structured board of directors on intellectual capital disclosure and company performance in Indonesian banking companies from 2014 to 2016. According to the findings, the board structure had a significant and positive impact on intellectual capital. As part of their effort to identify the board structure characteristics of Spanish companies included in the Ibex35 stock price index, Tejedo-Romero, Araujo, and Emmendoerfer (2017) analyzed the voluntary information disclosure policy regarding intellectual capital of companies in the Ibex 35 index. Company intellectual is positively influenced by board structure, according to the findings. Electronic manufacturers in Taiwan were studied by Tseng and Lin (2013) using cross-sectional panel data from 2001 to 2005. Results showed that board structure and intellectual capital had a strong correlation.

2.6.5 Board structure, Intellectual Capital and Firm Value of Firms

There have been studies showing that intellectual capital mediates the relationship between the structure of the board and firm value. Arifin (2017) found that intellectual capital had no significant impact on board structure but both board structure and intellectual capital had a significant effect on firm value. Nigerian conglomerates' board structure and performance were studied by Bala *et al.* (2019), who found that

intellectual capital had a mediating effect. The research found that intellectual capital acted as a buffer between board structure and organizational performance (firm value). Based on the Indonesian Stock Exchange, Djuminah (2019) studied the impact of board structure on firm value through intellectual capital and corporate social responsibility in the manufacturing industries. Results showed that intellectual capital did not moderate the link between the board of commissioners and firm value, in addition to the relationship between the audit committee and firm value.

An analysis by Hatane, Tertiadjadjad, and Josuatarigan (2017) on the effect of board structure through intellectual capital on firm value established a positive relationship between intellectual capital and firm value in Indonesia, but negative ones in Malaysia, according to the findings of this study. From 2010 to 2015 in Indonesia and Malaysia, Hatane, Setiadi, and Tarigan (2019) studied the impact of board structures on intellectual capital and firm value using consumer goods companies. Intellectual capital was found to influence the relationship between board structures and firm value in Malaysia.

A study conducted by Khan and Ali (2018) found that intellectual capital had a moderating effect on the relationship between board structure and company performance. The study found that intellectual capital had a significant impact on the relationship between board structure and firm value in terms of return on equity. One of the most important findings of Makki and Lodhi (2014) was that there is a link between board structure and intellectual capital efficiency as well as financial performance. The board structure does not directly improve financial performance, but directors can improve it by maximizing their intellectual capital.

Nurlis (2018) found that the influence of board structure through intellectual capital was weak, which means that intellectual capital was not an intervening variable in the relationship between board structure and company performance. "Board structure, intellectual capital, and performance of Indonesian public companies were the focus of a study conducted by Rahayu and Ramadhanti (2019). There was no evidence that intellectual capital had any effect on the relationship between board structure and company performance. Researchers in Malaysia used data from publicly traded companies in the country's stock exchanges to examine the role of intellectual capital as a link between board structure and corporate performance. The findings showed that the board's structure had an impact on the company's performance through the use of intellectual capital resources. The board's structure and performance were influenced by intellectual capital.

2.6.6 Board Structure, Financial Reporting Quality, and Firm Value

According to research, the link between board structure and firm value can be moderated by the quality of financial reporting. According to one study, Anis (2016) looked at how disclosure quality and board structure affect the value of publicly-traded companies in the UK between 2006 and 2009. When it comes to firm value, board independence and audit committee independence were found to have a direct correlation with the quality of the company's financial disclosures. Financial reporting quality in private firms from emerging markets was examined by Chen, Hope, Li, and Wang (2011) using World Bank firm-level data. Financial reporting quality was found to have a positive impact on shareholders' investment decisions, which in turn had a positive impact on the performance of companies.

Haat, Rahman, and Mahenthiran (2008), on the other hand, found that disclosure and timeliness (reporting quality) had no significant impact on the relationship between board structure and market performance. Based on the financial listed companies in Morocco, South Africa, and Turkey, Hessayri and Saihi (2017) sought to explain the relationship between ownership structure monitoring and international financial reporting quality standards (IFRS) reporting on equity value. Board structure and financial reporting quality were found to have a positive impact on information asymmetries between more informed and less influencing firm value.

There was a study done by Hessayri and Saihi (2018) that looked at the benefits of the capital market for publicly listed companies in Morocco, South Africa, and Turkey using data from 2001 to 2011.

For example, institutional investors and institutional shareholders (both domestic and foreign) increased their investments in IFRS-compliant companies' stock following the adoption of this accounting standard, according to the findings. In their study, Salleh, Chong, Joshi, and Wasiuzzaman (2018) used data from Malaysia's top-listed companies' 2013 annual reports to examine the impact of board structure, disclosure, and firm characteristics on firm performance. Firm performance was found to be positively impacted by a combination of the structure of the board of directors and their public disclosures. According to a multiple regression analysis study by Siagian *et al.*, (2013) on board structure, reporting quality, and firm value using listed Indonesian companies as a sample. Multivariate analysis found that board structure was positively associated with firm value, but financial reporting quality was negatively associated.

2.7 Control Variables

The purpose of control variables is to isolate the true effect of independent variables on the dependent variable in quantitative analysis (Creswell, 2013). Control variables mitigate against bias (confounding bias, in particular) and thus arrive at a finding that is unbiased. The control variables in this analysis were firm age and firm size. Conventional wisdom holds that firms experience material changes in their characteristics as they age. For instances firm face performance decline and run short of investment opportunities as they age. On the contrary, scholars claim that firm age influences corporate finance variables such as firm value. Grullon, Michaely, and Swaminathan, (2002) maturity hypothesis suggests that a firm's dividends improve as it enters the maturity stage. Similarly, DeAngelo, DeAngelo, and Stulz (2006) life-cycle hypothesis is premised on the same argument, though it does not explicitly consider firm age. Research conducted by Moeljadi (2014) showed a significant effect of firm size on firm value. Arifianto and Chabachib (2016) found that the size of a company has a positive effect on its value. It was also found that the size of the firm had an impact on the firm's value (Sudiyatno *et al.*, 2020). The value of a company increases as a result of a large firm size, which is an indicator of a company's growth.

2.8 Conceptual Framework

Four variables namely, board structure (independent), intellectual capital (mediating), financial reporting quality (moderating), and firm value (dependent) are conceptualised for the study. Board structure based on Sonmez and Yildırım (2015) is an art of management which avails a systematic from the top communication between shareholders, investors, workers, board of directors, firm owners, and chief executive officers. Board structure will be measured through the structure of the board of

directors (Rajhans, 2013). Basing on the conceptualisation of Chahal and Bakshi (2016), intellectual capital refers to human capital, relational capital, and structural capital which will be measured through the value-added intellectual capital coefficient (Pullik, 2001). Financial reporting quality refers to the standard practice by which stakeholders receive the precise reflection of a firm's finances not to mention expenses, profits, capital, revenues as well as cash flow for the purpose of providing in-depth insights into financial operations (Cascino *et al.*, 2014). In this study, financial reporting quality was conceptualised based on the measures by Al-Dmour, Abbod, and Al-Balqa (2018) as referring to financial statements understand-ability, relevance, comparability, and faithful representation. And was, therefore, be measured by the use of accruals quality as a proxy which equals a change in current assets – change in cash – change in current liabilities + change in short-term debt-Depreciation/scaled by average total assets (Ball, Kothari, & Robin, 2000; Kothari, 2004). Operationally, the firm value was defined based on Tobin's Q measure described by Chung & Prutt (1994) as the market value of the firm divided by its total assets.

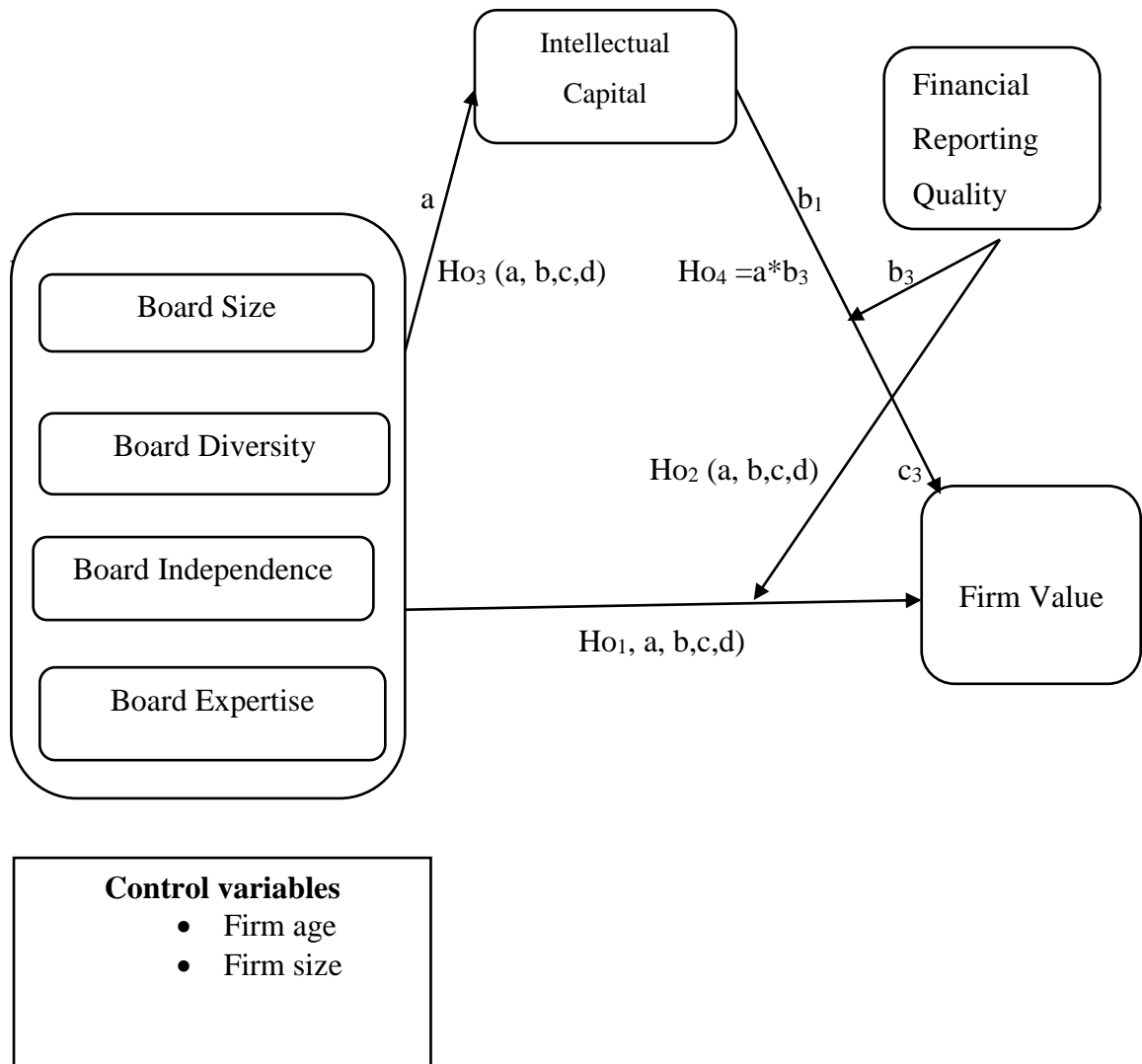


Figure 1: Conceptual Framework

Source: Model 15 in Hayes (2018)

CHAPTER THREE

METHODOLOGY

3.0 Overview

This chapter highlights the methodology that was used in the study. The following sections are discussed. Research philosophy, research design, study area, study population, sample size and procedure, measurement of variables, data collection instruments, data collection process, data processing and analysis, and ethical issues.

3.1 Research Philosophy

The research philosophy that informs this study is the objective philosophy. This meant studying reality independent of the researcher using scientific approaches, particularly statistical methodologies by testing hypotheses to produce generalizable findings (Harrison, Birks, Franklin & Mills, 2017). Knowledge was investigated using the positivist approach which involved the use of statistics. In reporting the results of this study, the researcher used impersonal and formal language for statistical results, using statements such as the study found out. Accordingly, the study's methodology is based on positivism, which means that the researcher relied on information from published sources. Hence personal biases were not captured in this study.

The study adopted the positivist research philosophy. Research philosophy is a set of assumptions about how things work, and which connects a variety of research techniques through underlying philosophical assumptions underpinning the research process. Three distinct research paradigms are discerned in relation to possible research approaches, namely positivism, interpretive and pragmatic. However, this proposed study adopted the positivist approach (Scotland, 2012; Shah & Al-Bargi,

2013). Positivism involves quantitative data analysis on the assumption that objective truth exists and requires organized methods and techniques to unearth it. Thus, a set of causal laws based on chance should be employed to find this objective truth by empirical observation of individual behavior and prediction of patterns of human activity (Venkatesh, Brown & Bala, 2013).

Positivists pursue a deterministic philosophy that focuses on causes being the probable determinants of effects or outcomes. Positivism aims at reducing small ideas into discrete variables which comprise hypotheses that can be tested (Creswell, 2014). Since this proposed study seeks to examine causality between board structure and firm value moderated and mediated by financial reporting quality and intellectual capital respectively, it is prudent to argue that the study should have elements of positivism. Using the positivist philosophical approach, the researcher was able to carry out statistical inferences on the effect of board structure on firm value as moderated by financial reporting quality and firm value.

3.2 Research Design

This study adopted the explanatory research design which is a panel study in nature. A panel study describes information about the same cases at two or more points in time. Panel studies, according to Hans-Peter *et al*, (2009), are a specific kind of longitudinal study whereby the unit of analysis is followed at predetermined timeframes in a lifetime. The panel data was used because panel studies give historical information revealing the back and forth shifting behaviour, strong in dealing with the threats of unit heterogeneity. About Explanatory research design, the researcher sought to determine if a cause-effect relationship exists between the independent and dependent variables (Ellis & Levy, 2009), namely board structure,

financial reporting, intellectual capital, and firm value. The researcher examined how the independent, moderating, and mediating variables directly affect the dependent variables in a cause-and-effect relationship between the variables because data collected enabled regression analysis.

3.3 Study Area

The location of the study is East African stock exchange markets (NSE, DSE, RSE, and USE) in Kenya, Tanzania, Rwanda, and Uganda respectively. As of the year 2020, Kenya had 63 companies listed and trading on the Nairobi Stock Exchange, Uganda had 17 companies listed and trading in Uganda on the Uganda Securities Exchange, Tanzania had 28 companies listed and trading in the Dar es Salaam Securities Exchange and Rwanda had 10 listed and trading on the Rwanda Securities Exchange.

The Choice of the Securities Exchange Markets in East Africa as the study location is informed by some features, first by the fact that exchanges registered had fluctuating share indices, the volume of shares traded, market capitalization, and Equity turnover in the period under review (Anyanzwa, 2019). Secondly the large number of listed firms drawn from diverse sectors that are trading there and their development, for example out of the 17 companies listed on USE, 8 are cross listed and all being primarily listed on the NSE (Capital Markets Authority, 2013) which has ever been rated by the International Finance Corporation (IFC) as the best performing market in the world with a return of 179% in dollar terms. Relevant data for examining the postulated relationships was therefore gathered from the numerous firms.

3.4 Study Population

From 2012 to 2019, the population of this study included all 118 businesses listed on four E. A securities exchange markets. According to Neuman (2000), a population can be defined as a collection of individuals or groups that the researcher is interested in studying. Saunders, Lewis, and Thornhill (2009) define a population as a whole group that permits data to be sourced and investigated, whereas Koonce and Kelly (2014) define it as an entire group of individuals, events, or things that share similar traits and adhere to a set of specifications.

3.4.1 Inclusion and Exclusion Criteria

The study included all firms that have been trading consistently from 2012 to 2020. Any company suspended, listed, or delisted during this period was removed from the sample. Thus, the study included all firms that traded consistently from 2012 to 2020 in the four E A securities exchanges. In addition, firms from RSE, USE, and DSE cross listed in NSE were excluded. As far as cross listing is concerned, the study considered the country where the company is primarily listed. Cross listing refers to a situation where the firm is listed in more than one country. Thus, the study sample was 48 listed firms in NSE, 12 listed in DSE, 5 listed in USE, and 2 firms listed in RSE. Hence, the sampling frame for this study 67 listed at the Securities Exchange Markets in East Africa and have been consistently trading between 2012 and 2020 giving a total of 536 observations.

Table 3. 1: Number of Companies Listed on the Stock Exchange Markets in East Africa per market

Sectors	Number of listed Companies	Sampled firms
Nairobi Securities Exchange	67	48
Dar es Salaam Stock Exchange	27	12
Uganda Stock Exchange	17	5
Rwanda Stock Exchange	10	2
Total	121	67

Source: NSE, RSE, DSE, USE, 2020

3.5 Measurement of Variables

There are different ways of measuring the variables described below

3.5.1 Measurement of Firm Value

The most widely used measure of firm value is Tobin's Q, which considers a company's market-to-book value ratio, net market value, net assets replacement value, economic value added, and market value added (Al-Awawdeh & Al-Sakini, 2018). Enterprise value is also used as a proxy for quantifying company worth in terms of market value of debt, minority interest – cash and equivalents, market value of common stock, and market value of preferred equity, according to Bhullar, Bhatnagar, and Gupta (2018). According to Ebenezer *et al.* (2019), enterprise value is used because it is commonly used in identifying undervalued companies and it is a strong market value proxy because it epitomizes the actual and overall market value of an organization as a whole, making it a useful economic measure or firm valuation. When evaluating a company, debt obligations, non-controlling minority interests, and extra cash are all taken into account. As a result, a proxy for company value is enterprise value divided by earnings before interest, taxes, depreciation, and amortization. As a result, according to Dang, Vu, Ngo, and Hoang (2019), enhancing business value entails multiplying profits, and where an enterprise generates more

income, its value skyrockets. The element of continuously optimizing the value of a proprietor's assets is known as enterprise value maximization. The term "maximization of enterprise value" refers to the process of maximizing a company's market value. As a result, enterprise value can be used as a proxy for company value.

As a proxy for Firm value, this study used a Q-Ratio estimate. Chung and Pruitt (1994) proposed the concept of approximate Q, calculated using the method indicated in the equation below.

$$\text{Approximate } Q = \frac{MVE + DEBT}{TA} \dots\dots\dots 3.1$$

Where MVE = the product of a firm's share price and the number of common stock shares outstanding, $DEBT$ = the value of the firm's short-term liabilities net of its short-term assets plus the book value of the firm's long-term debt and TA = the book value of the total assets of the firm. According to Robiyanto, Adhi, and Andreas (2021), if Tobin's Q is less than one, it is considered that the firm is undervalued or the firm's value in the market is smaller than the book value. This condition will attract and increase the investors' interest to buy the firm shares because prefer to buy the firm's assets at a cheaper price compared to when the firm's assets are resold. Conversely, if Tobin's Q is more than one, it can be considered that the firm is overvalued or the firm's value in the market is greater than the book value. This condition indicates that the firm has high growth potential.

3.5.2 Board Structure Measurement

The structure of the board of directors was used in this study as one of the most important indicators of board structure. Four elements were measured for this purpose, as shown in table 3.2 below. The extent to which these elements exist on the board was determined by examining the annual reports of the firms under consideration that are listed on the Stock Exchange Markets in East Africa for an eight-year period beginning in 2012 and ending in 2020. Although there are 51 indicators to quantify the level of board structure, a study by Brown and Caylor (2004) only included four indicators that are related to the structure of the board of directors for the following reasons:

- 1) Novelty of the issued legislations related to board structure in Kenya, Tanzania, Rwanda, and Uganda and their optional application.
- 2) The existence of many board structure standards which some listed companies like banks consider confidential and unable to be published.
- 3) There are quite several authorities guiding on board structure for example the individual company's articles of Association and memorandums, NSE, USE, RSE, and DSE Board charters, and Capital markets regulations.

Table 3.2: Elements of Board structure Measurement –Structure of the Board of Directors

Variable	Description	Measurement	Supporting Author
Board Size	Board members	Total number of inside and outside directors on the board	Ilaboya & Lodikero (2017)
Board Diversity	Female board members	Proportion of women board members to total number of board members.	Ilaboya & Lodikero (2017)
Board Independence	Majority of the members of the board who do not have relationship with the company	Proportion of non-executive directors to the total number of directors.	Ilaboya & Lodikero (2017)
Board Expertise	Board members with financial professional competence and knowledge.	Proportion of the board members with financial professional knowledge to the total number of board members.	Kankanamage (2015)

Source: Literature Review

3.5.3 Intellectual Capital Measurement

The Value-added Intellectual Coefficient was calculated by combining the Human, Structural, and Relational capital. As a result, the Value-added Intellectual Coefficient was used to determine intellectual capital in this study (Ante Pulic, 2000; 2003; 2005). This strategy focuses entirely on financial indicators found on a company's balance sheet. It assigns clear economic values to human capital (HC) and structural capital (SC), such as value added (VA) and capital employed (CE), and provides an unambiguous VAIC index on this basis. It's a metric that's been employed by a lot of academics to assess the performance of particular businesses (Stahle, *et al.*, 2011). The VAIC index is determined as the sum of the ratios of value added to capital employed and human capital as employee expenses, and it usually ranges between 1 and 3. (Stahle *et al.*, 2011).

The justification for using VAIC to measure intellectual capital is fourfold; first, Objective and quantitative measurements can be produced without the need for subjective grading and scoring. It also provides indicators that are valuable and informative to all stakeholders, including shareholders, and with which they may also identify and compare the essential components of IC in order to assess the value of a company's assets. If you're looking for a way to compare your financial data to that of your competitors, you'll find a wide range of financial metrics that may be utilized to do just that in this framework: In addition, it creates a type of standardization. The calculated indicators or indexes can be applied consistently and compared across divisions, companies, industries, and countries (Chan, 2009). In line with prior studies (Pulic, 2000; Williams, 2000; Shiu, 2006; Chen *et al.*, 2005), this study used VAIC to measure intellectual capital.

The VAIC is used to determine how much added value a company generates based on intellectual (capital) efficiency or intellectual resources. And to get the Value-Added Intellectual Capital coefficient (VAIC) the following steps were followed.

1. Calculate Value Added (VA_{it}) by all the resources during time t period.

$$VA_{it} = Output_{it} - Input_{it} \dots \dots \dots 3.2$$

$Output_{it}$ = Total income from all products and services during period t

$Input_{it}$ = All expenses (Except labour, taxation, interest, dividends, depreciation) incurred by the firm during that time t period

2. Calculate Value Added Capital employed (*VACA*) for time *t* period

$$VACA_{it} = \frac{VA_{it}}{CA_{it}} \dots \dots \dots 3.3$$

But CA_{it} (Capital employed) in *t* period = Total Assets – Intangible assets of *t* period

Note; $VACA_{it}$ = the value created by one unit of capital employed

3. Calculate the Value-Added Human Capital Coefficient ($VAHC_{it}$)

$$VAHC_{it} = \frac{VA_{it}}{HC_{it}} \dots \dots \dots 3.4$$

HC_{it} = Investment in human capital during *t* period or total salaries and all wages including all incentives

Note: $VAHC_{it}$ = Value added by one unit of human capital during period *t*

4. Calculate the Value-Added Structural Capital coefficient ($STVA_{it}$)

$$STVA_{it} = \frac{SC_{it}}{VA_{it}} \dots \dots \dots 3.5$$

$$SC_{it} = VA_{it} - HC_{it} \dots \dots \dots 3.6$$

Note: $STVA_{it}$ = The proportion of total value added accounted by the structural capital.

5. Calculate the Value-Added Intellectual Capital coefficient ($VAIC_{it}$)

$$VAIC_{it} = VAHC_{it} + VACA_{it} + STVA_{it} \dots \dots \dots 3.7$$

$VAIC_{it}$ = Indicates corporate value creation efficiency on firm resources

The VAIC approach was used in this study because it makes measuring IC and the efficiency of its various components easier. This enables accurate supervision and

intervention in the most productive sectors of the organization. Because the data utilized for the essential computations are generated directly from the financial statements, VAIC is considered an objective method. This allows organizations to be compared to one another. Furthermore, the data sources used, particularly the financial statements, are trustworthy and verifiable (Svanadze & Kowalewska, 2015). It's a transparent strategy that's basic and straightforward to use. Despite several drawbacks, VAIC can be utilized to perform statistical analysis. This method can be used in business practice to report intellectual capital synthetically, in research for intangible asset measurement, and examinations of the relationship between intellectual capital and company performance (Stahle *et al.*, 2011).

3.5.4 Financial Reporting Quality Measurement

The quality of financial reporting can be evaluated directly or indirectly. It can be directly measured by employing accruals models, value relevance models, specific elements in yearly reports, and operationalizing qualitative features (Beest, Braam & Boelens, 2009). Earnings management, financial restatements, and punctuality can all be used to measure it indirectly (Barth, Landsman & Lang, 2008; Cohen, Krishnamoorthy & Wright, 2004; Schipper & Vincent, 2013).

Financial Reporting Quality was examined in this study by using accruals quality as a proxy for financial reporting quality, which equals a change in current assets – change in cash – change in current liabilities + change in short-term debt – depreciation/scaled by average total assets (Ball, Kothari & Robin, 2000). The modified Jones model, as presented in, was utilized to determine the accruals quality in this investigation (Dechow, et al., 1995; Dechow & Dichev, 2002). Scholars such as Ball, Kothari, and Robin (2000), as well as Jerubet, Chepng'eno, and Tenai (2017) advocated for the use

of accruals quality as a proxy for measuring financial reporting quality. The key advantage of this approach is that it measures earnings management using accruals, which are produced using data from the financial statement (Beest *et al.*, 2009). Large (small) value of residual value corresponds to lower (higher) financial reporting and lower (higher) financial reporting.

3.5.5 Control Variables

Previous research (e.g. Muth & Donaldson, 1998; Elsayed, 2007; Topak, 2011; Al-Matari *et al.*, 2012; Lehn *et al.*, 2009) used the natural logarithm of total assets to calculate the business size (Log TA). For firm age (Log FA), prior studies measured firm age as the logarithm of the number of years the firm has been in operation since inception (Yasuda, 2005; Singla, & George, 2013)

3.6 Data Collection Instruments

There are two types of data sources: primary and secondary (Olaogun, 2010). The secondary data gathering strategy was used for this investigation. Secondary data, according to Kothari (2014) is data that is already available or has been collected and analyzed by someone else, whereas Polit and Beck (2003) define it as the use of data collected during a previous investigation to test new theories or investigate new connections. Data from a panel was used in this investigation. The data for all of the research variables came from public year-in-reviews as well as financial statements of the companies listed in The Securities Exchange Markets in East Africa from 2012 to 2020. Notes to the accounts, the income statement, and the statements of financial position are the financial statements from which the data was derived. A document report guide was used to guide the data collection.

3.7 Data Collection Procedures

Burns and Grove (2003) define data collection as the accurate, efficient collection of knowledge that is significant to the research sub-topics. In order to arrive at the specified goals of this research, the information used was limited to data from the Stock Exchange Markets in East Africa. The researcher went to the websites of the companies in question and downloaded their audited financial statements, from which the required figures were extracted and processed for further study. To verify data collection accuracy, the information acquired from the mentioned businesses' audited financial statements was compared to the values in the Securities Exchange Markets in East Africa handbooks. As a result, only secondary data from sampling quoted business financial statements from 2012 to 2019 was used in the study (8 years period).

3.8 Data Analysis

Management of quantitative data involved processing of the data through coding, entering the data into the computer using the STATA and SPSS, this is because STATA has specific commands for panel and times series data. SPSS has a process macro built for moderation and mediation effects (Hayes, 2013). Results were presented by summarising them using frequency tables, graphs, and tables. Being interval in nature, the data was analysed using descriptive statistics, correlation analysis, and panel multiple regression analysis. The Hausman test was also performed to determine whether to select the random effect or fixed effect model

3.9 Test for Multivariate Assumptions

The diagnostic tests involved tests of normality, homoscedasticity, autocorrelation, and multicollinearity.

3.9.1 Normality Test

Data is appropriate for correlation and regression analysis if it attains linearity on the scatter plot graph and normality of the histogram (Ernst & Albers, 2017). Normality of data was assessed using the skewness, kurtosis, histogram normality curve and a scatter graph for the data on the dependent and independent variables. Skewness is a measure of symmetry. A data set, otherwise referred as a distribution is said to be symmetric if it appears similar to the right as well as left of the focal point; it could either be negative or positive. Kurtosis is a variable that represents the form of the probability distribution of a probability distribution; it may be either high or low. The aim of normality testing is to determine whether the score distribution on the parameters is regular, and if it isn't, the results might be inaccurate. If the values of both Skewness and Kurtosis are close to 0, the distribution is natural. (Jayaram & Baker, 2008). Analysing linearity and normality of the data confirms whether the data is fit for inferential analyses, namely correlation and regression. In addition, the study performed the Jarque-Bera for normality. Additionally, skewness and kurtosis were used as proposed by Jarque and Bera (1987) for the omnibus test. Improved Jarque-Bera tests have been discussed by many authors. The Jarque-Bera statistic follows the chi-squares distribution with two degrees of freedom. Under the null hypothesis of normality, the expected value of the statistic is two. The hypothesis tested was;

H₀: Distribution is normal.

H₁: Distribution is not normal.

Decision criteria; Reject the *H₀* if the P-values are less than the level of significance.

3.9.2 Homoscedasticity Assessment

According to Ernst and Albers (2017), homoscedasticity is the impartiality of variance which is an analysis whose purpose is to determine whether the variance of the errors is standard for any set of values of the covariate. The premise of homoscedasticity makes it possible to ascertain how the values of the data are distributed out among the variables in research. If there is no realisation of the premise, the data is dismissed as not fit to carry out a test of differences, for instance, regression. Meyers, Gamst & Guarino, (2012) contend that the premise of homoscedasticity implies that there is a need for equal degrees of variance between measured variable across a group of covariates that can classify as either continuous or categorical. A breach of homoscedasticity assumption in a multivariate study is best understood as heteroscedasticity, it can further result in an over appraisal of the link that exists between predictor and outcome variables consequently significantly influencing undermining homoscedasticity assumption in a multivariate study can be referred to as heteroscedasticity, and it can result in an overvaluation of the link that lies between control and dependent variables, therefore considerably or crucially impacting essential discernments (Nimon, 2012). Heteroscedasticity according to Greenland *et al.*, (2016) takes place when the F-statistic p-value is not significant ($p > 0.05$) Therefore, the results of F-statistics must be significant critical values below 0.05 in the different regression models. Homogeneity tests the assumption that:

H₀: The data is not homogeneous.

H₁: The data is homogeneous

Decision criteria; Reject the *H₀* if the P-values are less than the level of significance

3.9.3 Testing for Autocorrelation

The Wooldridge test for autocorrelation was used to evaluate the assumption of observational independence (autocorrelation) (Fox, 2016). This is an issue that reduces estimator efficiency by distorting standard errors, which affects the test statistic, resulting in erroneous significance tests and conclusions (Gujarati, 2003). The presence of serial correlation is shown by a p value less than the 5% level of significance (Wooldridge, 2002).

3.9.4 Multicollinearity

Multicollinearity refers to a perfect or exact linear relationship among all or some of the explanatory variables in a regression model that is unacceptably high correlation making it very difficult to determine the individual contribution of independent variables because their effects run on the dependent variable (Schofield, 2015). The existence of multicollinearity among exogenous variables has the probability of impacting the measures of regression coefficients as well as the statistical significance tests. Particularly, multicollinearity causes a rise in standard errors of the coefficients, which consequently results in the reduction of the predictive influence of the covariates. This based on Won, Wan, and Sharif (2017) can be attributed to the fact that the variables neutralise each other. Before regressing independent variables on the dependent variable, the collinearity of the independent variables was examined by applying the collinearity diagnostics tools of tolerance limit, variance inflation factor, and the correlation matrix of the exogenous variables (Schofield, 2015). A threshold of 10 will be applied, where a VIF bigger than 10 indicates that there is a multicollinearity problem (Gujarati, 2003).

3.9.5 Panel Stationarity Test

To estimate variables that are observed across time, stationarity is required. Unit root tests are used to verify stationarity. The data series is said to be stationary if its mean and variance remain constant throughout time, and the covariance constant between the two timelines is only dependent on the latencies or otherwise lags between the two intervals (Gujarati & Porter, 2010). Adopting a unit root test for panel data can significantly improve the test's power (Levin *et al.*, 2002). Because regressing panel series variables that are not stationary leads to meaningless interpretation based on regression findings, it was important to test for unit root. If the series is nonstationary, it is differentiated until it is integrated. The panel unit root test is performed on each individual series before starting regression analysis. To verify for consistency and robustness, Judge *et al.* (1985) propose using a variety of panel unit root tests. As a result, the panel unit root tests listed below were estimated.

3.9.6 Levin-Lin-Chu Panel Unit Root Test

The first test was Levin-Lin-Chu panel data unit root test and was performed on the

following model.
$$\hat{\rho}_{Y_{it}}^2 = \frac{1}{T-1} \sum_{t=1}^T \Delta Y_{it}^2 + 2 \sum_{L=1}^{\bar{K}} \omega \bar{K} L \left[\frac{1}{T-1} \sum_{t=2+L}^T \Delta Y_{it} \Delta Y_{it-L} \right] \dots\dots 3.8$$

Where ε_{it} a white noise process is $\rho = 1$ indicates a unit root $0 < \rho < 1$ implies stationarity (Levin *et al.*, 2002; Phillips & Moon 2000). Levin *et al.*, (2002) propose a panel unit root test for the null hypothesis of unit root against a homogeneous stationary hypothesis

3.9.7 Im-Pesaran-Shin Unit Root Test

Im-Pesaran-Shin, (IPS) is an extension of the Dickey-Fuller (DF) test. The classic DF test for pure time series is usually presented as;

$$\Delta Y_{it} = \phi_i Y_{i,t-1} + Z'_{it} \gamma_i + \varepsilon_{it} \dots\dots\dots 3.9$$

Where ε_t is a white noise $\rho = 1$ indicate a unit root $0 < \rho < 1$ implies stationarity (Im, Pesaran & Shin, 2003). The null hypothesis for this is that all panels contain unit root.

3.10 Selection of the Model

When it's suspected that the result variable is influenced by unobservable explanatory variables that are correlated with the observed explanatory variables, panel data regression models come in handy (Schmidheiny, 2014). Panel data estimators enable for consistent estimation of the effect of observable explanatory variables if such omitted variables are constant through time. As a result, the following equation is used to create the estimating model:

The model considers a multiple linear regression for individual $i = 1 \dots N$ which is observed at several time periods $i = 1 \dots T$

$$y_{it} = \alpha + x'_{it} \beta + c_i + u_{it} \dots\dots\dots 3.11$$

Where y_{it} is the dependent variable, x'_{it} is a K -dimensional row vector of time – varying explanatory variables, α is the intercept, β is a K -dimensional column vector of parameters, c_i is an individual-specific effect, and u_{it} is an idiosyncratic error term.

It is assumed that each individual i is observed in all time periods t .

3.10.1 The Random Effects and Fixed Effect Model

In the random effects model, the individual-specific effect is a random variable that is uncorrelated with the explanatory variables.

RE1: Unrelated effects

$$SE(c_i | X_i, z_i) = 0 \dots\dots\dots 3.12$$

RE1 posits that the individual-specific impact is a random variable unrelated to the explanatory variables of all previous, present, and future time periods for the same person. The individual-centered impact is a random variable in the fixed effects model that is allowed to have a correlation with the explanatory factors.

3.10.2 Hausman Test

The Hausman test is used to determine if the effects are fixed or random (Green, 2008). It determines whether the regressor is associated with unique mistakes. The random effect is acceptable versus the alternative that a fixed effect is appropriate, according to the Hausman test null hypothesis. The random effect is utilized if the Hausman test probability is greater than a 5% significance level, else the fixed effect is employed.

The preceding estimators are calculated to perform the Hausman test.

$\hat{\beta}_{RE} - \hat{\beta}_{FE}$ and its covariance. The covariance of an efficient estimator with its difference from an inefficient estimator should be zero. Under the null hypothesis, the following is tested

$W = (\beta_{RE} - \beta_{FE})' \hat{\Sigma}^{-1} (\beta_{RE} - \beta_{FE})$ follows a chi-square distribution with k degrees of freedom. If W is significant, random effects estimator should be used.

3.11 Model Specification

Before inferential testing of mediation and moderation, data will first be log transformed because of the diversity in the measurement scales. The effects of board structure on firm value was estimated using panel analysis (fixed or random effect) methods as shown below.

$$FV_{it} = \beta_0 + \beta_1 FS_{it} + \beta_2 FA_{it} + \beta_3 BS_{it} + \beta_4 BD_{it} + \beta_5 BI_{it} + \beta_5 BE_{it} + \varepsilon_{it} \dots \dots \dots 3.13$$

Where;

FV - is the measure of firm value

β_0 is changes in firm value that independent variables present in the model cannot explain. Noted that it is the constant in the equation.

FS Firm size

FA Firm age

BS Board size

BD Board diversity

BI Board independence

BE Board expertise

ε is error term

i firms

t time

3.11.1 Model for a moderation effect

The study's conceptual and statistical diagrams are depicted in figure 2 and 3 below for moderation analysis according to model 1 Hayes (2013).

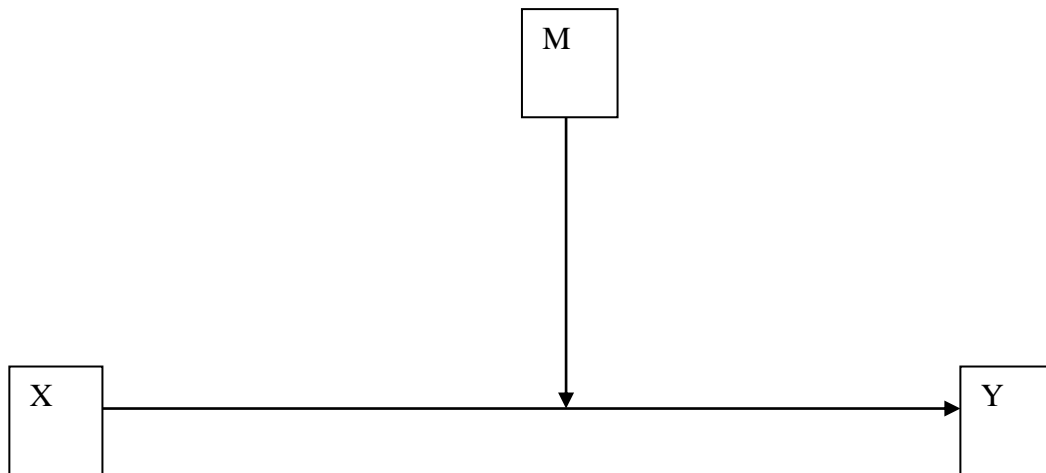


Figure 2: Conceptual diagram for moderation analysis

Source; Model 1 by Hayes, (2013)

Where;

X; Independent variable (board structure)

M; Moderating variable (financial reporting quality)

Y; Dependent variable (firm value)

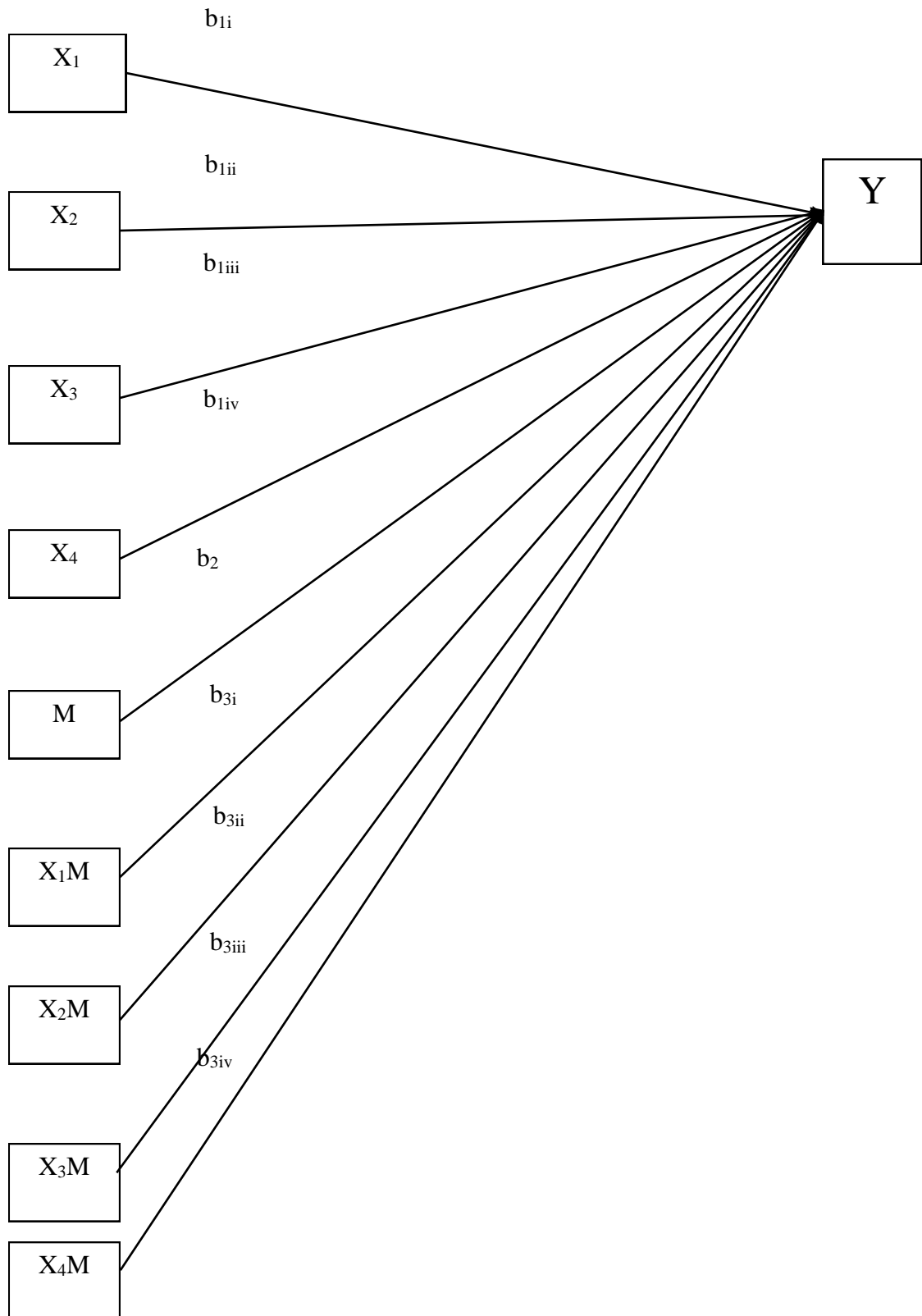


Figure 3: Statistical diagram for moderation analysis

Source; Model 1 by Hayes (2013)

Where;

- X_1 = Board Size
 X_2 = Board Diversity
 X_3 = Board Independence
 X_4 = Board Expertise
 M = Financial Reporting Quality

Y ; Dependent variable (Firm Value)

$b_{1i}, b_{1ii}, b_{1iii}, b_{1iv}, b_2, b_{3i}, b_{3ii}, b_{3iii},$ and b_{3iv} ; Paths of the model.

Conditional indirect effect of X on $Y = (b_{1i} + b_{1ii} + b_{1iii} + b_{1iv}) + (b_{3i} + b_{3ii} + b_{3iii} + b_{3iv}) M$

The hierarchical multiple regression model was used in this investigation (Baron and Kenny 1986). A series of hierarchical linear regression analyses, as indicated in the equation below, were used to evaluate the hypothesis.

$$FV_{it} = \beta_{0it} + C + \beta_{1it}BS_{1it} + \beta_{2it}BD_{2it} + \beta_{3it}BI_{3it} + \beta_{4it}BE_{4it} + \varepsilon \dots 3.14$$

$$FV_{it} = \beta_{0it} + C + \beta_{1it}BS_{1it} + \beta_{2it}BD_{2it} + \beta_{3it}BI_{3it} + \beta_{4it}BE_{4it} + \beta_{5it}FRQ_{it} + \varepsilon \dots 3.15$$

$$FV_{it} = \beta_{0it} + C + \beta_{1it}BS_{1it} + \beta_{2it}BD_{2it} + \beta_{3it}BI_{3it} + \beta_{4it}BE_{4it} + \beta_{5it}FRQ_{it} + \beta_{5ait}BS_{1it} * FRQ_{it} + \varepsilon \dots 3.16$$

$$FV_{it} = \beta_{0it} + C + \beta_{1it}BS_{1it} + \beta_{2it}BD_{2it} + \beta_{3it}BI_{3it} + \beta_{4it}BE_{4it} + \beta_{5it}FRQ_{it} + \beta_{5ait}BS_{1it} * FRQ_{it} + \beta_{6bit}BD_{2it} * FRQ_{it} + \varepsilon \dots 3.17$$

$$FV_{it} = \beta_{0it} + C + \beta_{1it}BS_{1it} + \beta_{2it}BD_{2it} + \beta_{3it}BI_{3it} + \beta_{4it}BE_{4it} + \beta_{5it}FRQ_{it} + \beta_{5ait}BS_{1it} * FRQ_{it} + \beta_{6bit}BD_{2it} * FRQ_{it} + \beta_{7Bit}BI_{3it} * FRQ_{it} + \varepsilon \dots 3.18$$

$$FV_{it} = \beta_{0it} + C + \beta_{1it}BS_{1it} + \beta_{2it}BD_{2it} + \beta_{3it}BI_{3it} + \beta_{4it}BE_{4it} + \beta_{5it}FRQ_{it} + \beta_{5ait}BS_{1it} * FRQ_{it} + \beta_{6bit}BD_{2it} * FRQ_{it} + \beta_{7Bit}BI_{3it} * FRQ_{it} + \beta_{8dit}BE_{4it} * FRQ_{it} + \varepsilon \dots 3.19$$

Where;

FV - is the measure of firm value

β_0 is changes in firm value that independent variables present in the model cannot explain. Note that it is the constant in the equation.

C = control Variables

$FSIZ$ = Firm Size

FA =Firm age

BS = Board Size

BD = Board Diversity

BI = Board Independence

BE = Board Expertise

FRQ = Financial Reporting Quality

ϵ is error term

i firms

t time

3.11.2 Testing for Panel Mediation

Macknon (2012) procedure was followed to test for mediation hypotheses by use of Hayes 2013/2018 model

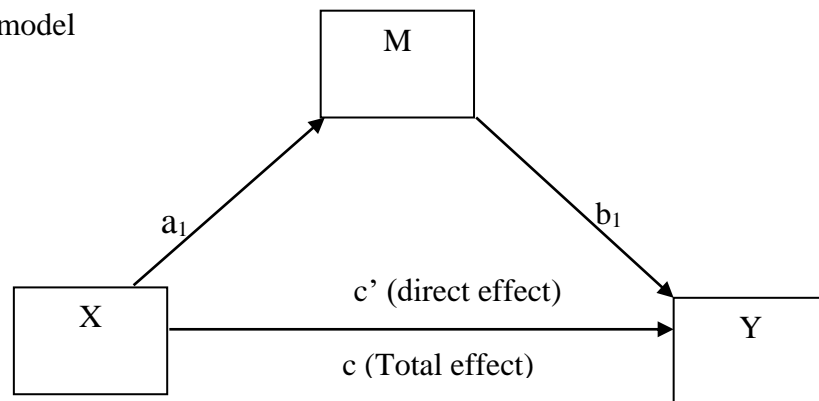


Figure 4: Hayes model 4

X- Board structure, M- Intellectual capital, Y- Firm value

The procedure involves the following.

- i. X must have a relationship with M

$$M_{it} = a_0 + a_1 X_{it} + \epsilon_{it} \dots \dots \dots 3.17$$

- ii. M must have a relationship with Y

$$Y_{it} = b_0 + b_1 M_{it} + \epsilon_{it} \dots \dots \dots 3.18$$

- iii. $Y_{it} = C + b_1 M_{it} + c' X_{it} + \epsilon_{it} \dots \dots \dots 3.19$

- iv. Mediation effect.

$$a_1 b_1 \text{ or } c \text{ (total effect)} - c' \text{ (direct effect)}$$

- v. $c \text{ (total effect)} = (a_1 b_1) + c' \text{ (direct effect)} \dots \dots \dots 3.20$

From the above model, Intellectual capital was hypothesized to mediate the relationship between board structure and firm value if the effect of board structure on firm value, after controlling for intellectual capital is zero.

3.11.3 Model for Moderated Mediation

Hayes Model 15 procedure was followed to test for moderated mediation hypotheses as shown below.

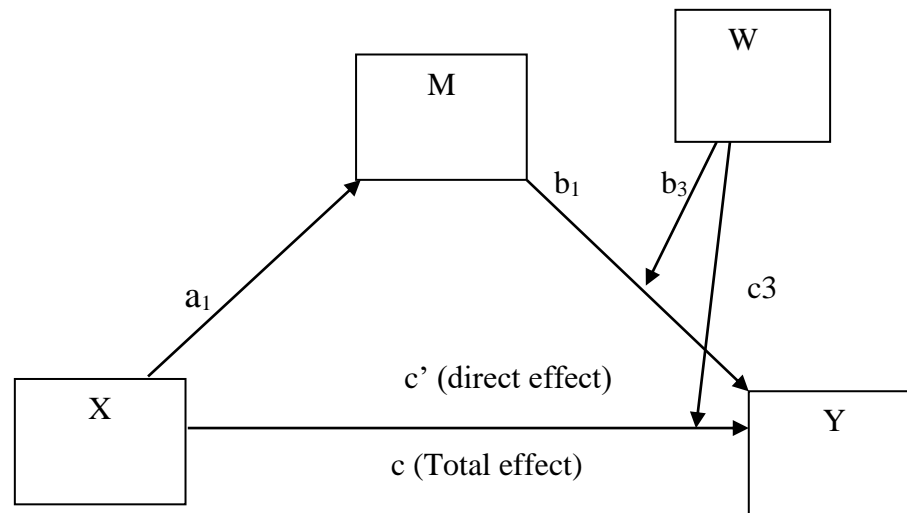


Figure 5: Hayes Model 15

3.12 Ethical Considerations

The researcher throughout the study remained ethical by respecting the rights of others and maintaining honesty. The researcher maintained objectivity by ensuring that data presentation, analysis, and interpretation were all based solely on the information gathered. For ethical approval, the project is given to Moi University's School of Graduate Studies. Following these approvals, the researcher asked for permission to collect and analyze data from the National Commission for Science, Technology, and Innovation (NACOSTI). The findings were presented to relevant stakeholders at the conclusion of the study through conferences and publishing in peer-reviewed journals. The researcher took on the obligation of just collecting and analyzing data that was essential to complete/achieve the study's objectives. Finally, this study had no conflicts of interest.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.0 Overview

The chapter presents the results and discussion of findings. It presents descriptive and inferential results about the study findings. It also entails the results of the diagnostic tests.

4.1 Descriptive Statistics

The first part of the analysis is to describe the overall characteristics of the study variables. Understanding the study population is important in the sense that it helps one to know the kind of data the research is studying, and it gives a blueprint understanding before making some inference about the data. The study sought to find out the effect of board structure on the firm value of firms listed on the Securities Exchange Markets in East Africa from 2012 to 2020 period. The following are the descriptive analysis of the data.

4.1.1 Descriptive Statistics of Board Size along Countries

Table 4.1 presents the descriptive statistics of board size along the sampled countries. The firms were selected based on the availability of the data. From the table below, 384 firms' year of observations from the NSE had a board size of 9 members while 40 firms' year of observations from USE had a board size of 8 members. Further findings indicated that the sampled firms in the RSE had a board size of 6 members while those in the DSE had a board size of 8 members. Notably, there is a statistically significant difference in board size for the firms listed in NSE, USE, RSE, and DSE ($F= 12.37, \rho=0.00<0.05$). Also, Bartlett's Test was Significant.

Table 4.1: Descriptive Statistics of Board Size along Countries

	N	Max	Min	Mean	p50	SD	Kurtosis	Skewness
NSE, Kenya	384	23	3	9.98	10.00	3.28	3.95	0.73
USE, Uganda	40	13	5	8.96	9.00	2.13	1.93	-0.11
RSE, Rwanda	16	10	5	6.81	7.00	1.64	2.03	0.40
DSE, Tanzania	96	14	5	8.40	9.00	2.12	2.32	0.20
ANOVA								
F	12.37							
Prob > F	0.000							
Bartlett's test for equal variances: $\chi^2(3) = 39.4860$ Prob> $\chi^2 = 0.000$								

Source; Field data (2020)

4.1.2 Descriptive Statistics of Board Diversity along Countries

Nguyen and Faff (2007) associated board diversity with high firm value. As such the study sought to ascertain the board diversity for the stock exchanges in the sampled countries. Based on the findings in Table 4.2, board diversity at the RSE in Rwanda was at 23% while in Uganda at 20% and Kenya 18%. The lowest (14%) board diversity was evidenced among firms listed at the DSE in Tanzania. Moreover, there was a statistically significant difference in board diversity across the firms in the sampled stock exchanges (($F = 3.99$, $\rho = 0.0079 < 0.05$). Also, Bartlett's Test was significant, $\chi^2(3) = 18.2129$, p-value < 0.001.

Table 4.2: Descriptive Statistics of Board Diversity along Countries

	N	Min	Max	mean	p50	sd	Kurtosis	Skewness
NSE, Kenya	384	0.00	0.88	0.18	0.17	0.15	5.14	1.06
USE, Uganda	40	0.00	0.40	0.20	0.20	0.12	2.12	-0.26
RSE, Rwanda	16	0.14	0.38	0.23	0.20	0.07	2.30	0.62
DSE, Tanzania	96	0.00	0.38	0.14	0.17	0.12	1.65	0.07
ANOVA								
F	3.99							
Prob > F	0.0079							
Bartlett's test for equal variances: $\chi^2(3) = 18.2129$ Prob> $\chi^2 = 0.000$								

Source; Field Data (2020)

4.1.3 Descriptive Statistics of Board Independence along Countries

Independent directors play an instrumental role in ensuring that there is better monitoring of the management team and the protection of the shareholders' interest. It

is, therefore, necessary to ascertain the trends in board independence among the stock exchanges in Kenya, Uganda, Rwanda, and Tanzania. As indicated in Table 4.3, board independence ranged from 29% among firms in RSE to 78% for firms listed at the NSE. Evidently, there was a significant difference in the composition of independent directors for the firms listed at the stock exchanges ($F= 178.68$, $\rho=0.000<0.05$).

Table 4.3: Descriptive Statistics of Board Independence along Countries

	N	Min	Max	Mean	p50	sd	Kurtosis	Skewness
NSE, Kenya	384	0.00	1.00	0.78	0.83	0.16	8.40	-1.95
USE, Uganda	40	0.50	0.92	0.74	0.75	0.11	1.94	-0.01
RSE, Rwanda	16	0.00	0.57	0.29	0.31	0.17	2.38	-0.52
DSE, Tanzania	96	0.00	0.90	0.37	0.36	0.21	3.22	0.25
ANOVA								
F	178.68							
Prob > F	0.000							
Bartlett's test for equal variances: $\chi^2(3) = 20.5639$ Prob> $\chi^2 = 0.000$								

Source; Field data (2020)

4.1.4 Descriptive Statistics of Board expertise along Countries

The study sought to establish the board expertise for the firms listed in the NSE, USE, RSE, and DSE stock exchanges. The findings are as presented in Table 4.4. Based on the results, board expertise ranges from 34 years for firms listed in RSE to 64 years for firm listed in NSE. Firms listed at the USE had a board expertise of 46 years while those at the DSE 48 years. Besides, there was a significant difference in the board expertise for the firms listed at the stock exchanges ($F= 30.16$, $\rho=0.000<0.05$). Also, Bartlett's Test was significant, $\chi^2(3) = 21.2662$, p-value < 0.000.

Table 4.4: Descriptive Statistics of Board expertise along Countries

	N	Min	Max	Mean	p50	SD	Kurtosis	Skewness
NSE, Kenya	384	0.01	1.00	0.64	0.67	0.21	3.23	-0.78
USE, Uganda	40	0.14	0.80	0.46	0.41	0.15	2.63	0.30
RSE, Rwanda	16	0.00	0.88	0.34	0.31	0.21	3.65	0.81
DSE, Tanzania	96	0.18	0.88	0.48	0.48	0.15	2.71	0.43
ANOVA								
F	30.16							
Prob > F	0.000							

Bartlett's test for equal variances: $\chi^2(3) = 21.2662$ Prob> $\chi^2 = 0.000$

Source; Field Data (2020)

4.1.5 Descriptive Statistics of Intellectual Capital along Countries

Intellectual capital is a collection of non-financial, non-physical resources that gives a company a competitive advantage (Chahal & Bakshi, 2016). As such, the study sought to ascertain the intellectual capital for the listed firms in the stock exchanges in Kenya, Uganda, Rwanda, and Tanzania. As evidenced in Table 4.5, intellectual capital ranges from a mean of 35.84 for listed firms in Tanzania to 65.22 in Kenya. Further, there was a significant difference in the intellectual capital for the firms listed at the stock exchanges ($F= 3.44$, $\rho=0.0167<0.05$). As well, Bartlett's Test was significant, $\chi^2(3) = 1.6e+03$, p-value < 0.001

Table 4.5: Descriptive Statistics of intellectual capital along Countries

	N	Min	Max	Mean	p50	sd	Kurtosis	Skewness
NSE, Kenya	384	-89.7	158.39	8.48	4.94	16.28	28.60	2.71
USE, Uganda	40	-1219.0	1612.67	65.22	8.33	458.66	7.24	1.12
RSE, Rwanda	16	3.56	284.70	54.68	5.02	93.58	3.61	1.47
DSE, Tanzania	96	-9.86	464.92	35.84	7.65	80.28	15.64	3.54
ANOVA								
F	3.44							
Prob > F	0.0167							
Bartlett's test for equal variances: $\chi^2(3) = 1.6e+03$ Prob> $\chi^2 = 0.000$								

Source; field data (2020)

4.1.6 Descriptive Statistics of Financial Reporting quality along Countries

The financial reporting quality for the sampled stock exchanges in Kenya, Uganda, Rwanda, and Tanzania are highlighted in Table 4.6. Based on the findings, the financial reporting quality was at a mean of 9.53 at the NSE, 2.29 at the USE, 0.87 at RSE, and 1.08 at the DSE. Further, there was no significant difference in the financial reporting quality for the firms listed at the stock exchanges ($F= 0.59$, $\rho=0.6198>0.05$). However, Bartlett's Test was significant, $\chi^2(3) = 651.7236$, $p\text{-value} < 0.001$.

Table 4.6: Descriptive Statistics of Financial Reporting quality along Countries

	N	Min	Max	Mean	p50	sd	Kurtosis	Skewness
NSE, Kenya	384	-1002.1	680.86	9.53	0.99	75.32	114.54	-2.69
USE, Uganda	40	-0.16	66.59	2.29	0.43	10.46	37.52	6.02
RSE, Rwanda	16	-3.41	8.63	0.87	0.32	2.50	7.42	1.87
DSE, Tanzania	96	-3.48	21.31	1.08	0.35	3.62	22.14	4.18
ANOVA								
F	0.59							
Prob > F	0.6198							
Bartlett's test for equal variances: $\chi^2(3) = 651.7236$ Prob> $\chi^2 = 0.000$								

Source; Field Data (2020)

4.1.7 Descriptive Statistics of Firm Value along Countries

In the study, firm value was proxied by the approximation of Q-Ratio. Findings in Table 4.7 revealed that the firm value for the firms listed at the stock exchanges ranged from 0.08 in USE to 0.64 in DSE. Notably, firm value was highest for firms listed at DSE while lowest at USE, Uganda. Additionally, there was a statistically significant difference in firm value across the firms in the sampled stock exchanges ($F= 12.9$, $\rho=0.00<0.05$). Besides, Bartlett's Test was significant, $\chi^2(3) = 458.8981$, $p\text{-value} < 0.001$.

Table 4.7: Descriptive Statistics of Firm Value along Countries

	N	Min	Max	Mean	P50	SD	Kurtosis	Skewness
NSE, Kenya	384	0.01	0.99	0.52	0.51	0.27	1.71	-0.09
USE, Uganda	40	0.01	0.31	0.08	0.05	0.07	5.04	1.53
RSE, Rwanda	16	0.14	0.95	0.56	0.62	0.21	2.34	-0.21
DSE, Tanzania	96	0.02	9.74	0.64	0.52	1.01	68.85	7.69
ANOVA								
F	12.9							
Prob > F	0.00							
Bartlett's test for equal variances: $\chi^2(3) = 485.8981$ Prob> $\chi^2 = 0.000$								

Source; Field data (2020)

4.1.8 Descriptive Statistics of Variables along the Years

Table 4.8 illustrates the descriptive statistics of variables from 2012 to 2020 with emphasis on the sampled firms. As evident in the Table, between 2012 -2020, the board of the listed firms had an average of nine members. Further findings indicate that board diversity was lowest (15%) in 2012 while highest in 2018 and 2019. There was, however, no statistically significant difference in board diversity over the years ($F= 0.91$, $\rho=0.5>0.05$). Moreover, board independence ranged between 66% - 70%. Similarly, there was no statistically significant difference in board independence between 2012 and 2019 ($F= 0.30$, $\rho=0.95>0.05$).

In addition, board expertise was at its lowest in 2015 (mean = 0.55) while highest in 2019 (mean = 0.62). Further, the VAIC score ranged from, -6.49 to 37.21. However, there was no significant difference in the VAIC score between 2012 and 2020 ($F= 0.90$, $\rho=0.51>0.05$). Also, financial reporting quality ranged from -9.44 to 15.21 with no significant difference in the financial reporting quality between 2012 and 2020. Finally, there was no significant difference in the firm value as measured by Q-ratio between 2012 and 2020 ($F= 0.87$, $\rho=0.53>0.05$).

Table 4.8: Descriptive Statistics of Variables along the Years

Year	descriptive	BS	BD	BI	BE	IC(vaic)	FRQ	FV
2012	Mean	9.43	0.15	0.69	0.57	9.95	8.53	0.64
	SD	2.90	0.14	0.25	0.20	91.83	35.51	1.17
2013	Mean	9.43	0.17	0.67	0.60	7.11	4.78	0.54
	SD	3.15	0.13	0.27	0.23	82.81	14.14	0.32
2014	Mean	9.54	0.17	0.66	0.59	32.88	13.30	0.52
	SD	3.26	0.14	0.25	0.21	140.95	76.61	0.31
2015	Mean	9.70	0.16	0.69	0.55	26.82	15.21	0.47
	SD	3.28	0.12	0.24	0.23	119.90	83.64	0.31
2016	Mean	9.52	0.19	0.70	0.59	37.21	6.74	0.48
	SD	3.13	0.16	0.23	0.22	199.93	15.76	0.29
2017	Mean	9.55	0.20	0.69	0.58	30.57	10.06	0.48
	SD	3.00	0.15	0.24	0.23	151.44	43.30	0.28
2018	Mean	9.46	0.19	0.71	0.58	-6.49	-9.44	0.47
	SD	3.11	0.14	0.22	0.23	153.71	123.69	0.29
2019	Mean	9.55	0.19	0.70	0.62	13.87	8.56	0.49
	SD	2.97	0.14	0.22	0.19	45.49	31.06	0.37
	F	0.05	0.91	0.30	0.52	0.90	0.93	0.87
	Prob > F	1.00	0.50	0.95	0.82	0.51	0.48	0.53

Source; Field data (2020)

Key: *BS=board size, BD=board diversity, BI=Board independence, BE=board expertise, IC=intellectual capital, FRQ=financial reporting quality, FV=firm value*

4.1.9 Summary Statistics

One of the most useful aspects of descriptive statistics is that it allows you to see how data is distributed. Summarizing the data is one technique to observe this distribution. Summary statistics are typically used to gain a better understanding of a set of data observations. Outliers can occur in data, and summary statistics can be used to identify and remove any outliers. Summary statistics are also useful since they describe measures of dispersion and central tendency in observations, such as mean, variances, standard deviations, and minimum and maximum values (Vong *et al.*, 2009).

The data in Table 4.9 compares board structure features, firm value, intellectual and financial reporting quality of the companies listed on the East African Stock

Exchange Markets. Tobin's Q is a ratio of the total sum of MVE and debt divided by the total assets of a company, where MVE is the product of the company's share price and the number of common stock shares, and debt represents the company's liabilities.

Table 4.9: Summary Statistics

Stats	N	Min	Max	mean	p50	Sd	kurtosis	skewness
BS	536	3.00	23.00	9.52	9.00	3.08	4.31	0.83
BD	536	0.00	0.88	0.18	0.17	0.14	4.91	0.90
BI	536	0.00	1.00	0.69	0.75	0.24	3.62	-1.16
BE	536	0.00	1.00	0.59	0.60	0.22	2.52	-0.36
IC(Vaic)	536	-1219.09	1612.67	18.99	5.57	131.31	82.78	4.56
FRQ	536	-1002.06	680.86	7.22	0.59	63.92	157.56	-3.04
FV	536	0.01	9.74	0.51	0.47	0.50	210.92	11.60
FA	536	0.70	2.23	1.74	1.76	0.26	4.18	-0.86
FS	536	4.35	12.55	9.88	10.22	1.47	4.09	-1.10

Source; Field data (2020)

Based on findings in Table 4.9, firms listed on the Stock Exchange Markets in East Africa have an average firm value of 0.51. Board structure in this study was measured using board size, board diversity, board independence, and board expertise. According to Brown and Caylor (2004), board structure can be measured using several indicators, but this study chose the four mentioned above indicators since they are associated with the structure of the board of directors' characteristics. It is observed that the board size of the listed firms is of a maximum size of 23 members and an average of 10 members. The mean of 10 members is following the Company's Articles of Association, that the number of Directors (including the Chief Executive and excluding Alternates) shall not be less than seven (7) and not more than Eleven (11) in numbers. Also, in line with the financial institutions' act of 2004 which stipulates that the board should be composed of at least 5 members. According to Kumar, et al, (2012) there is no optimal size of the board, however, OECD (2019) recommends a size of not less than 6 directors.

The amount of females on the board is referred to as board diversity. Some publicly traded companies have no female directors, as evidenced by the presence of zero female directors. Firms listed on the East African Securities Exchange Markets can have a maximum of 9 females. The 69 percent ratio of non-executive directors to the total number of directors indicates that the board of directors of companies listed on the East African Securities Exchange Markets is likely to be independent. The number of board members with financial competence or experience implies that every firm has at least one member on the board with financial expertise, which is a good indicator for firms listed on the East African Securities Exchange Markets.

According to Pullic (2000), intellectual capital, which is a mediating variable in this study, assesses human, structural, and relation aggregated to value-added intellectual coefficient (VAIC), which includes the production of efficiency of the firms' resource. According to Chepng'eno and Tenai (2017), financial reporting quality is proxied by a change in current assets minus a change in cash minus a change in current liabilities plus short-term debt minus depreciation divided by the total assets of the organization.

4.2 Diagnostic Tests of the Data

Before running the model, the data sets were checked for the standard linear regression model assumptions. Brooks (2008) argues that in order to validly test the hypothesis and estimate the coefficient, five important assumptions must be met before using OLS estimation. The assumptions of the standard linear regression model, as well as associated diagnostic tests, are presented below.

4.2.1 Normality

The study used the Jarque-Bera test as suggested by Jarque and Bera (1987). Jarque-Bera (JB) statistics are often used to test the null hypothesis that the sample is

randomly selected from a population with a normal distribution (Park, 2002). The normality assumption states that prediction errors are distributed normally. The null hypothesis that the sample is drawn from a normally distributed population was tested using the Jarque-Berra statistics (Park, 2002). Jarque-Bera statistics have a two-degree-of-freedom asymptotic χ^2 distribution and were used to evaluate the null hypothesis that the data follows a regular distribution. If the residuals are usually distributed, the Jarque-Bea coefficient will be insignificant, and the p-value will be greater than 5%. (Brooks, 2008). The chi (2) value is 0.7129, which is greater than 0.05 according to Table 4.10, meaning that the null hypothesis cannot be rejected. The result is that there is no violation of the usual definition of error terms in the distribution as the residuals come to be regular. Likewise, the SK test shows the number of observations (which is 536) and the probability of Skewness which is 0.648 indicating that data is normally distributed (Skewness p-value > 0.05). Likewise, Pr (Kurtosis) shows that the data is normally distributed as well (kurtosis p-value > 0.05). Lastly, chi (2) is 0.609, higher than 0.05 and therefore the null hypothesis cannot be rejected.

Table 4.10: Jarque-Bera test for Normality

Skewness/Kurtosis tests for Normality						
Variable	Obs	Pr (Skewness)	Pr(Kurtosis)	Adj	chi2(2)	Prob>chi2
Myresiduals	536	0.648	0.3789		0.99	0.609
Jarque-Bera normality test: .6769 Chi (2) .7129						
Jarque-Bera test for Ho: normality:						

Source; Field Data (2020)

4.2.2 Heteroscedasticity

The variance of the mistakes must be constant under the heteroscedasticity condition. To test this hypothesis, the model is put through a white test (See: Table 4.11). The

model is not heteroscedastic, and the error variance is constant, because the p-value is not significant, i.e., 0.1570, which is bigger than 0.05. As a result, because the error variance is constant, the null hypothesis was not rejected.

Table 4.12: White's test for homoscedasticity

White's test for Ho: homoscedasticity			
against Ha: unrestricted heteroskedasticity			
chi2(14) = 19.22			
Prob > chi2 = 0.1568			
Cameron & Trivedi's decomposition of IM-test			
Source	chi2	df	P
Heteroskedasticity	19.22	14	0.157
Skewness	18.76	4	0.001
Kurtosis	7.03	1	0.008
Total	45	19	0.001

Source; Field Data (2020)

4.2.3 Unit root test

In 2004, Gujarati stated that time series is immobile if its variance and mean remains the same over some time. Hence the series is likely to deviate around its mean due to regulated variance. The series can be of a deterministic nature (displaying a trend) or a stochastic nature (randomly determined). According to Studenmund (2011), a random walk model or a nonstationary time-series frequently change the mean and variance over time and has a simple correlation coefficient between its lagged variable and the X-variable which is affected by aspects other than merely the gap between the two. Time related and seasonal shocks in a one-time period may greatly influence consequent periods in the area of finance and economics. This study applies Levin-Lin-Chu unit-root test, Harris-Tzavalis unit-root test, and Im-Pesaran-Shin unit-root. The following hypothesis was considered for this test.

Levin-Lin-Chu unit-root test

Ho: Panels contain unit roots

Ha: Panels are stationary

Harris-Tzavalis unit-root test

Ho: Panels contain unit roots

Ha: Panels are stationary

Im-Pesaran-Shin unit-root test --

Ho: All panels contain unit roots

Ha: Some panels are stationary

The p-values in table 4.12 show that the null hypothesis can be rejected for all of the study's variables at all conventional significance levels, indicating that there is no unit root in the data. This means that the data's means and variances aren't affected by time, and so OLS can produce relevant results (Gujarati, 2012).

The Levin-Lin-Chu Unit Root Test is a standard unit root test that employs an inverse normal z-statistic from Augmented Dickey Fuller with six lags. The presence of a unit root in the series was used to test the null hypothesis of stationarity (Munir & 2015). The Levin Lin Chu test results are shown in Table 4.12. Firm value (FIRV), board size (BSIZE), board independence (BIND), board expertise (BEXP), financial reporting quality (FREP), and value-added intellectual capital (VAIC) are all integrated of order zero, as denoted by I. (0). A significant p-value at a 5% level of

significance (p-value-0.0000 0.05) demonstrates this. The null hypothesis of unit root is rejected in favor of the alternative hypothesis, and it was concluded that the data is stationary at levels since the probability values are less than 0.05.

Table 4.12 demonstrates that all variables were integrated to order zero (I (0)) in the output. Significant p-values at the 5% level of significance suggest this. FIRV (p-value-0.0000 0.05), BSIZ (p-value-0.0000 0.05), BDIV (p-value-0.0025 0.05), BIND (p-value-0.0308 0.05), BEXP (p-value-0.0000 0.05), FREP (p-value-0.0000 0.05), VAIC (p-value-0.0000 0.05), FIRV (p-value-0.0000 0.05) and VAIC (p-value-0.0000 0.05). All variables on the East African Stock Exchange Markets were stationary after the first difference (all p-values were 0.0000 0.05) at the 5% level of significance, and are denoted as I (1) in the remarks, indicating that the variables were integrated after the first difference and that they have a long-term relationship (Kapetanios, 2009).

Table 4.32: Unit Root Test

	Levin-Lin-Chu unit-root test		Harris-Tzavalis unit-root test		Im-Pesaran-Shin unit-root	
	Statistic	p-value	Rho	p-value	Z-t-tilde-bar	p-value
Zscore	-5.556	0.000	-0.308	0.000	-4.088	0.000
BS	-2.921	0.002	-0.143	0.000	-4.948	0.000
BD	-7.599	0.000	-0.296	0.000	-6.197	0.000
BI	5.134	0.000	-0.146	0.000	-5.428	0.000
BE	-4.961	0.000	-0.252	0.000	-5.094	0.000
IC (VAIC)	-4.154	0.000	-0.282	0.000	-6.533	0.000
FRQ	-3.046	0.001	0.454	0.000	-2.690	0.004
FA	-23.721	0.000	-5.3584	0.000	-14.313	0.000
FS	-2.347	0.000	-0.204	0.000	-7.226	0.000
FV	7.765	0.000	-0.204	0.000	-3.458	0.000

Source; Field Data (2020)

4.2.4 Autocorrelation

The error term in the linear regression requires that successive values of the error term should be sequentially independent (Mukras, 1993). Autocorrelation of the data

concerning a variable occurs when the error term occurring at one period crosses over into another period or simply the present value and its lagged values correlate them. It may also occur when the error term relating to any observation is influenced by the error term relating to any other observation.

The degree of similarity between a time series and a lagged version of itself over time intervals is represented by autocorrelation. The link between the current value of a variable and its previous values is measured by autocorrelation. There are numerous autocorrelation error tests, of which the Wooldridge test was chosen and used in this work in a well-defined econometric setting. When the model is subjected to a fixed-effect, the Wooldridge test is often the best option. The autocorrelation test is based on the following hypotheses:

H0: The errors are not autocorrelated.

H1: The errors are autocorrelated.

Table 4.13 shows that the test's p-value is greater than 5%, indicating that there is no autocorrelation of mistakes. Simulation results were used by Drukker (2003) and Maladjian and Khoury (2014) to show that the test has good size and power properties in appropriately sized samples.

Table 4.43: Wooldridge test for autocorrelation

Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
F(1, 24) = 0.477
Prob > F = 0.4966

Source: Field data (2020)

4.2.5 Multicollinearity

Multicollinearity occurs when two or more explanatory variables in a regression model have a high degree of correlation. It's a phenomenon in which independent variables have a high degree of correlation. When there is a high connection between these predictor variables in a multiple regression model, the regression coefficients are questioned. When attempting to determine the degree to which independent factors explain changes in the outcome variable, this leads to unexpected results (Creswell, 2014). According to Brooks (2008), correlation between explanatory variables will almost always be non-zero in any practical context, but will generally be benign in the sense that a small degree of association between explanatory variables will almost always occur but will not cause too much loss of precision. When the explanatory factors are significantly associated with one other, however, a problem arises. Multicollinearity is the term for this issue. As a result, determining multicollinearity is critical. This study considers correlation coefficients and Variance Inflation Factor (VIF) tests for multicollinearity, which is consistent with the literature (Cerbioni & Parbonetti 2007; Eng & Mak 2003; Haniffa & Cooke 2005; Haniffa & Cooke 2002; Ho & Wong 2001).

Multicollinearity causes increased standard errors in Beta evaluations, resulting in lower dependability and sometimes misleading conclusions. The multicollinearity test was used to see if there was a strong connection between one, and more of the study's variables and one or more of the other independent variables. The variance inflation factor (VIF) calculated the inflated variances due to linear dependence with other explanatory factors by measuring the correlation level between the predictor variables. VIFs of 10 or above (conservatively over 5) are thought to indicate extreme multi-collinearity (Gujarti & Porter, 2010). The VIF test yielded findings ranging

from 1.06 to 1.65 (Table 4.14). If the value of VIF is larger than 10, multicollinearity is a worry (Gujarti & Porter, 2010). As a result, from the standpoint of the VIF, there is no possible difficulty with this study. As a consequence of the diagnostic testing, it has been determined that there is no multicollinearity problem. The total number of variables is less than ten. As a result, the study findings do not suffer from multicollinearity issues when employing the model.

Table 4.54: VIF Test for Multicollinearity

Variable	VIF	SQRT-VIF	Tolerance	R-Squared
FA	1.22	1.10	0.8192	0.1808
FS	1.44	1.20	0.6966	0.3034
BD	1.06	1.03	0.9471	0.0529
BI	1.63	1.28	0.6130	0.3870
BE	1.32	1.15	0.7561	0.2439
BS	1.30	1.14	0.7683	0.2317
IC	1.51	1.23	0.6613	0.3387
FR	1.33	1.16	0.7492	0.2508
Mean VIF	1.35			
		Cond		
1	Eigenvalue	Index		
2	1.3855	2.1123		
3	0.7321	2.9060		
4	0.3089	4.4733		
5	0.2233	5.2621		
6	0.1351	6.7647		
7	0.0200	17.6018		
8	0.0087	26.6664		
9	0.0045	37.1614		
	Condition Number	37.1614		
Eigenvalues & Cond Index computed from scaled raw sscp (w/ intercept)				
Det(correlation matrix) 0.2726				

Source; Field data (2020)

4.3 Correlation Analysis

Correlation analysis is usually estimated to understand how variables are related to one another in terms of the direction and strength of their associations. Since this study controls for firm size and age, then partial correlation was chosen (Boon & Arumugam, 2006). In the description, partial correlation refers to a measure of direction as well as strength of a linear relationship that exists between two continuous variables while at the same time regulating the impact of one or many other independent variables (can also be referred to as ‘covariates’ or ‘control’ variables). Results in Table 4.15 are for the partial and semi partial correlation of the variables under study when the country is being controlled. Partial correlation shows the direction and strength of the association between firm value and the rest of the independent variables. The squared values for partial correlation (partial corr. ²) signifies the degree of association.

From the findings in Table 4.15, the relationship between board diversity and firm value was found to be negative and significant, $r = -0.188$, $p\text{-value} < 0.05$. Furthermore, the relationship between board independence and firm value was found to be positive and significant, $r = 0.648$, $p\text{-value} < 0.05$. This is in agreement with other scholars like Brenman and McDermott (2004), Zhu *et al.* (2016), Jenwittayoroje *et al.* (2019), and Kabir *et al.* (2019) found that board independence to have an impact on firm value. The findings also showed that the relationship between board expertise and firm value is positive and significant, $r = 0.463$, $p\text{-value} < 0.05$. Consistently, Burton (2000), Meng and Tian (2020), Fauver *et al.* (2017) found out that board expertise has an impact on firm value.

Moreover, the relationship between board size and firm value was found to be negative but insignificant, $r = -0.081$, $p\text{-value} > .05$. This is in agreement with studies like Nguyen *et al.* (2016), Nguyen and Faff (2005), Kumar and Singh (2013), Akileng and Kobumanzi (2019), and Tarus (2020) which also reported that board size has an impact on firm value. Though it is important for shareholders of companies to have a board size that is sufficient that the balance of skills and experience is appropriate for the requirements; however, a large board weakens firm value. The correlation between intellectual capital and firm value was found to be positive and significant, $r = 0.569$, $p\text{-value} < 0.05$. In addition financial reporting and firms value had a positive and significant correlation $r = 0.407$, $p\text{-value} < 0.05$. Finally both the control variable were negatively correlated with firm value; firm age ($r = -0.401$, $p\text{-value} < 0.05$) and firm size ($r = 0.114$, $p\text{-value} < 0.05$).

Table 4.15: Correlation Analysis

	FV	FA	FS	BD	BI	BE	BS	IC	FR
FV	1.000								
FA	-0.401*	1.000							
FS	-0.114*	0.020	1.000						
BD	-0.188*	-0.010	-0.030	1.000					
BI	0.648*	-0.271*	-0.020	-0.157*	1.0000				
BE	0.463*	-0.218*	0.144*	-0.074	0.346*	1.000			
BS	-0.081	-0.097*	0.428*	-0.078	-0.030	0.165*	1.000		
IC	0.569*	-0.276*	-0.286*	-0.083	0.397*	0.304*	-0.160*	1.000	
FR	0.407*	-0.119*	0.222*	-0.143*	0.325*	0.331*	0.039	0.167*	1.000

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

Source; Field data (2020)

4.4 Effect of the Control Variables on Firm Value

Before testing the main hypotheses, the study run the fixed and random effect for control variables (firm age and firm size) against firm value. The results for the random effect are annexed in Appendix I. Based on the results of the Hausman test

(Appendix I), a chi square value of 12.59 with ρ -value of 0.00, the study used fixed effect to test the effect of control variables (firm age and firm size) on firm value. From the results, firm age had a significantly negative effect on firm value ($\beta = -.999$, $\rho < .05$). The findings may be attributed to declining profit and the shrinking investment opportunity set that firms face as they age. Similarly, firm size had a significantly negative effect on firm value ($\beta = -.296$, $\rho < .05$). Although the signaling theory argues that financial statements disclosures on items such as size and profitability improves investors' confidence, large firms are characterized by high level of operational complexity and agency conflicts that may signal greater risks.

Table 4.16: Effect of the control variables on firm value- Fixed Effect

Fixed-effects (within) regression	Number of obs	=	536			
Group variable: companyid	Number of groups	=	67			
R-sq: within = 0.1119	Obs per group: min	=	8			
between = 0.1411	Avg	=	8.0			
overall = 0.1266	Max	=	8			
	F(2,468)	=	29.41			
corr(u_i, Xb) = -0.4295	Prob > F	=	0.0000			
FV	Coef.	Std. Err.	t	P>t	[95% Conf. Interval]	
FA	-.991	.228	-4.35	0.000	-1.439	-.5433
FS	-.296	.049	-6.05	0.000	-.393	-.200
_cons	3.746	.603	6.21	0.000	2.561	4.932
sigma_u	.63745994					
sigma_e	.34468207					
Rho	.77377271 (fraction of variance due to u_i)					

F test that all u_i=0: F(66, 468) = 20.79 Prob > F = 0.0000

Source: Field data (2020)

4.4.1 Direct Effect- Random Effect Model

The coefficients are estimated using the random effect model, which assumes that individual or group effects are uncorrelated with other independent variables. In table 4.17 the regression results for the random model are shown. The random model revealed that firm size, board diversity, board independence, board expertise, and board size explained 56.0% variation of firm value for overall r squared. While R squared within showed that 27.6% of firm various is explained by board structure based only on the variation within each company. While R squared between showed that 66.20% variation of firm value is explained by firm size, board diversity, board independence, board expertise, and board size between each company over time. From the table, firm age had a negative and significant effect on firm value ($\beta = -0.509, p < .05$). Similarly, results were reported for firm size and firm value ($\beta = -0.062, p < .05$). The size of the board had a negative and significant effect on company value ($\beta = -0.307, p < .05$). As a result, one unit increase in board size results in a 0.037-unit decrease in firm value. The effect of board diversity on firm value was significant and negative ($\beta = -0.092, p < .05$). As a result, a unit increase in board diversity leads to a 0.092 unit decrease in firm value. Furthermore, board independence had a positive and statistically significant impact on company value ($\beta = 0.238, p < .05$); implying, a unit increase in board independence leads to a 0.238 unit rise in company value.

Table 4.27: Random-Effects GLS regression

Random-effects GLS regression	Number of obs	=	536			
Group variable: companyid	Number of groups	=	67			
R-sq: within = 0.276	Obs per group: min	=	8			
between = 0.662	Avg	=	8.0			
overall = 0.560	Max	=	8			
	Wald chi2(6)	=	270.08			
corr(u_i, X) = 0 (assumed)	Prob > chi2	=	0.000			
FV	Coef.	Std. Err.	Z	P>z	[95% Conf.	Interval]
FA	-.509	.117	-4.36	0.000	-.738	-.280
FS	-.062	.030	-2.07	0.038	-.121	-.003
BD	-.096	.030	-3.21	0.001	-.154	-.037
BI	.238	.035	6.84	0.000	.169	.306
BE	.411	.054	7.64	0.000	.306	.517
BS	-.307	.095	-3.24	0.001	-.492	-.121
_cons	1.589	.366	4.35	0.000	.873	2.306
sigma_u	.309					
sigma_e	.3156					
Rho	.492 (fraction of variance due to u_i)					

Source; Field data (2020)

4.4.2 Direct Effect- Fixed Effect Model

Table 4.18 highlights the regression results for the fixed model. The findings indicated that 42.6% variation in firm value is explained by firm size, board diversity, board independence, board expertise, and board size. From the table, firm size ($\beta = -0.142$, $p < .05$) and firm age ($\beta = -0.608$, $p < .05$) had a negative and significant effect on firm value. However, board size had a negative and significant influence on firm value ($\beta = -0.371$, $p < .05$). In addition, board diversity had a negative and significant influence on firm value ($\beta = -0.087$, $p < .05$). The t values for significant variables were greater than 1.96 at 95 confidence intervals.

In addition, board independence had a favorable and significant impact on firm value ($=.126, <.05$.) In particular, a unit increase in board independence translates to a.126-unit rise in company value. Furthermore, board expertise had a positive and statistically significant impact on business value ($=.381, \rho <.05$). As a result, a unit increase in board expertise corresponds to a.381-unit rise in company value.

Table 4.38: Fixed-Effects (within) Regression

Fixed-effects (within) regression	Number of obs	=	536			
Group variable: companyid	Number of groups	=	67			
R-sq: within = 0.290	Obs per group: min	=	8			
between = 0.468	Avg	=	8.0			
overall = 0.426	Max	=	8			
	F(6,468)	=	27.71			
corr(u _i , Xb) = 0.069	Prob > F	=	0.000			
FV	Coef.	Std. Err.	T	P>t	[95% Conf. Interval]	
FA	-.608	.269	-2.26	0.024	-1.138	-.079
FS	-.142	.049	-2.91	0.004	-.239	-.047
BS	-.371	.107	-3.45	0.001	-.582	-.159
BD	-.087	.032	-2.67	0.008	-.150	-.023
BI	.126	.038	3.31	0.001	.051	.200
BE	.381	.057	6.70	0.000	.269	.493
Cons	2.619	.685	3.82	0.000	1.273	3.964
sigma_u	.462					
sigma_e	.315					
Rho	.684	(fraction of variance due to u _i)				

F test that all u_i=0: F(59, 468) = 9.89 Prob > F = 0.000

Source; Field data (2020)

4.4.3 Model Selection Using the Hausman Test

Jerry Hausman (1978) proposed that under the data generated process, the Hausman test is used to compare two different estimates of the model parameters. Panel regression has two models Fixed and random effects estimation. When the individual-specific effects across the panel are allowed to be uncorrelated with the standard errors, then it is said to be random otherwise fixed when allowed to be correlated with

standard errors. To test for the hypotheses, the Hausman test was employed to pick either the fixed or random effects regression model (Green, 2008). The Hausman test compares coefficients under specific conditions. First, both estimates for the true parameters of the model are compatible under the null hypothesis of correct model specification. The size of the test can be regulated asymptotically with this characteristic. Second, the Hausman test for model misspecification requires that the model estimates have distinct probabilities. The test's power is derived from this feature.

Table 4.49: Model Selection Using Hausman Test

	---- Coefficients ----			
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	Fe	Re	Difference	S.E.
FA	-.6082121	-.5087354	-.0994767	.2427096
FS	-.1424679	-.0622427	-.0802252	.0386545
BS	-.3708402	-.3066334	-.0642068	.0509184
BD	-.0866501	-.0956454	.0089954	.0128848
BI	.1258056	.2375504	-.1117447	.0152946
BE	.3811809	.4114517	-.0302708	.0184783

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$$\chi^2(6) = (b-B)'[(V_b-V_B)^{-1}](b-B)$$

$$= 55.59$$

$$\text{Prob}>\chi^2 = 0.0000$$

Source; Field data (2020)

The null hypothesis of "difference in coefficients not systematic" to direct influence of board structure on company value of the firms listed on The Securities Exchange Markets in East Africa is rejected, according to Hausman test Table 4.19, which presents a summary of the data. This is due to the fact that the chi-square value of 55.59 was statistically significant (p-value =.0000). As a result, the influence of the

hypothesis is examined using the fixed effects model. As a result, the fixed effect model is the most applicable model.

4.5 Test of Hypotheses

The study used a fixed-effects model after running the Hausman test. According to Allison (2009), whether the unit of analysis is firm or a country, the standard errors in a regression model from each case will be correlated or dependent over time, there exist unobserved characteristics that vary from one case to another. In such situations, the assumptions of independence of errors for regression are violated. To solve this problem of correlated errors, both fixed effects and random effects models can be used, and fixed effects do much more. This study results, therefore, used the Hausman test to determine the suitability of either the fixed effect model or the random effect model in testing the hypotheses regression as suggested by Hausman (Jerry Hausman, 1978).

4.5.1 Effect of Board Size on Firm Value of Listed Firms

Hypothesis H_{01a} stated that board size does not significantly affect the firm value of firms listed on the Securities Exchange Markets in East Africa. Based on the results in table 4.18 board size had a negative and significant effect on company value ($= -0.371, \rho < .05$); therefore the hypothesis was rejected. The assumption is that the board's size has a bearing on the firm's worth. The findings contradict those of Kiel and Nicholson (2003), Henry (2008), and Pham *et al.*, (2011), who found that the size of the board of directors had a positive impact on firm value (Tobin's Q). Similarly, the data support the notion that big board sizes result in optimal value-maximizing outcomes for major corporations (Kalsie & Shrivastar, 2016). Furthermore, the findings contradict those of Nguyen *et al.* (2016), who found that firms with a big

board of directors have inferior operating performance and higher operating expenditures, such as increased director salary. Singh and Davidson (2003) agreed, as did Yermack (1996), who claimed that firms with a big board of directors have much lower firm values.

4.5.2 Effect of Board Diversity on Firm Value

The hypothesis (**H_{01b}**) tested was that board diversity does not have a significant effect on the firm value of firms listed in The Stock Exchange Markets in East Africa. The study discovered that board diversity, as assessed by the number of female board members, has no effect on company value ($= -0.087, >.05$). It indicates that board diversity in terms of the number of females on the board has no bearing on the increase in firm value in East Africa's stock exchange markets. The findings are attributable to the fact that there are proportionally fewer women on the boards of listed firms in Uganda than there are men (Senyonyi, 2018). Similarly, women are under-represented on corporate boards in Kenya, and as a result, Kenya is on the list of countries considering enacting gender quota laws to ensure that women are represented on corporate boards (Reddy & Jadhav, 2019).

The findings contradict a study by Nguyen and Faff (2007) that found that gender diversity benefits shareholders since the presence of female directors is linked to increased firm value for publicly traded Australian companies. The same notion was shared by Putri, (2016) who concluded that increasing the percentage of women on board contributes to an increase in firm value. As well, findings from Deloitte (2013) suggest that the inclusion of women on the board is of benefit to the firm. Notably, there is a paucity of knowledge on the link between board diversity and firm value.

There is thus a need for further findings to validate if indeed board diversity has no influence on firm value.

4.5.3 Effect of Board Independence on Firm Value

Based on Board independence (BI) coefficient of 0.126 ($p\text{-value } 0.000 < 0.05$), the hypothesis (H_{01c}) was rejected and inferred that board independence had a positive and significant effect on firm value. This means that every unit increase in board independence results in a 0.126-unit increase in firm value for E.A listed companies. The positive relationship between board independence and firm value can be explained by the fact that an independent executive provides independent thinking, which reduces the likelihood of mass thinking that is detrimental to the firm (s). The positive relationship can also be explained by the fact that directors who serve as independent directors are more likely to face fewer obstacles, such as personal interests, and thus are more likely to perform well, resulting in increased firm value. According to Ramdani and Witteloostuijn (2010), independent boards can effectively perform their functions.

According to the findings, Vintila and Gherghina (2013), Zattoni *et al.* (2017); Chi and Lee (2010), Singh, and Davidson (2003) discovered a positive relationship between board independence and firm value. This positive relationship between board independence and firm value, however, contradicted previous research by (Salisu, Ishak & Sawandi, 2019; Adjaoud, Zeghal & Andaleeb, 2007; Bhagat & Black, 2001; Agrawal & Knoeber, 1996; Erkens, Hung, & Matos, 2012). Whereas, Abdullah (2004) discovered a non-significant and negative relationship between total firm value and board independence.

4.5.4 Effect of Board Expertise on Firm Value

The hypothesis (H_{01a}) stated that there is no significant effect of board expertise on firm value of firms listed on the Stock Exchange Markets in East Africa. The findings showed a positive and significant coefficient of 0.381 (p-value $0.000 < 0.05$). Thus, hypothesis four was rejected. This means that every unit increase in board expertise results in a 0.381-unit increase in firm value. This positive and significant relationship between board expertise and firm value means that a board whose directors understand generally accepted accounting principles, financial statements, and internal controls will provide the firm with competitive advantages such as international networks, commitment to shareholder rights, and managerial entrenchment avoidance, resulting in a high firm value (Masakari & Ombaba, 2018).

This finding corroborates previous findings by (Yasser, Al Mamun & Rodrigs, 2017). According to Vo and Phan (2013) says that because the board is in charge of the organization's board structure and is mandated to supervise its activities, they must have the necessary knowledge and skills such as marketing, business strategy, accounting, information technology, legal aspects, and any other related business relating competencies depending on the mother activities to run the organization effectively. There are two types of competencies, according to Hambrick and Manson (1984), functional knowledge, which includes areas such as finance, legal issues, accounting, legal, marketing, and economics, and firm specific deals, which deal with specific firm operations.

Possession of requisite skills and reasonable expertise in a specific field by the board members are more are likely to overcome problems that are related to breach of laws within the firm and thus avoid expenses related to legal issues and it will in turn

increase firm value. This concurs with the previous findings by (Alhaji & Wan Yusoff, 2012). Board directors with financial expertise in financial matters play key roles in boardrooms in providing forecasting and future businesses for their businesses thus improving their firm value.

Caligiuri and Santo (2001) approach the desired expertise from the company's ability to transact businesses overseas with other firms having the knowledge of international issues, openness, flexibility in changing leadership styles based on the dynamic nature of the firm, and expertise in the world's business structures. Boards of directors with diverse business competencies have greater knowledge, expertise, and understanding of the current business environment and are thus better able to protect the company by making clear decisions on market opportunities (Lorsch & Carter, 2003; Güner *et al.*, 2008; Conger, & Ready, 2004), who argue that it is critical for board members to have required expertise in accounting and financial statements. This leads to better board oversight that will lead to better oversight to better the interest of shareholders of the firm.

4.6 Moderating effect of Financial Reporting Quality on the Relationship between Board Structure and Firm Value

Moderation implies that the causal relationship between two variables changes as a function of the moderator variable. Moderation is said to exist if the amount of variance accounted for by the interaction is significantly greater than the variance without the interaction and the coefficient of the interaction term is greater than zero (Hayes, 2013).

The study used a hierarchical regression model to test the moderation effect of financial reporting quality (Baron & Kenny, 1986). The effect of a dependent variable, such as board diversity was regressed on controls, exogenous variables, and interaction terms. The hierarchical regression method was used by entering variables in a lump of variables for control and exogenous variables, including the moderator and each of the interaction terms, and observing the results.

The study performed both the fixed effect and the random regression for each of the hierarchical regression models and their respective Hausman test and the output is annexed in appendix II. However, a summary table for the regression models is shown in table 4.20

4.6.1 Moderating effect of Financial Reporting Quality on the Relationship between Board Size and Firm Value

Hypothesis (**H_{02a}**) stipulated that there is no significant moderating effect of financial reporting quality on the relationship between board size and firm value for firms listed on the Stock Exchange Markets in East Africa. The results presented in a summary moderation table 4.20, indicate that after introducing financial reporting quality the relationship between board size and firm value, the explanatory power of the model improved by 3% ($R\text{-sq}\Delta = .01$, $\beta = -0.01$, $\rho < 0.05$). Thus, the study rejected the hypothesis and concludes that there is a positive and significant moderating effect of financial reporting quality on the relationship between board size and firm value. Arguably, financial reporting quality offers the directors on the board with high quality financial reporting information that is instrumental in enhancing firm value. According to the IASB (2008), high-quality financial reporting information is important because it influences capital providers and other stakeholders in making

investment, credit, and other resource allocation decisions, thereby improving overall market efficiency.

4.6.2 Moderating effect of Financial Reporting Quality on the Relationship between Board Diversity and Firm Value

Hypothesis (**H_{02b}**) postulated that there is no significant moderating effect of financial reporting quality on the relationship between board diversity and firm value for firms listed in The Stock Exchange Markets in East Africa. However, the findings in Table 4.20 showed that the introduction of financial reporting quality increased the significant effect of board diversity on firm value by 2% ($R\text{-sq}\Delta = .01$, $\beta = 0.01$, $\rho < 0.05$). Hence, the hypothesis was rejected. Thus, financial reporting quality has a positive and significant moderating effect on the relationship between board diversity and firm value of listed firms in East Africa. The implication is that financial reporting quality enhances the utility of a diverse board in the sense that it enhances the quality of information they report to ensure that the management is fully informed in order to make well-grounded decisions to enhance the firm value.

4.6.3 Moderating effect of FRQ on the Relationship between Board Independence and Firm Value

Hypothesis (**H_{02c}**) stipulated there is no significant moderating effect of financial reporting quality on the relationship between board independence and firm value for firms listed on the Stock Exchange Markets in East Africa. Results showed that after introducing financial reporting quality the relationship between board independence and firm value did change by 2% ($R\text{-sq}\Delta = .02$, $\beta = -0.01$, $\rho < 0.05$). Hence, the hypothesis was accepted. Thus, financial reporting quality has a significant moderating effect on the relationship between board independence and firm value of

listed firms in East Africa. Though non-independent directors have a greater understanding of the business and make better decisions, their effectiveness must be supported by an environment of high quality financial reporting to increase firm value (Gaur *et al.*, 2015).

4.6.4 Moderating effect of Financial Reporting Quality on the Relationship between Board Expertise and Firm Value

Hypothesis (**H02a**) stated that there is no significant moderating effect of financial reporting quality on the relationship between board expertise and firm value for firms listed in East Africa. Findings showed that after introducing financial reporting quality, there was an improvement in the relationship between board expertise and firm value of 1% ($R\text{-sq}\Delta = .01$ $\beta = 0.04$, $p < 0.05$). Hence, the hypothesis was rejected. Thus, there was a significant moderating effect of financial reporting quality on the relationship between board expertise and firm value of listed firms in East Africa. The findings are supported by Siagian *et al.*, (2013) findings that board expertise under financial reporting quality had a positive significant association with value firm value. Chen, Hope, Li, and Wang (2011) the findings suggested that financial reporting quality influenced shareholders' investment decisions positively affecting the performance of firms. Hessayri and Saihi (2017) results revealed that in a combined relationship, board structure and financial reporting quality reduced information asymmetries between more informed and less informed shareholders thus influencing firmvalue.

Table 4.20: Moderating effect of Financial Reporting Quality on the relationship between Board structure and Firm Value

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
FV	Coef (S.Err.)	Coef (S. Err.)	Coef (S. Err.)	Coef. (S.Err.)	Coef. (S. Err.)	Coef. (S. Err.)	Coef (Std. Err.)
FA	-0.99(.23)**	-0.61(.27)**	-0.74(.24) **	-0.80(.25) **	-0.90(.26)**	-0.96(.26)**	-0.95(.26)**
FS	-0.296(.05)**	-0.14(.05)**	-0.13(.04)**	-0.13(.05)**	-0.15(0.05)**	-0.17(.05)**	-0.15(.05)**
BS		-0.37(.11)**	-0.35(.11)**	-0.34(.11)**	-0.29(.11)	-0.25(.12)	-0.25(.11)
BD		-0.08(.03) **	-0.13(.04) *	-0.11(.04)**	-0.10(.04)	-0.10(.04)*	-0.11(.04)*
BI		0.13(.04) **	0.12(.04) **	0.11(.04) **	0.11(.04)**	0.11(.04)**	0.11(.04)**
BE		0.38(.06) **	0.33(.05) **	0.35 (.06) **	0.33(.06)**	0.32 (.06)**	0.31(.06)**
FRQ			0.06(.02)**	0.07(.02)**	0.09(.02)**	0.10(.02)**	0.01(.01)**
BS*FRQ				-0.01(0,01)**	-0.01(001)**	-0.02(0.01)**	-0.01(.01)**
BD*FRQ					0.01(.01)**	0.02(.01)**	0.02(.01)**
BI*FRQ						-0.02(.01)**	-0.02(.01)**
BE*FRQ							0.04(.02)**
_cons	3.75(.60)**	2.62(.68)**	2.54(0.62)**	2.65(.65)**	2.91(0.67)**	3.08(.67)**	2.92(.67)**
R-sq (within)	0.12	0.29	0.33	0.36	0.38	0.39	0.40
R-sqΔ	-	0.17	0.04	0.03	0.02	0.02	0.01
F-value	29.41	27.71	24.16	24.11	20.13	19.34	18.44
Prob > F	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hausman chi2	12.59	55.59	106.37	396.85	79.08	55.82	87.61
Prob> chi2	0.00	0.00	0.00	0.00	0.00	0.00	0.00
sigma_u	0.64	0.46	0.53	0.54	0.57	0.57	0.55
sigma_e	0.34	0.31	0.31	0.31	0.31	0.31	0.30
rho	0.77	0.68	0.75	0.75	0.78	0.77	0.77

**significant at 0.05 level; Figures in parenthesis are standard errors. BS=board size, BD=board diversity, BI=Board independence, BE=board expertise, IC=intellectual capital, FRQ=financial reporting quality, FV=firm value.

Source; Field Data (2020)

4.6.5 Modgraph For Moderating Effect Of Financial Reporting Quality on the Relationship Between Board Structure And Firm Value

The study used Modgraph, as recommended by Jose (2008) to demonstrate antagonistic and enhancing moderating effects. Aiken and West (1991) proposed that the moderated results be presented on a moderation graph to better understand the nature of the interaction of financial reporting quality on the relationship between board structure (board sizes, board diversity, board independence, and board expertise). Furthermore, indicated that conclusion that there is interaction without probing the nature of that interaction at different levels of the moderator is insufficient. As a result, the significance of the board gender diversity and board size coefficients on firm value was evaluated at low, medium, and high levels of financial reporting quality.

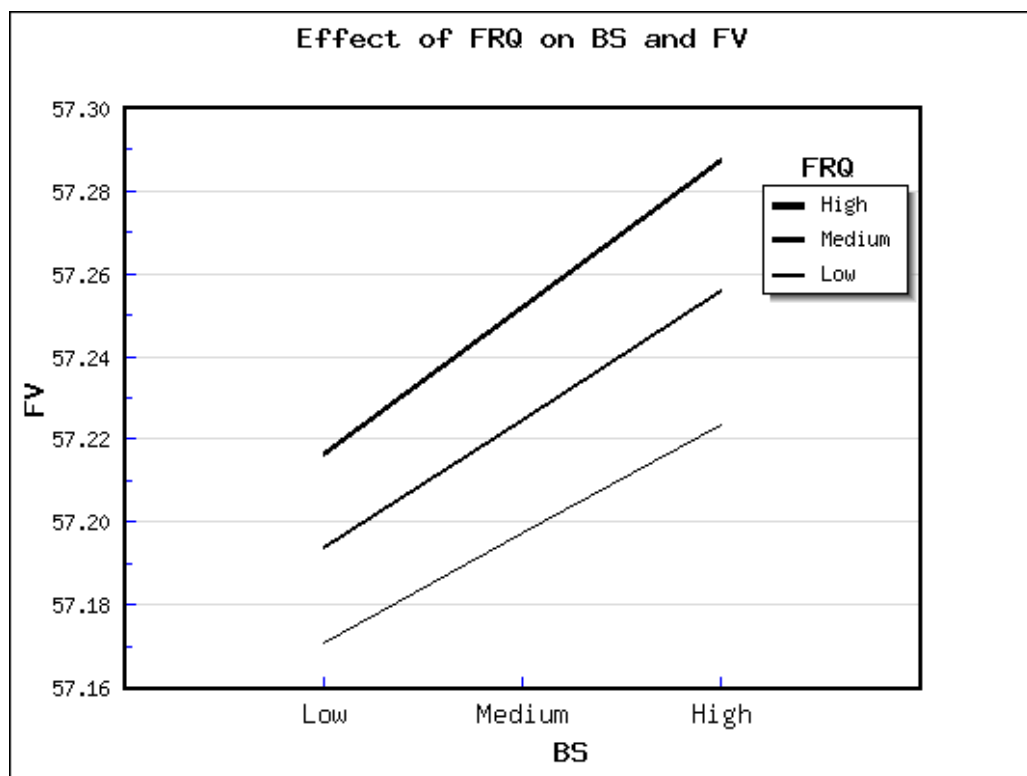


Figure 5: Modgraph for Moderating Effect of FRQ on the Relationship between Board Size and Firm Value

According to the above graphs (Fig 5) indicate enhancing moderating effect, thus at high level of financial reporting quality, the effect of board size on firm value is high. Equally, as the effect of board size on firm value decreases at low levels of financial reporting quality.

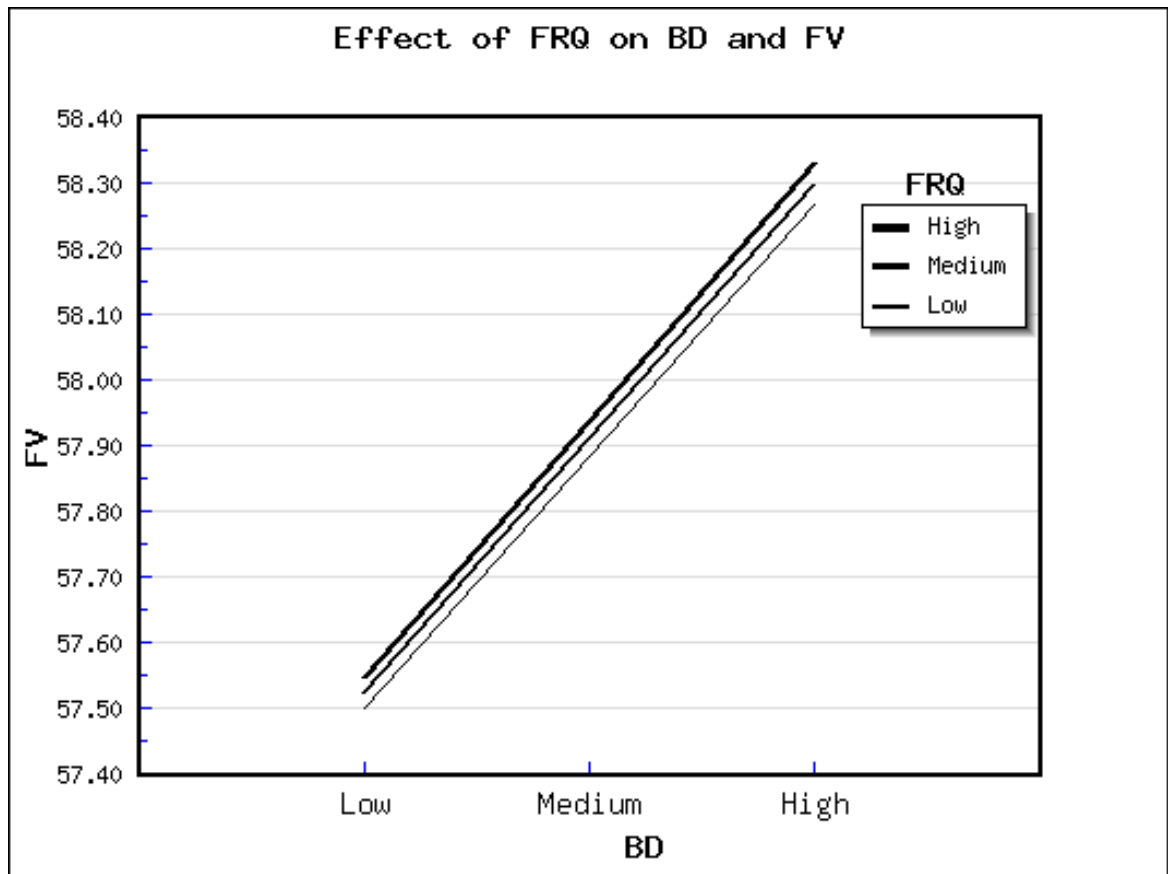


Figure 6: Modgraph for Moderating Effect of FRQ on the Relationship between Board Diversity and Firm Value

According to findings in (Figure 6) show buffering effects since at high level of financial reporting quality, the effect of board diversity on firm value at high levels and at low levels of financial reporting quality, the effect of board diversity on firm value is low.

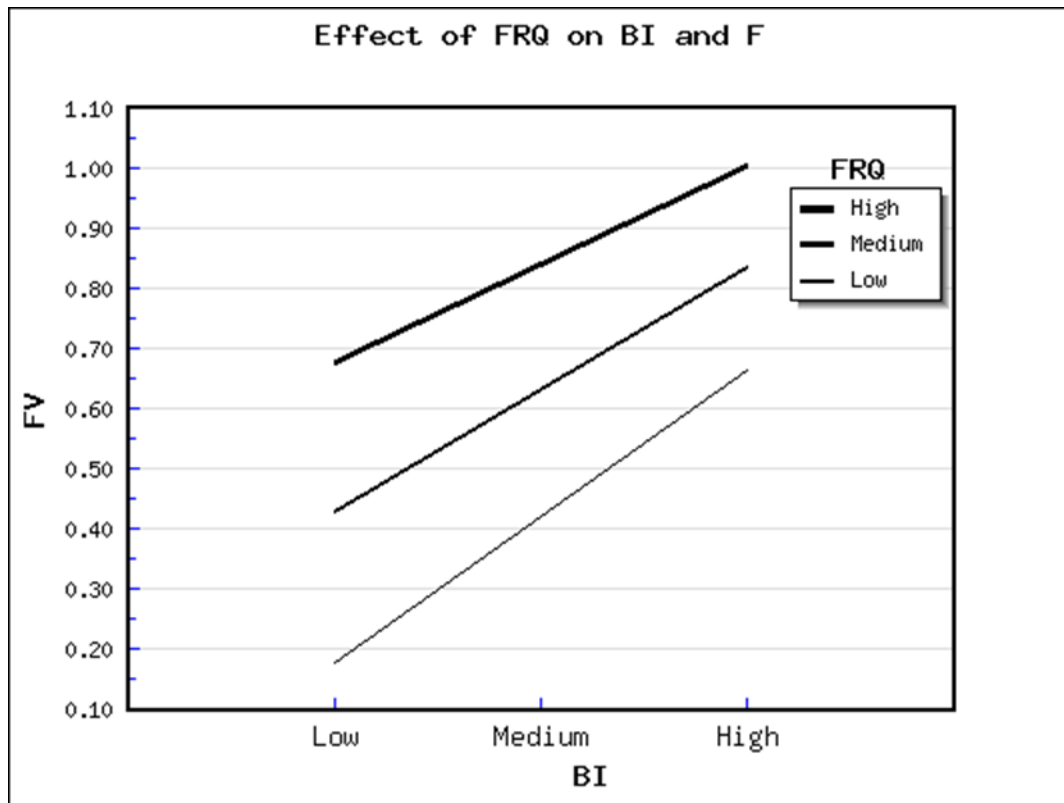


Figure 7: Modgraph for Moderating Effect of FRQ on the Relationship between Board Independence and Firm Value

According to the above graphs (Fig 7) indicate enhancing moderating effect, thus at high level of financial reporting quality, the effect of board independence on firm value is high. Equally, as the effect of board independence on firm value decreases at low levels of financial reporting quality.

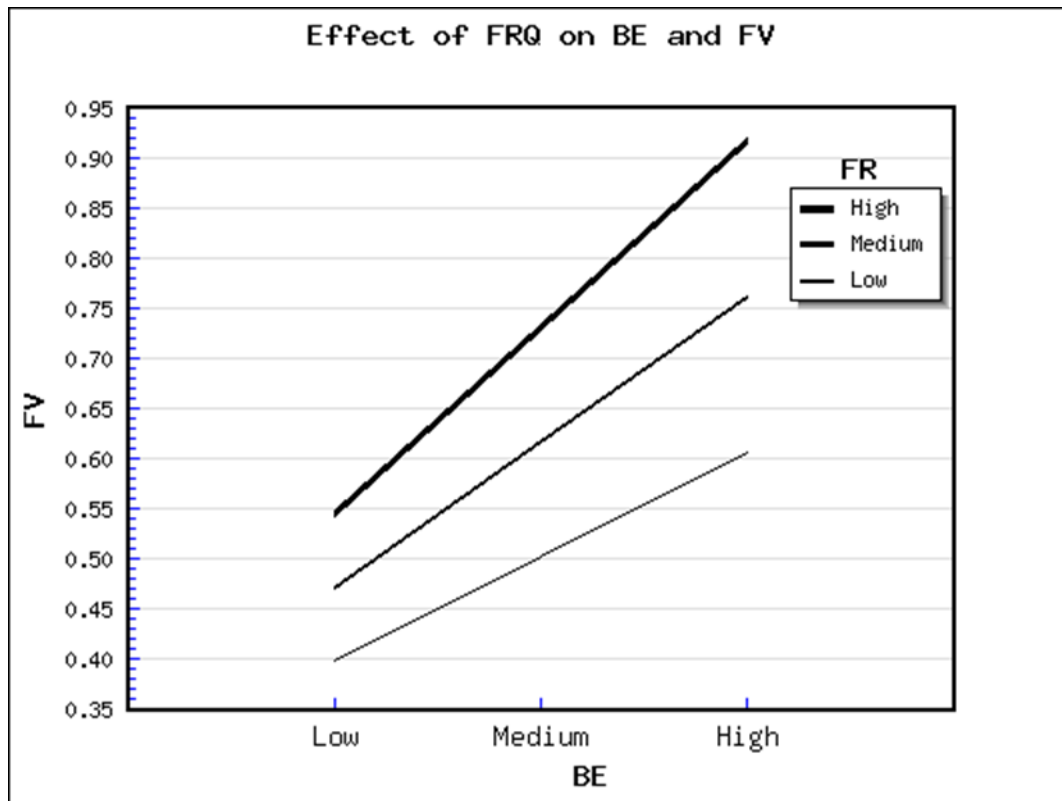


Figure 8: Modgraph for Moderating Effect of FRQ on the Relationship between Board Expertise and Firm Value

According to the above graphs (Fig 8) indicate enhancing moderating effect, thus at high level of financial reporting quality, the effect of board expertise on firm value is high. Equally, as the effect of board expertise on firm value decreases at low levels of financial reporting quality.

4.7 Mediating effect of Intellectual Capital on the relationship Between Board Structure and Firm Value

The mediating effect of intellectual capital on the relationship between board structure and firm value was tested using the Preacher and Hayes Sobel test calculator (<http://quantpsy.org/sobel/sobel.htm/>) because the study used panel analysis and there is no Process Macro for STATA (whose models are widely used for panel data analyses). The Sobel test assumes that mediation is the product of the coefficients of paths a and b (MacKinnon *et al.*, 2002; Sobel, 1982). The Preacher and Hayes, Sobel

test is a three- step process. First, is to run a regression analysis with the independent variable (board structure) predicting the mediator (intellectual capital). Second, is to perform regression analysis with the independent variable and mediator predicting the dependent variable to establish path b, the study incorporated the moderator and an interaction term for the moderator and the mediator in the second stage. Third, this is the final step where beta coefficients and standard errors of the path a and b are used to test for mediation through the aid of the Sobel calculator. The regression results for path *a* and path *b* for both the fixed effect and random effect and the Hausman test are presented in appendix III. A summary of the mediation is shown in table 4.21.

4.7.1 Mediating effect of Intellectual Capital on the Relationship between Board Size and Firm Value

Hypothesis (**H_{03a}**) stated that there is no mediated effect of intellectual capital on the relationship between board size and firm value for firms listed in East Africa. From the results in Table 4.21, the effect (a_1b_1) of board size on firm value, through its influence on intellectual capital, is negative and significant, ($\beta = -0.089$, $\rho\text{-value} = 0.03 < 0.05$). Consequently, hypothesis H_{03a} is rejected and the conclusion is that intellectual capital has a mediating effect on the relationship between board size and firm value. The findings could be attributed to the argument that as the size of the board increases, firms' value decreases due to reduced board effectiveness. According to the findings by Annuar and Rashid (2015) discovered that board size is detrimental to intellectual capital and larger boards do not necessarily enable companies to secure intellectual capital resources. The authors hypothesized that the directors in Indonesian and Malaysian firms, while numerous, are not necessarily fit or add value, resulting in communication and decision-making issues and a reduced ability to make intellectual capital investments (Annuar & Rashid, 2015; Appuhami & Bhuyan,

2015). Board size had no correlation with the skills and ability of directors in Indonesian and Malaysian firms to perform their jobs in this context. The implication is that not all directors on the board have the necessary skills to effectively manage intellectual capital.

According to the findings of Bounfour (2003), who used data from 100 large international companies in the United States, increased intellectual capital, particularly human capital, improves firm performance. Hong *et al.* (2007) add to this positive relationship by examining firms listed in Singapore. This finding, however, is challenged by the view that there is no significant relationship between intellectual capital, particularly human capital, and firm performance (Zahara *et al.*, 2003; Bontis, Keow & Richardson, 2000). Furthermore, Li and Zhao (2018) explained that the positive influence of human capital on firm value exists only in capital intensive firms such as those in typical developing countries such as China, but there appears to be a universal, lagged positive impact of organizational capital on firm value, implying that improving organizational systems plays a more important role in raising a firm's value. Furthermore, the findings contradict those of Jackling and Johl (2009), who claim that a larger board provides more links to the external environment, improving the company's access to a variety of resources, such as intellectual capital, which ultimately improves its performance.

4.7.2 Mediating effect of Intellectual Capital on the Relationship between Board Diversity and Firm Value

Hypothesis (**H_{03b}**) stipulated that there is no mediating effect of intellectual capital on the relationship between board diversity and firm value for firms listed on the Stock Exchange Markets in East Africa. Table 4.21 illustrated that the mediating effect of

intellectual capital on the relationship between board diversity and firm value a_2b_1 ($\beta = -0.028$, $\rho\text{-value} = -0.037 < 0.05$). Consequently, hypothesis H_{03b} is rejected and the conclusion is that intellectual capital mediates the relationship between board diversity and firm value. The results suggest that the diversity in the board in terms of representation of women board members did not have an impetus on the intellectual capital hence no impact on firm value. Consistent with the findings, Haryo-no and Paminto (2015) proved that board structure does not have any effect on the value of the company.

4.7.3 Mediated effect of intellectual capital on the relationship between board structure and firm value

Hypothesis (H_{03c}) postulated that there is no mediating effect of intellectual capital on the relationship between board independence and firm value for firms listed on the Stock Exchange Markets in East Africa. Table 4.21 reports that the effect (a_3b_1) of board independence on firm value, through its influence on intellectual capital, is positive and significant ($\beta = 0.037$, $\rho = 0.017 < 0.05$). Thus, the rejected hypothesis H_{03c} concluded that the intellectual capital mediates the relationship between board independence and firm value. The results are supported by the work of Berzkalne and Zelgalve (2014) that intellectual capital positively and significantly affects firm value. The findings of the study further agree with those findings of Kabir *et al.* (2019) and Jackling *et al.* (2009) which revealed that board independence increases firm value. However, these studies did not establish the mediating effect of intellectual capital on the relationship between board independence and firm value. The current study expounds on the available literature by studying intellectual capital as a mediator on the relationship between board independence and firm value. The study findings confirm the Notion of Resource Based View that expertise is an intellectual resource

that a firm can leverage to attain firm value by effective and efficient use of the firm intangible asset of expertise. The results further support the assertions of the resource based view by revealing that an independent board that has the required financial knowledge is capable of making decisions that increase the value of the firm.

4.7.4 Mediated Effect of Intellectual Capital on the Relationship between Board Expertise and Value Listed Firms

Hypothesis (**H_{03a}**) stated that there is no mediated effect of intellectual capital on the relationship between board expertise and firm value for firms listed on the Stock Exchange Markets in East Africa. Table 4.21 indicates that the effect (path a_4b_1) of board expertise on firm value, through its effect on intellectual capital, is positive and significant ($\beta = 0.103$, $\rho = 0.00 < 0.05$). As a result, the study rejects hypothesis **H_{03d}** and concludes that intellectual capital mediates the relationship between board expertise and firm value. Notably, listed firms on East African securities exchanges have superior intellectual capital as a result of board expertise, which increases investor confidence and, as a result, firm value. The findings support roles played by intellectual capital in enhancing firms' value by confirming that the value of intellectual capital plays a role in different emerging economies such as Kenya and Uganda, where different technological advancements may bring different implications for the valuation of intellectual capital (Bontis *et al.*, 2005).

Furthermore, the findings support previous research by Dashti *et al.* (2016) and Tui *et al.* (2017), which show that intellectual capital has a positive effect on value. Dashti *et al.* (2016) also demonstrated that intellectual capital formation is particularly important for a company because intellectual capital demonstrates the company's advantages over competitors in conducting board structure toward transparency of

corporate management. Transparency by the company's management will be rewarded by investors and the general public in the form of a higher stock market price. The results show that intellectual capital can increase company value because a company can manage its resources to produce unique product innovations in response to market demands. The study findings support the claims of the resource-based theory by demonstrating that the expertise of the board of directors can be leveraged to increase firm value. The findings imply that the board's expertise assists them in effectively analysing financial reports and using the information from the financial reports to make informed decisions.

Table 4.21: Mediating effect of Intellectual Capital on the Relationship between Board Structure and Firm Value

	Path a			B	Path b ₁		Path a*b ₁		
	β	Std. Err	ρ -value		Std. Err	ρ -value	β	Std.Err	ρ -value
FA	0.682	0.942	0.470	-	-	-	0.084	0.099	0.471
FS	-0.187	0.185	0.312	-	-	-	-0.020	0.017	0.317
IC`	-			0.088	0.012	0.00	-		-
BS	-0.843	0.375	0.025	-	-	-	-0.089	0.035	0.032
BD	-0.263	0.122	0.032	-	-	-	-0.028	0.011	0.039
BI	0.354	0.142	0.013	-	-	-	0.037	0.013	0.019
BE	0.979	0.222	0.000	-	-	-	0.103	0.023	0.000
R-squared	0.1449			0.3750					

Source; Field Data (2020)

4.8 Moderating effect of Financial Reporting Quality on the Indirect Effect of Intellectual Capital on the Relationship between Board Structure and Firm Value among Listed Firms in East Africa

Hypothesis (H₀₄) stated that there is no moderating effect of financial reporting quality on the indirect effect of intellectual capital on the relationship between board structure and firm value for firms listed on the Securities Exchange Markets in East

Africa. Testing for moderated mediation (conditional indirect effects) involves evaluating whether the moderating variable influences the independent variable and mediating variable relationship (first stage-moderated mediation) or the mediating variable and dependent variable relationship (second stage-moderated mediation). . This study investigated whether moderation was present in path b. For second stage moderated mediation, the index of moderated mediation ab_3 coefficient should be statistically different from zero (Hayes, 2015).

Though the index approach to testing moderated mediation is widely used because it relies on only one inferential test and directly assesses the statistical significance of the relationship between the moderator and the indirect effect, this study used the piecemeal approach as suggested by Edwards & Lambert (2007) due to shortcomings of STATA and multiple independent variables. The piecemeal approach tests moderation and mediation separately; then jointly interpreting the results.

Based on the moderation output for financial reporting quality on the relationship between intellectual capital and firm value (Appendix IV), the interaction term the moderator and the mediator are positive and statistically significant ($\beta = .022$, $p < 0.05$) suggesting that presence of moderation in path b. The Modgraph (figure 8) that indicates that high financial reporting quality and high IC will increase firm value further supports this assertion. Similarly, a low financial reporting quality will also lead to a low firm value where IC is low.

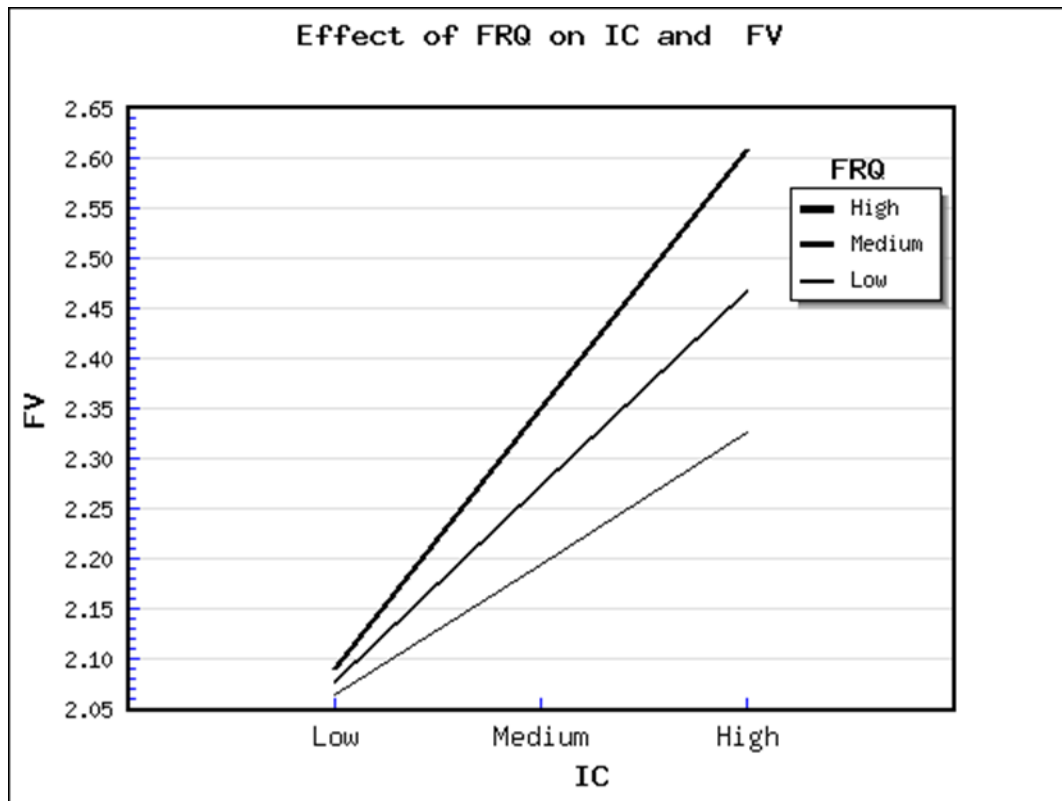


Figure 9: Modgraph for Moderating Effect of FRQ on the Relationship between Intellectual Capital and Firm Value

In the second stage moderated mediation the relationship between X and Y through M is assumed to be a linear function of W (the moderator). The weight of W (ab_3) is the index of moderated mediation for this model and it quantifies the effect of W on the indirect effect of X on Y through M. The moderated mediated relationship requires testing the significance of path ab_3 . The beta coefficients of the path a (a_1 , a_2 , a_3 , and a_4) were multiplied with b_3 to generated the weights of path ab_3 . The regression results for path a (fixed effect, random effect, and Hausman test) are presented in appendix III, while those of path b_3 are in appendix IV. However, the summary results for the moderated mediation relationship using the Preacher and Hayes's Sobel calculator and the results are presented in table 4.22.

Ho_{4a}: There is no moderating effect of financial reporting quality on the indirect effect of intellectual capital on the relationship between board size and firm value

Table 4.22 indicates that the moderating effect of financial reporting on the indirect effect of intellectual capital on board size and firm value (path a_1b_3), is negative and insignificant ($\beta = 0.103$, $\rho = 0.00 < 0.05$). Consequently, hypothesis Ho_{4a} is supported that financial reporting quality does not significantly moderate the indirect effect of intellectual capital on the relationship between board expertise and firm value. The board plays a significant role in intellectual capital formation and disclosures, which improve both the quality of financial reporting and firm value. However, it has been argued in extant literature that large boards are ineffective in decision-making (Boubaker, Nguyen & Nguyen, 2012). Therefore, corporate boards need not be too small and too large for financial reporting to moderate the indirect effect of IC on board size and firm value.

Ho_{4b}: There is no moderating effect of financial reporting quality on the indirect effect of intellectual capital on the relationship between board diversity and firm value

The findings presented in table 22 shows that the moderating effect of financial reporting on the indirect effect of intellectual capital on board diversity and firm value (path a_1b_3), is negative and statistically insignificant ($\beta = -0.008$, $\rho = 0.00 < 0.05$). Therefore, hypothesis Ho_{4b} is not rejected and the conclusion is that financial reporting quality does not significantly moderate the indirect effect of intellectual capital on the relationship between board expertise and firm value. A diversified board is of great benefit to an organization. According to Erhardt, Werbel, and Shrader (2003) board diversity improve a firm's access to critical resources, thus a

positive determinant of firm performance and value. Besides, Williams (2001) reported a positive association between board diversity and intellectual capital performance. However, studies show that not all dimensions of board diversity have a favorable effect on the firm. For instance, Kouaib and Almulhi (2019) reported a positive association between foreign directorship and earnings management. Therefore, there is a need for firms to understand the various aspects of board diversity that may enhance the moderating effect of financial reporting quality on the indirect effect of IC on board diversity and firm value.

H_{04c}: There is no moderating effect of financial reporting quality on the indirect effect of intellectual capital on the relationship between board independence and firm value

Based on the results, the moderating effect of financial reporting on the indirect effect of intellectual capital on board independence and firm value (path a_3b_3), is positive and significant ($\beta = 0.011$, $\rho = 0.00 < 0.05$). Hence, the hypothesis H_{04c} is rejected and the deduction made is that financial reporting significantly moderates the indirect effect of intellectual capital on the relationship between board independence and firm value. Among the various corporate governance mechanisms, the association between board independence and intellectual capital efficiency is the most direct because independent directors' major priority is to ensure that the firm engages in value-added corporate activities, such as IC efficiency (Kweh *et al.*, 2021). Besides, prior studies point out that board independence improves a firm adoption of voluntary disclosures practices (Garcia-Meca & Sanchez-Ballesta, 2010). The authors also argue that board independence improves firm value. Further, Boubaker and Nguyen (2012) argue that the board of directors ensures the integrity of accounting and financial reporting

systems and one such way is the application of relevant IFRS in the preparation of financial statements

H_{04d}: There is no moderating effect of financial reporting quality on the indirect effect of intellectual capital on the relationship between board expertise and firm value

The findings further show that the moderating effect of financial reporting quality on the indirect effect of intellectual capital on board expertise and firm value (path a_{4b3}), is positive and significant ($\beta = 0.002$, $\rho = 0.00 < 0.05$). As a result, the study rejects hypothesis H_{04a} and concludes that financial reporting quality significantly moderates the indirect effect of intellectual capital on the relationship between board expertise and firm value. The findings are consistent with those of prior studies emphasizing the importance of board expertise to organisational positional outcomes. Board expertise denotes board members' quality concerning their educational qualifications, industry experience, and age. Similarly, a study by Saruchi *et al.*, (2019) found out that board expertise has a positive and significant effect on dimensions of IC efficiency (human capital efficiency and the Structural Capital Efficiency). Also, board expertise improves a firm financial reporting quality (Aifuwa & Embele, 2019).

Notably, listed firms on East African securities exchanges have superior intellectual capital as a result of board expertise, which increases investor confidence and, as a result, firm value. The findings support roles played by intellectual capital in enhancing firms' value by confirming that the value of intellectual capital plays a role in different emerging economies such as Kenya and Uganda, where different technological advancements may bring different implications for the valuation of intellectual capital (Bontis *et al.*, 2005).

Furthermore, the findings support previous studies by Dashti *et al.* (2016) and Tui *et al.* (2017), which show that intellectual capital has a positive effect on value. Dashti *et al.* (2016) also demonstrated that intellectual capital formation is particularly important for a company because intellectual capital demonstrates the company's advantages over competitors in conducting board structure toward transparency of corporate management. Transparency by the company's management will be rewarded by investors and the general public in the form of a higher stock market price. The results show that intellectual capital can increase company value because a company can manage its resources to produce unique product innovations in response to market demands. The study findings support the claims of the resource-based theory by demonstrating that the expertise of the board of directors can be leveraged to increase firm value. The findings imply that the board's expertise assists them in effectively analysing financial reports and using the information from the financial reports to make informed decisions.

Table 4.22: Moderated Mediated effect of Intellectual Capital on the Relationship between Board Structure and Firm Value

	Path a			Path b			Path a*b ₃		
	B	Std. Err	ρ-value	B	Std. Err	ρ-value	B	Std.Err	ρ-value
FA	0.682	0.942	0.470	-	-	-	0.022	0.031	0.478
FS	-0.187	0.185	0.312	-	-	-	-0.006	0.006	0.331
FR_IC	-	-	-	0.032	0.009	0.00	-	-	-
BS	-0.843	0.375	0.025	-	-	-	-0.027	0.014	0.058
BD	-0.263	0.122	0.032	-	-	-	-0.008	0.004	0.067
BI	0.354	0.142	0.013	-	-	-	0.011	0.006	0.043
BE	0.979	0.222	0.000	-	-	-	0.002	0.012	0.006
R-squared	0.1449			0.3580					

Source; Field Data (2020)

Table 4.23: Summary of the Hypotheses Tested

Hypothesis	Estimation Method	Test Statistics	Decision and Conclusion
<i>HO_{1a}</i> There is no significant the effect of board sizes on firm value in The Stock Exchange Markets in East Africa	Fixed effects panel regression	$\beta = -0.36$ $p = 0.000$	$P < 0.05$. hypothesis rejected
<i>HO_{1b}</i> There is no significant effect of board diversity on firm value in The Stock Exchange Markets in East Africa	Fixed effects panel regression	$\beta = -0.08$ $p = 0.000$	$P < 0.05$. hypothesis rejected
<i>HO_{1c}</i> There is no significant effect of board independence on firm value in The Stock Exchange Markets in East Africa	Fixed effects panel regression	$\beta = 0.13$ $p = 0.000$	$p < 0.05$. hypothesis rejected
<i>HO_{1d}</i> There is no significant effect of board expertise on firm value in The Stock Exchange Markets in East Africa	Fixed effects panel regression	$\beta = 0.38$ $p = 0.000$	$p < 0.05$. hypothesis rejected
<i>HO_{2a}</i> There is no significant moderating effect of financial reporting quality on the relationship between board size and firm value for firms listed in The Stock Exchange Markets in East Africa	Hierarchical regression	$\beta = -0.01$ $p = 0.000$	$p < 0.05$. hypothesis rejected
<i>HO_{2b}</i> There is no significant moderating effect of financial reporting quality on the relationship between board diversity and firm value for firms listed in The Stock Exchange Markets in East Africa	Hierarchical regression	$\beta = 0.02$ $p = 0.000$	$p < 0.05$. hypothesis rejected
<i>HO_{2c}</i> There is no significant moderating effect of financial reporting quality on the relationship between board independence and firm value for firms listed in The Stock Exchange Markets in East Africa	Hierarchical regression	$\beta = -0.02$ $p = 0.000$	$p < 0.05$. hypothesis rejected
<i>HO_{2d}</i> There is no significant moderating effect of financial reporting quality on the relationship between board expertise and firm value for firms listed in The Stock Exchange Markets in East Africa	Hierarchical regression	$\beta = 0.04$ $p = 0.000$	$p < 0.05$. hypothesis rejected
<i>HO_{3a}</i> There is no mediating effect of intellectual capital on the relationship between board size and firm value for firms listed in The Stock Exchange Markets in East Africa.	Preacher and Sobel test	Hayes $\beta = -0.087$ $p = 0.032$	$p < 0.05$. hypothesis rejected
<i>HO_{3b}</i> There is no mediating effect of intellectual capital on the relationship between board diversity and firm value for firms listed in The Stock Exchange Markets in East Africa.	Preacher and Sobel test	Hayes $\beta = -0.028$ $p = 0.039$	$p < 0.05$. hypothesis rejected

<i>HO_{3c}</i>	There is no mediating effect of intellectual capital on the relationship between board independence and firm value for firms listed in The Stock Exchange Markets in East Africa.	Preacher Sobel test	and	Hayes	$\beta = 0.037$ $p = 0.019$	$p < 0.05$. hypothesis rejected
<i>HO_{3d}</i>	There is no mediating effect of intellectual capital on the relationship between board expertise and firm value for firms listed in The Stock Exchange Markets in East Africa.	Preacher Sobel test	and	Hayes	$\beta = 0.103$ $p = 0.000$	$p < 0.05$. hypothesis rejected
<i>HO_{4a}</i>	There is no moderating effect of financial reporting quality on the mediating effect of intellectual capital on the relationship between board size and firm value for firms listed in The Stock Exchange Markets in East Africa.	Preacher Sobel test	and	Hayes	$\beta = -0.027$ $p = 0.055$	$p > 0.05$. hypothesis failed to be rejected
<i>HO_{4b}</i>	There is no moderating effect of financial reporting quality on the mediating effect of intellectual capital on the relationship between board diversity and firm value for firms listed in The Stock Exchange Markets in East Africa.	Preacher Sobel test	and	Hayes	$\beta = -0.08$ $p = 0.067$	$p > 0.05$. hypothesis failed to be rejected
<i>HO_{4c}</i>	There is no moderating effect of financial reporting quality on the mediating effect of intellectual capital on the relationship between board independence and firm value for firms listed in The Stock Exchange Markets in East Africa.	Preacher Sobel test	and	Hayes	$\beta = 0.011$ $p = 0.043$	$p < 0.05$. hypothesis rejected
<i>HO_{4d}</i>	There is no moderating effect of financial reporting quality on the mediating effect of intellectual capital on the relationship between board expertise and firm value for firms listed in The Stock Exchange Markets in East Africa.	Preacher Sobel test	and	Hayes	$\beta = 0.002$ $p = 0.006$	$p < 0.05$. hypothesis rejected

CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 Overview

This chapter presents the summary of study findings and draws conclusions from the findings based on the study objectives. This chapter also presents the recommendations made from the findings. In the last part of this chapter, suggestions for further research and limitations of the study studies are also discussed.

5.2 Summary of Findings

The main objective of the study was to determine the relationship between firm value, board structure, intellectual capital, and financial reporting quality among firms listed on the Stock Exchange Markets in East Africa for the period 2012-2019. Specific objectives were to determine the effect of board structure (board size, board independence, board diversity, and board expertise on firm value of firms listed on the Securities Exchange Markets in East Africa, Examine the moderating effect of financial reporting quality on the relationship between board structure and firm value for firms listed on the Securities Exchange Markets in East Africa and determine the mediating effect of intellectual capital on the relationship between board structure and firm value for firms listed on the Securities Exchange Markets in East Africa.

Data for this study were collected from audited financial statements for both four security markets in East Africa (NSE, USE, RSE, and DSE). Using inclusion-exclusion criteria, a sample of 67 firms was obtained for East Africa stock markets. During analysis, the number of firms selected per sector is presented. Descriptive statistics such as mean, median, maximum, minimum, and standard deviation were calculated. Correlation analysis was used to show the strength and direction of the

relationship among variables in the study. The hypotheses were tested using the fixed effect regression model while hierarchical regression tested the moderating role of financial reporting quality. Further, the mediation effect of intellectual capital was ascertained using the Sobel test.

Stationary tests were done using Levin-Lin-Chu and Im-Pesaran-Shin unit root tests. The two tests were applied to check for robustness. Levin-Lin-Chu test indicated that firm value (FV), board size (BS), board independence (BI), board expertise (BE), financial reporting (FRQ), and value-added capital indicated that they are stationary at levels and at first difference. Im-Pesaran-Shin unit root test indicated that BS, BI indicated unit root at levels while FV, BE, FRQ and IC were all stationary at levels. Upon first difference, the variables were stationary. From unit root tests, it was concluded that all FC, BS, BI, BE, BD FRQ, and IC were stationary after the first difference. Model selection was done using Hausman model specification test and the study considered fixed effects regression coefficients in testing the hypothesis of direct effect of board structure on firm value of the firms listed in The Stock Exchange Markets in East Africa.

5.2.1 Effect of Board Size on Firm Value

The size of the board had a negative and significant effect on firm value ($= -0.37, p < .05$). In contrast to the findings, Cooper *et al.* (2008) and Watanabe *et al.* (2013) explained that a large board size provides CEO compensation that is unrelated to performance and is instead determined by the size of the firm's balance sheet, which is likely to encourage asset accumulation at the expense of creating value, thereby reducing firm value. Similarly, the findings contradict Mak and Kusnadi (2005) findings that board size is the most important governance variable and has a

strong negative effect on firm value as measured by Tobin's Q. Baker and Griffith (2010) also discover a positive relationship between board size and Tobin's Q as well as effective board monitoring.

Furthermore, the findings contradict those of Guest (2009), who discovered that large board sizes reduce firm value. Furthermore, Nguyen and Faff (2007) discovered that as board size increases, firm value decreases, but at a decreasing rate, implying that the relationship between board size and firm value is not strictly linear. Several studies, in summary, show a positive or negative relationship between board size and firm value. As a result, additional research is required, as the current study finds no evidence of a relationship between the two variables.

5.2.2 Effect of Board Diversity on Firm Value

Board diversity has a significantly negative effect on firm value of firms listed on The Stock Exchange Markets in East Africa ($= -0.058, p < .05$). In contrast to the study findings, Agyemang *et al.* (2019) discovered that the presence of women on corporate boards of UK financial institutions has a positive and statistically significant relationship with the firm's value. Similarly, Inua *et al.* (2019) found that males dominate corporate boards of publicly traded firms in Nigeria, and gender diversity had a small impact on firm value. Notably, an increase in female board representation reduces the firm value of selected companies in the Nigerian economy. Furthermore, Manyaga and Taha (2020) stated that board diversity can have a significant impact on a company's performance, which in turn affects the firm's value. Clearly, there has been little scholarly research on the relationship between board diversity and firm value. This necessitates further research in order to provide a clear account of the direction of the relationship between the two variables.

5.2.3 Effect of Board Independence on Firm Value

Board independence had a positive and significant effect on firm value ($\beta = 0.13$, p-value = 0.000 < 0.05). In line with the findings, Kabir *et al.* (2019) confirmed that board independence positively impacts firm value as estimated by economic value added. Similarly, Jackling *et al.* (2009) confirmed that independent directors are beneficial to an organization. In the same way, Babatunde *et al.* (2016) asserted that board independence had a positive and statistically significant effect on firm value. Moreover, Bhat *et al.* (2018) indicated that board independence had a positive and significant association with firm value strictly for state-run corporations. Also, Kumar & Singh, (2012) espoused that independence of the directors mitigate the agency problems and increase the transparency of the company's affairs, and provide more assurance to investors. The findings also conform to that of Jenwittayaroje *et al.* (2019), which indicated that independent directors are really helpful in providing solutions and remedies at times of crisis in firms. However, the findings are contrary to that of Sulaiman (2014), who found no influence between board structure (board independence) and firm value of the companies in the United Kingdom. Overall, the study findings are in line with the bulk of the empirical literature which points to a positive link between board independence and firm value.

5.2.4 Effect of Board Expertise on Firm Value

The results revealed a positive and significant relationship between board expertise and firm value ($\beta = 0.38$, p-value 0.000 < 0.05). According to Faleye *et al.* (2018), board industry expertise has a positive effect on innovation. Furthermore, the authors argued that the magnitude to which board industry know-how produces higher firm value is dependent on the importance of corporate innovation in the firm's value chain. Meng and Tian (2020) argue that, contrary to the findings, board expertise may reduce the

CEO's incentive to properly implement a project. According to the authors, when the board's expertise is high enough, the CEO has incentives to underreport his project evaluation to the board. Clearly, there is a scarcity of information about the relationship between board expertise and firm value. More research on the relationship between the two variables in the context of publicly traded companies is required.

5.2.5 Moderating Effect of Financial Reporting Quality on the Relationship between Board Structure and Firm Value

The results of the moderating effect of financial reporting quality revealed that financial reporting quality has a negative and significant moderating effect on the relationship between board size and firm value ($\beta = -0.01$, $\rho < 0.05$). Though higher-quality financial information provides the board with better market information, allowing firms to act in the market with greater confidence, board effectiveness (measured by size) may influence financial reporting.

Furthermore, the beta value ($\beta = 0.02$, $\rho < 0.05$) indicates that financial reporting quality has a positive and significant moderating effect on the relationship between board diversity and firm value of East African listed firms. Clearly, the direction of the relationship between board diversity and firm value shifts from non-linear to statistically significant when financial reporting quality improves. It means that, with financial reporting quality, a diverse board can broaden the scope and quality of information they report to ensure that market participants are fully informed in order to make well-informed investment decisions. As a result, high-quality information promotes greater transparency, which reduces information asymmetries and thus increases firm value.

On the other hand, financial reporting quality had a negative and significant moderating effect on the relationship between board independence and firm value of East African listed firms ($\beta = 0.01$, $\rho < 0.05$). There is a possibility that independent directors are unaware of the financial reporting quality of the firms, so they are unable to make a significant impact on the firm's value. The findings are consistent with those of Annuar and Rashid (2015), who stated that the role of independent directors is more about steering the company forward, but management is in charge of making things happen.

Similarly, financial reporting quality has no significant moderating effect on the relationship between board expertise and firm value of East African listed firms ($\beta = 0.01$, > 0.05). It means that the direction of the relationship between board expertise and firm value shifts from significant to non-linear as financial reporting quality improves.

5.2.6 Mediating Effect of Intellectual Capital on the Relationship between Board Structure and Firm Value

Hypothesis H_{03a} stated that intellectual capital has no mediating effect on the relationship between board size and firm value for firms listed in The Stock Exchange Markets in East Africa. However, the study reported a significant mediating effect (a_1b_1 , $\beta = -0.001$, $p\text{-value} < 0.05$). Contrary to the findings, Arifin (2017) established that board structure had no significant effect on intellectual capital. Similarly, Hatane, Tertiadjadi, and Josuatarigan (2017) confirmed that board size and board composition did not have any significant influence on intellectual capital in Indonesia. Further support to the study findings was by Relatedly, Jamei (2017) who found no significant linkage between the number of board members and intellectual capital.

However, the findings are in contrast with that of Hassan and Yaacob (2019) which indicated that board size had a significant and positive association with intellectual capital efficiency.

Hypothesis H_{03b} stated that intellectual capital has no mediating effect on the relationship between board diversity and firm value for firms listed in The Stock Exchange Markets in East Africa. The study reported a significant mediating effect (a_2b_1 , $\beta = -0.01$, ρ -value < 0.05). The study adds new insights on how the representation of women on the board among listed firms in The Stock Exchange Markets in East Africa by highlighting the indirect impact of board diversity on firm value through intellectual capital performance. The scarcity of knowledge on the existing relationship between board diversity and firm value through intellectual necessitates further studies on other demographic characteristics of the board, which might improve firm value through intellectual capital efficiency.

Hypothesis H_{03c} stated that intellectual capital has no mediating effect on the relationship between board independence and firm value for firms listed in The Stock Exchange Markets in East Africa variable intellectual capital mediates the relationship between board independence and firm value (a_3b_1 , $\beta = 0.02$, ρ -value < 0.05). According to the findings, outside directors are a potential source of new business contacts and networks for firms, which creates new opportunities for the firm and, as a result, increases firm value. Outside directors also play a variety of roles and have access to a wide range of resources that aid in the execution of strategy and the evaluation of managers' decisions.

Hypothesis H_{03d} stated that intellectual capital has no mediating effect on the relationship between board expertise and firm value for firms listed in The Securities

Exchange Markets in East Africa board expertise and firm value (a_3b_1 , $\beta= 0.04$, ρ -value <0.05). A higher level of expertise in a firm results in a greater level of intellectual capital and this translates to higher firm value. In tally with the results, Hassan and Yaacob (2019) affirmed that there was no association between board composition and intellectual capita efficiency. The findings are also in agreement with that of Makki and Lodhi (2014) which revealed that a company that has excellent board structure strategies is guaranteed improved intellectual efficiency ultimately generating more return on investment, return on equity, and net profit.

5.2.7 Moderating Effect of Financial Reporting Quality on the Mediating Effect of Intellectual Capital on the Relationship between Board Structure and Firm Value

The final objective of the study was to determine whether financial reporting quality moderates the indirect effect of intellectual capital on firm value firms listed in The Stock Exchange Markets in East Africa. The findings indicated that financial reporting had a positive and significant moderating effect on the relationship between intellectual capital and firm value. However, the significance of the moderated mediation path varied among the elements of board structure.

The indirect relationship between board expertise (a_1b_3 , $\beta= 0.002$, $\rho<0.05$), board independence (a_2b_3 , $\beta= 0.011$, $\rho<0.05$) and firm value through intellectual capital was significantly moderated by financial reporting, while that of board size (a_3b_3 , $\beta= -0.027$, $\rho >0.05$) and board gender (a_4b_3 , $\beta= -0.008$, $\rho>0.05$) was not.

5.3 Conclusion

Evidence from the study suggests that board size has no significant influence on firm value. It could be that an increase or decrease in the size of the board is not associated

with an improvement in the boards' skills, experience, and expertise. As such, the change in the number of directors has no influence on factors such as decision making which have the potential of influencing firm value. However, when the relationship between board size and firm value is moderated with financial reporting quality, there is a change in the direction of the relationship. Notably, financial reporting quality strengthens the relationship between the two variables. It appears that the knowledge of financial reporting enhances the utility of the board which in turn boosts the firm value.

Further, intellectual capital has no mediating effect on the relationship between board size and firm value. There is a possibility that the benchmark for a number of directors on the board to enhance intellectual capital appears to be too high. As a result, it is unrealistic to pursue a strategy that would enhance the intellectual capital by increasing the proportion of directors on the board. However, what is in doubt is the board size that is needed to spur the intellectual capital and in turn, enhance the firm value.

Also, the presence of women directors in the listed firms is not associated with firm value. The findings are notwithstanding the fact that the listed firms in East African securities operate in a diverse market place which requires a diverse board that is more effective in problem-solving, corporate leadership, and innovation. Nevertheless, when moderated with financial reporting quality, board diversity enhances firm value. The implication is that financial reporting quality enhances the effectiveness of the diverse board. Further findings indicated that the relationship between board diversity and firm value through intellectual capital is insignificant. The findings are in contradiction to the view by Nguyen, & Faff, (2007) that women

play an essential role in enhancing the effectiveness of the board of directors. The study findings, necessitate future studies to validate the utility of board diversity to a firms' intellectual capital and the overall firm value.

Moreover, board independence had a positive impact on firm value. Evidence suggests that the independent directors are effective towards monitoring management and providing more and better expert advice. However, when moderated with financial reporting quality, there is no relationship between board independence and firm value. It could mean that the outside directors do not benefit from high quality financial reporting information that is instrumental in enhancing firm value. Nevertheless, independent directors contribute to the firm's intellectual capital. The implication is that independent directors have experience and expertise that is key in enhancing intellectual capital and overall firm value.

Finally, board expertise exhibited a positive and significant relationship with firm value. The implication is that a board whose directors have knowledge of the accepted accounting principles, financial statements enhances firm value (Masakari & Ombaba, 2018). However, when moderated with financial reporting quality, board expertise has no influence on firm value. In that regard, there is a need for further studies on the same since financial reporting quality provides the board with high quality financial reporting information significant for firm value. Further, the intellectual capital variable partially mediates the relationship between board expertise and firm value. Remarkably, through board expertise, the listed firms have superior intellectual capital which increases the firm value.

5.4 Implications

5.4.1 Practical Implications

The findings from the analysis point to an insignificant relationship between board size and firm value. It is therefore instrumental for listed firms to establish the board size that would enhance firm value with subsequent member appointments. Further, since financial reporting quality enhances the relationship between board size and firm value, it is of utmost necessary for directors on the board to have sufficient knowledge and expertise on financial reporting. As well, listed firms should ensure that the board members have the skills, experience, and expertise that contribute positively to the firm's intellectual capital. In so doing, the composition of the board would be able to contribute to the firm value.

Despite the insignificant relationship between board diversity and firm value, it is evident that there is low representation of women in the boards of listed firms in The Securities Exchange Markets in East Africa. It could be due to their low representation that the study was unable to establish a significant link between the presence of women directors and firm value. There is thus a need to increase the representation of women on the board to establish if they will contribute to the effectiveness of the board and the overall firm value. Further, it seems that, by enhancing their financial reporting quality, there will be provisions for including women on the board. In turn, the board diversity results in enhanced firm value. As such, it is important for the listed firms to establish the factors that determine the appointment of women on the board and if the firms would be required to increase the size of the board to accommodate more women. In so doing, there will be insights on whether a large board size with more representation of women contributes to the firms' intellectual capital and eventually firm value. Also, there will be insights on

whether the presence of women on the board improves the quality of the boards' decisions and in turn firm value.

Notably, board independence enhances firm value. It is therefore important to have an optimal mix between insiders and outsiders to benefit from the knowledge and expertise of insiders about the firm as well as the monitoring and control from outsiders. Also, firms should include independent directors because they are good at balancing the board since they do not represent the investors. As such, they are capable of moving the firm in the right direction by providing the management with advice to enhance firm value.

Finally, in view of the positive link between board expertise and firm value, it is necessary for the Capital Market Authority to have a provision on the appointment of board members with diverse expertise to enhance firms' intellectual capital and firm value. Besides, it is important to have board members with diverse expertise since it influences their impact on the board oversight responsibilities. The study also recommends the inclusion of members in the board with expertise in financial reporting.

5.4.2 Policy Implications

The existing regulators, such as the Capital Markets Authority, central banks, and other regulators in the industries in which listed companies operate, should develop standard operating procedures to guide companies in their industries, as well as those that are listed, in developing high firm value. Now that intellectual capital is a reason for improved firm value, management in listed companies should focus on maintaining an efficient intellectual capital mix that creates value addition to the listed companies.

5.4.3 Theoretical Implications

Agency theory is supported by the study's findings, which demonstrate empirically that factors like board expertise and board independence can help reduce the agency problem by demonstrating management's openness and accountability in corporate operations. Furthermore, the ability of enterprises to manage their assets is reflected in the disclosure of information about intellectual capital, increasing the percentage of investments based on knowledge. Board structure, intellectual capital, and financial reporting quality are examined in this study to establish a model. The findings support current hypotheses and studies. So it helps to increase our understanding of this subject matter.

5.5 Limitation and Suggestions for Further Research

This study warrant additional investigation, given the study's scope and limitations: First, the study focused on four board structures: board size, diversity, independence, and expertise. Other aspects of board structure, such as age and education, should be taken into account in future research. Other indicators of business value that could be utilized in future research include total assets, return on assets (ROA), return on investment (ROI), earnings per share (EPS), sales growth (Gross Sales Margin), ROI (Return on Investment) and Expenses to Assets (EAA).

The research employed the VAIC approach, which has been criticized for failing to distinguish between expenditures and assets. When it comes to accounting, assets are thought to have a claim on future benefits, while expenses are thought to have no value beyond the time in which they are recorded. As a result, other methods of assessing intellectual capital should be considered in future research.

REFERENCES

- Abdullah, N. A. I. N., Ali, M. M., & Haron, N. H. (2017). Ownership structure, firm value and growth opportunities: Malaysian evidence. *Advanced Science Letters*, 23(8), 7378-7382.
- Abdullah, S. N. (2004). Board composition, CEO duality and performance among Malaysian listed companies. *Corporate Governance: The international journal of business in society*.
- Act, C. M. A. (2002). Corporate governance guidelines: Government Printers, Nairobi.
- Adelegan, O. J. (2008). Can regional cross-listings accelerate stock market development? Empirical evidence from Sub-Saharan Africa.
- Adjaoud, F., Zeghal, D., & Andaleeb, S. (2007). The effect of board's quality on performance: A study of Canadian firms. *Corporate Governance: An International Review*, 15(4), 623-635.
- Agrawal, A., & Knoeber, C. R. (1996). Firm performance and mechanisms to control agency problems between managers and shareholders. *Journal of financial and quantitative analysis*, 31(3), 377-397.
- Agus, T. (2010). Financial management theory and application: Yogyakarta: BPF.
- Agyemang, M., Kusi-Sarpong, S., Khan, S. A., Mani, V., Rehman, S. T., & Kusi-Sarpong, H. (2019). Drivers and barriers to circular economy implementation: an explorative study in Pakistan's automobile industry. *Management Decision*.
- Agyemang, O. S., & Castellini, M. (2013). Corporate governance in an emergent economy: A case of Ghana. *IUP Journal of Corporate Governance*, 12(3), 7.
- Agyemang, O. S., Aboagye, E., Antwi, S., & Frimpong, J. (2014). Board of directors and firm performance of banking institutions: A Ghanaian experience.
- Ahmadu, S., Aminu, S. M., & Tukur, G. (2005). Corporate governance mechanisms and firm financial performance in Nigeria.
- Ahmed, A. S., & Duellman, S. (2007). Accounting conservatism and board of director characteristics: An empirical analysis. *Journal of accounting and economics*, 43(2-3), 411-437.
- Aifuwa, H. O., & Embele, K. (2019). Board Characteristics and Financial Reporting. *Journal of Accounting and Financial Management*, 5(1), 30-44.
- Aiken, L. S., West, S. G., & Reno, R. R. (1991). *Multiple regression: Testing and interpreting interactions*: sage.
- Akileng, G., Ogwang, A. A., & Ssendyona, C. (2019). Determinants of performance of securities exchanges in East Africa. *Journal of Finance and Investment Analysis*, 7(3), 1-3.

- Al-Awawdeh, H. A. (2018). The Impact of Economic Value Added, Market Value Added and Traditional Accounting Measures on Shareholders; Value: Evidence from Jordanian Commercial Banks. *International Journal of Economics and Finance*, 10(10), 1-40.
- Alchian, A. A., & Demsetz, H. (1972). Production, information costs, and economic organization. *The American economic review*, 62(5), 777-795.
- Al-Dmour, A., Abbod, M., & Al-Balqa, N. (2018). The impact of the quality of financial reporting on non-financial business performance and the role of organizations demographic attributes (type, size and experience).
- Alhaji, I. A. (2012). Does Director's Competencies Matter To Corporate Governance? A Review of Literature.
- Allison, P. D. (2009). *Fixed effects regression models*: SAGE publications.
- Al-Matari, Y. A., Al-Swidi, A. K., Fadzil, F. H. B. H., & Al-Matari, E. M. (2012). Board of directors, audit committee characteristics and the performance of Saudi Arabia listed companies. *International Review of Management and Marketing*, 2(4), 241-251.
- Almurni, S. (2019). *Effect of Quality of Financial Reporting to Asymmetry Information on Manufacturing Company in BEI*. Paper presented at the 5th Annual International Conference on Accounting Research (AICAR 2018).
- Alonso, A. D., & Kok, S. (2018). A resource-based view and dynamic capabilities approach in the context of a region's international attractiveness: The recent case of Western Australia. *Local Economy*, 33(3), 307-328.
- Al-Sartawi, A., & Abdalmuttaleb, M. (2018). Corporate governance and intellectual capital: evidence from gulf cooperation council countries. *Academy of Accounting and Financial Studies Journal*, 22(1), 1-12.
- Ammann, M., Oesch, D., & Schmid, M. M. (2011). Corporate governance and firm value: International evidence. *Journal of Empirical Finance*, 18(1), 36-55.
- Anis, R. M. M. (2016). Disclosure quality, corporate governance mechanisms and firm value.
- Annur, H. A., & Rashid, H. M. A. (2015). An investigation of the control role and effectiveness of independent non-executive directors in Malaysian public listed companies. *Managerial Auditing Journal*.
- Anyanzwa, J. (2019). SGR Future in Doubt as Governments Revert to Old Metre Gauge Railways. *East African*.
- Appuhami, R., & Bhuyan, M. (2015). Examining the influence of corporate governance on intellectual capital efficiency: Evidence from top service firms in Australia. *Managerial Auditing Journal*.
- Arieftiara, D., Utama, S., Wardhani, R., & Rahayu, N. (2019). Contingent fit between business strategies and environmental uncertainty: The impact on corporate tax avoidance in Indonesia. *Meditari Accountancy Research*.

- Arifin, J. (2017). Corporate Governance and Intellectual Capital on Firm Value of Banking Sector Companies Listed at Indonesia Stock Exchange in Period 2008-2012. *Wacana Journal of Social and Humanity Studies*, 20(1).
- Baker, T., & Griffith, S. J. (2007). Predicting corporate governance risk: Evidence from the directors' & officers' liability insurance market. *The university of Chicago law review*, 487-544.
- Bala, A. J., Raja, A. S., & Dandago, K. I. (2019). The mediating effect of intellectual capital on corporate governance and performance of conglomerates in Nigeria. *SEISENSE Journal of Management*, 2(3), 16-29.
- Ball, R., Kothari, S., & Robin, A. (2000). The effect of international institutional factors on properties of accounting earnings. *Journal of accounting and economics*, 29(1), 1-51.
- Barney, J. (1991). Special theory forum the resource-based model of the firm: origins, implications, and prospects. *Journal of management*, 17(1), 97-98.
- Barney, J. B., Ketchen Jr, D. J., & Wright, M. (2011). The future of resource-based theory: revitalization or decline? *Journal of management*, 37(5), 1299-1315.
- Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of personality and social psychology*, 51(6), 1173.
- Barth, M. E., Landsman, W. R., & Lang, M. H. (2008). International accounting standards and accounting quality. *Journal of accounting research*, 46(3), 467-498.
- Becht, M., Bolton, P., & Röell, A. (2003). Corporate governance and control *Handbook of the Economics of Finance* (Vol. 1, pp. 1-109): Elsevier.
- Beest, F. V., Braam, G., & Boelens, S. (2009). Quality of Financial Reporting: measuring qualitative characteristics.
- Belkaoui, A. R. (2003). Intellectual capital and firm performance of US multinational firms: a study of the resource-based and stakeholder views. *Journal of Intellectual capital*, 4(2), 215-226.
- Berger, W., Coutinho, E. S. F., Figueira, I., Marques-Portella, C., Luz, M. P., Neylan, T. C., . . . Mendlowicz, M. V. (2012). Rescuers at risk: a systematic review and meta-regression analysis of the worldwide current prevalence and correlates of PTSD in rescue workers. *Social psychiatry and psychiatric epidemiology*, 47(6), 1001-1011.
- Bernile, G., Bhagwat, V., & Yonker, S. (2018). Board diversity, firm risk, and corporate policies. *Journal of financial economics*, 127(3), 588-612.
- Berzkalne, I., & Zelgalve, E. (2014). Intellectual capital and company value. *Procedia-Social and Behavioral Sciences*, 110, 887-896.
- Bhagat, S., & Black, B. (2001). The non-correlation between board independence and long-term firm performance. *J. CorP. l.*, 27, 231.

- Bhat, K. U., Chen, Y., Jebran, K., & Bhutto, N. A. (2018). Corporate governance and firm value: a comparative analysis of state and non-state owned companies in the context of Pakistan. *Corporate Governance: The international journal of business in society*.
- Bhattacharjee, S., Chakraborty, S., & Bhattacharjee, S. (2017). Impact of corporate governance attributes on intellectual capital disclosure: evidence from listed banking companies in Bangladesh. *Prestige International Journal of Management & IT-Sanchayan*, 6(1), 20-42.
- Bhullar, P. S. (2017). Empirical Analysis of Operating Efficiency and Firm Value: A Study of Fast Moving Consumer Goods and Pharmaceutical Sector in India. *International Journal of Economics and Financial Issues*, 7(3), 671-675.
- Bhullar, P. S., Bhatnagar, D., & Gupta, P. (2018). Impact of buyback of shares on firm value: An empirical evidence from India. *Iranian Journal of Management Studies*, 11(3), 425-436.
- Bhullar, P., & Bhatnagar, D. (2013). Theoretical framework EV vs. Stock price—A better measurement of firm value. *International Journal of Commerce, Business and Management*, 2(6), 335-343.
- Bistrova, J., & Lace, N. (2012). Defining key factors to sustain maximum shareholder value. *Journal of Financial Studies & Research*, 2012, 1.
- Biswas, P. K. (2015). Corporate governance reforms in emerging countries: A case study of Bangladesh. *International Journal of Disclosure and Governance*, 12(1), 1-28.
- Blowfield, M., & Murray, A. (2014). *Corporate responsibility*: Oxford University Press, USA.
- Bohnstedt, A., Hannig, A., & Odendall, R. (2000). Capital Market Development in Uganda—Private sector opinions on listing. *Bank of Uganda—German Technical Co-operation Financial System Development (FSD) Project, FSD Series(2)*.
- Bøhren, Ø., & Strøm, R. Ø. (2007). *Aligned, informed, and decisive: Characteristics of value-creating boards*. Paper presented at the EFA 2007 Ljubljana Meetings Paper.
- Bontis, N., Keow, W. C. C., & Richardson, S. (2000). Intellectual capital and business performance in Malaysian industries. *Journal of Intellectual capital*.
- Boon, O. K., & Arumugam, V. (2006). The influence of corporate culture on organizational commitment: case study of semiconductor organizations in Malaysia. *Sunway Academic Journal*, 3(1), 99-115.
- Borlea, S. N., Achim, M. V., & Mare, C. (2017). Board characteristics and firm performances in emerging economies. Lessons from Romania. *Economic research-Ekonomska istraživanja*, 30(1), 55-75.
- Boubaker, S., Nguyen, B. D., & Nguyen, D. K. (2012). *Corporate Governance*. Springer.

- Bounfour, A. (2003). The IC-dVAL approach. *Journal of Intellectual capital*.
- Brennan, N., & McDermott, M. (2004). Alternative perspectives on independence of directors: Wiley Online Library.
- Brooks, C. (2008). RATS Handbook to accompany introductory econometrics for finance. *Cambridge Books*.
- Brown, L. D., & Caylor, M. L. (2004). Corporate governance and firm performance. Available at SSRN 586423.
- Bueno, E., Salmador, M. P., & Rodríguez, Ó. (2004). The role of social capital in today's economy: Empirical evidence and proposal of a new model of intellectual capital. *Journal of Intellectual capital*.
- Burns, N., & Grove, S. K. (2010). *Understanding nursing research-eBook: Building an evidence-based practice*: Elsevier Health Sciences.
- Burton, J. M. (2000). The configuration of meaning: Learner-centered art education revisited. *Studies in Art Education*, 41(4), 330-345.
- Cahan, S. F., Chua, F., & Nyamori, R. O. (2005). Board structure and executive compensation in the public sector: New Zealand evidence. *Financial accountability & management*, 21(4), 437-465.
- Caligiuri, P., & Santo, V. D. (2001). Global competence: what is it, and can it be developed through global assignments? *Human Resource Planning*, 24(3).
- Campbell, K., & Mínguez-Vera, A. (2008). Gender diversity in the boardroom and firm financial performance. *Journal of business ethics*, 83(3), 435-451.
- Canibano, L., Garcõa-Ayuso, M., & SaÃnchez, M. (2000). ^aAccounting for intangibles: a literature review^o. *Journal of Accounting Literature*, 19, 102-130.
- Canibano, L., & SÃnchez, M. P. (2009). Intangibles in universities: current challenges for measuring and reporting. *Journal of Human Resource Costing & Accounting*.
- Carter, C. B., & Lorsch, J. W. (2003). *Back to the drawing board: Designing corporate boards for a complex world*: Harvard Business Press.
- Cascino, S., Clatworthy, M., GarcÃa Osma, B., Gassen, J., Imam, S., & Jeanjean, T. (2014). Who uses financial reports and for what purpose? Evidence from capital providers. *Accounting in Europe*, 11(2), 185-209.
- Cavaco, S., Crifo, P., RebÃerioux, A., & Roudaut, G. (2017). Independent directors: Less informed but better selected than affiliated board members? *Journal of Corporate Finance*, 43, 106-121.
- Cerbioni, F., & Parbonetti, A. (2007). Exploring the effects of corporate governance on intellectual capital disclosure: an analysis of European biotechnology companies. *European Accounting Review*, 16(4), 791-826.

- Chahal, H., & Bakshi, P. (2016). Measurement of intellectual capital in the Indian banking sector. *Vikalpa*, 41(1), 61-73.
- Chan, K. H. (2009). Impact of intellectual capital on organisational performance: An empirical study of companies in the Hang Seng Index (Part 1). *The learning organization*.
- Che, M. H. H., Rashidah Abdul, R., & Sakthi, M.(2008). *Corporate governance, transparency and performance of Malaysian companies. Managerial Auditing Journal*, 23(8), 744-778.
- Cheffins, B. R. (2015). Corporate governance since the managerial capitalism era. *Business History Review*, 89(4), 717-744.
- Chen, F., Hope, O.-K., Li, Q., & Wang, X. (2011). Financial reporting quality and investment efficiency of private firms in emerging markets. *The accounting review*, 86(4), 1255-1288.
- Chen, M. C., Cheng, S. J., & Hwang, Y. (2005). An empirical investigation of the relationship between intellectual capital and firms' market value and financial performance. *Journal of Intellectual capital*.
- Chung, K. H., & Pruitt, S. W. (1994). A simple approximation of Tobin's q. *Financial management*, 70-74.
- Claessens, S., & Yurtoglu, B. B. (2013). Corporate governance in emerging markets: A survey. *Emerging markets review*, 15, 1-33.
- Coase, R. H. (1937). The nature of the firm. *economica*, 4(16), 386-405.
- Cohen, J. R., Krishnamoorthy, G., & Wright, A. (2004). The corporate governance mosaic and financial reporting quality. *Journal of Accounting Literature*, 87-152.
- Conger, J. A., & Ready, D. A. (2004). Rethinking leadership competencies. *Leader to leader*, 2004(32), 41.
- Cooper, M. J., Gulen, H., & Schill, M. J. (2008). Asset growth and the cross-section of stock returns. *the Journal of Finance*, 63(4), 1609-1651.
- Creswell, J. W., & Creswell, J. D. (2017). *Research design: Qualitative, quantitative, and mixed methods approaches*: Sage publications.
- Damodaran, A. (2007). *Valuation approaches and metrics: a survey of the theory and evidence*: Now Publishers Inc.
- Dang, H. N., Vu, V. T. T., Ngo, X. T., & Hoang, H. T. V. (2019). Study the impact of growth, firm size, capital structure, and profitability on enterprise value: Evidence of enterprises in Vietnam. *Journal of Corporate Accounting & Finance*, 30(1), 144-160.
- DeAngelo, H., DeAngelo, L., & Stulz, R. M. (2006). Dividend policy and the earned/contributed capital mix: a test of the life-cycle theory. *Journal of Financial economics*, 81(2), 227-254.

- Dechow, P. M., & Dichev, I. D. (2002). The quality of accruals and earnings: The role of accrual estimation errors. *The accounting review*, 77(s-1), 35-59.
- Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting earnings management. *Accounting review*, 193-225.
- Deloitte. (2013). Women in the boardroom: a global perspective: Deloitte Center for Corporate Governance London.
- Dittmar, A., Mahrt-Smith, J., & Servaes, H. (2003). International corporate governance and corporate cash holdings. *Journal of financial and quantitative analysis*, 38(1), 111-133.
- Dobbin, F., & Jung, J. (2010). The misapplication of Mr. Michael Jensen: How agency theory brought down the economy and why it might again *Markets on trial: The economic sociology of the US financial crisis: Part B*: Emerald Group Publishing Limited.
- Dogru, T. (2018). Corporate Investment and Hotel Firm Value: Does Corporate Governance Matter in Financially Constrained Firms? *Cornell Hospitality Quarterly*, 59(4), 339-351.
- Drukker, D. M. (2003). Testing for serial correlation in linear panel-data models. *The stata journal*, 3(2), 168-177.
- Duh, M. (2017). Corporate governance codes and their role in improving corporate governance practice. *Corporate governance and strategic decision making*, 8, 53-87.
- Dunlavy, C. A., & Welskopp, T. (2007). Myths and Peculiarities: Comparing US and German Capitalism. *GHI Bulletin*, 41, 33-64.
- Ebenezer, O. O., Islam, M. A., Junoh, M. Z. M., & Yusoff, W. S. (2019). Loan Growth, Bank Solvency and Firm Value: A Comparative Study of Nigerian and Malaysian Commercial Banks. *Journal of Reviews on Global Economics*, 8, 373-386.
- Edvinsson, L., & Malone, M. (1997). Intellectual Capital (HarperBusiness, New York, NY).
- Eisenhardt, K. M. (1985). Control: Organizational and economic approaches. *Management science*, 31(2), 134-149.
- Eisenhardt, K. M. (1989). Agency theory: An assessment and review. *Academy of management review*, 14(1), 57-74.
- Ellis, T. J., & Levy, Y. (2009). Towards a Guide for Novice Researchers on Research Methodology: Review and Proposed Methods. *Issues in Informing Science & Information Technology*, 6.
- Elsayed, K. (2007). Does CEO duality really affect corporate performance? *Corporate Governance: An International Review*, 15(6), 1203-1214.

- Endri, E. (2018). Determinants of Firm Value: A Case Study of Cigarette Companies Listed on the Indonesia Stock Exchange. *International Journal of Managerial Studies and Research (IJMSR)*.
- Eng, L. L., & Mak, Y. T. (2003). Corporate governance and voluntary disclosure. *Journal of accounting and public policy*, 22(4), 325-345.
- Erhardt, N. L., Werbel, J. D., & Shrader, C. B. (2003). Board of director diversity and firm financial performance. *Corporate governance: An international review*, 11(2), 102-111.
- Erkens, D. H., Hung, M., & Matos, P. (2012). Corporate governance in the 2007–2008 financial crisis: Evidence from financial institutions worldwide. *Journal of Corporate Finance*, 18(2), 389-411.
- Ernst, A. F., & Albers, C. J. (2017). Regression assumptions in clinical psychology research practice—a systematic review of common misconceptions. *PeerJ*, 5, e3323.
- Faleye, O., Hoitash, R., & Hoitash, U. (2018). Industry expertise on corporate boards. *Review of Quantitative Finance and Accounting*, 50(2), 441-479.
- Farag, H., & Mallin, C. (2019). Monitoring corporate boards: evidence from China. *The European Journal of Finance*, 25(6), 524-549.
- Fauver, L., Hung, M., Li, X., & Taboada, A. G. (2017). Board reforms and firm value: Worldwide evidence. *Journal of financial economics*, 125(1), 120-142.
- Ficici, A., & Aybar, C. B. (2012). Corporate governance and firm value in emerging markets an empirical analysis of adr issuing emerging market firms. *Emaj: Emerging Markets Journal*, 2(1).
- Fox, J. (2015). *Applied regression analysis and generalized linear models*: Sage Publications.
- Fragouli, E. (2015). Intellectual Capital & Organizational Advantage: an economic approach to its valuation and measurement. *International Journal of Information, Business and Management*, 7(1), 36.
- Fugar, F. D., Ashiboe-Mensah, N. A., & Adinyira, E. (2013). Human capital theory: Implications for the Ghanaian construction industry development. *Journal of Construction Project Management and Innovation*, 3(1), 464-481.
- Gaffikin, M. J. (2008). Accounting theory: Research, regulation and accounting practice.
- Garanina, T. A. (2011). Intellectual capital structure and value creation of a company: evidence from Russian companies.
- García Lara, J. M., Osma, B. G., & Penalva, F. (2007). Board of directors' characteristics and conditional accounting conservatism: Spanish evidence. *European Accounting Review*, 16(4), 727-755.

- Garcia-Meca, E., & Sanchez-Ballesta, J. P. (2010). The association of board independence and ownership concentration with voluntary disclosure: A meta-analysis. *European Accounting Review*, 19(3), 603-627.
- Gassen, J., & Schwedler, K. (2010). The decision usefulness of financial accounting measurement concepts: Evidence from an online survey of professional investors and their advisors. *European Accounting Review*, 19(3), 495-509.
- Gaur, S. S., Bathula, H., & Singh, D. (2015). Ownership concentration, board characteristics and firm performance: A contingency framework. *Management Decision*.
- Gherghina, S. C. (2015). Corporate governance ratings and firm value: Empirical evidence from the Bucharest stock exchange. *International Journal of Economics and Financial Issues*, 5(1), 97.
- Gnanarajah, R. (2017). *Accounting and auditing regulatory structure: Us and international*: Congressional Research Service Washington, DC.
- Goel, P. (2018). Implications of corporate governance on financial performance: an analytical review of governance and social reporting reforms in India. *Asian Journal of Sustainability and Social Responsibility*, 3(1), 1-21.
- Gogan, L. M., Duran, D. C., & Draghici, A. (2015). Structural capital-A proposed measurement model. *Procedia economics and finance*, 23, 1139-1146.
- Gomory, R., & Sylla, R. (2013). The American Corporation. *Daedalus*, 142(2), 102-118.
- Greenland, S., Senn, S. J., Rothman, K. J., Carlin, J. B., Poole, C., Goodman, S. N., & Altman, D. G. (2016). Statistical tests, P values, confidence intervals, and power: a guide to misinterpretations. *European journal of epidemiology*, 31(4), 337-350.
- Grullon, G., Michaely, R., & Swaminathan, B. (2002). Are dividend changes a sign of firm maturity?. *The journal of Business*, 75(3), 387-424.
- Guest, P. M. (2009). The impact of board size on firm performance: evidence from the UK. *The European Journal of Finance*, 15(4), 385-404.
- Gujarati, D. N. (2021). *Essentials of econometrics*: SAGE Publications.
- Güner, A. B., Malmendier, U., & Tate, G. (2008). Financial expertise of directors. *Journal of financial economics*, 88(2), 323-354.
- Haat, M. H. C., Rahman, R. A., & Mahenthiran, S. (2008). Corporate governance, transparency and performance of Malaysian companies. *Managerial Auditing Journal*.
- Hambrick, D. C., & Mason, P. A. (1984). Upper echelons: The organization as a reflection of its top managers. *Academy of management review*, 9(2), 193-206.
- Han, Y., & Li, D. (2015). Effects of intellectual capital on innovative performance: The role of knowledge-based dynamic capability. *Management Decision*.

- Handriani, E., & Robiyanto, R. (2019). Institutional ownership, independent board, the board size, and firm performance: Evidence from Indonesia. *Contaduría y administración*, 64(3).
- Haniffa, R. M., & Cooke, T. E. (2002). Culture, corporate governance and disclosure in Malaysian corporations. *Abacus*, 38(3), 317-349.
- Haniffa, R. M., & Cooke, T. E. (2005). The impact of culture and governance on corporate social reporting. *Journal of accounting and public policy*, 24(5), 391-430.
- Harrison, H., Birks, M., Franklin, R., & Mills, J. (2017). *Case study research: Foundations and methodological orientations*. Paper presented at the Forum Qualitative Sozialforschung/Forum: Qualitative Social Research.
- Hassan, H., & Yaacob, N. M. (2019). Corporate Governance Mechanisms and Intellectual Capital Efficiency: Evidence from Malaysia. *International Journal of Economics and Finance*, 11(1), 83-95.
- Hatane, S. E., Angeline, C. O., Wedysiage, M., & Saputra, V. T. (2019). *Intellectual Capital Disclosure and Firm Value: Does Jokowi's Era Matter?*, Atlantis Press.
- Hatane, S. E., Djajadi, A. T., & Tarigan, J. (2017). *The impact of corporate governance on intellectual capital and firm value: Evidence from Indonesia and Malaysia consumer goods*. Petra Christian University.
- Hatane, S. E., Setiadi, M., & Tarigan, J. (2019). The intervening role of value added intellectual capital on the relationship between corporate governance and firm value. *Journal of Accounting and Investment*, 20(3), 213-235.
- Hayes, A. F. (2013). Introduction to mediation, moderation, and conditional process analysis: Methodology in the Social Sciences. *Kindle Edition*, 193.
- Hejazi, R., Ghanbari, M., & Alipour, M. (2016). Intellectual, human and structural capital effects on firm performance as measured by Tobin's Q. *Knowledge and Process Management*, 23(4), 259-273.
- Henry, D. (2008). Corporate governance structure and the valuation of Australian firms: is there value in ticking the boxes? *Journal of Business Finance & Accounting*, 35(7-8), 912-942.
- Herath, S. K., & Albarqi, N. (2017). Financial reporting quality: A literature review. *International Journal of Business Management and Commerce*, 2(2), 1-14.
- Hermalin, B., & Weisbach, M. S. (2001). Boards of directors as an endogenously determined institution: A survey of the economic literature: National Bureau of Economic Research Cambridge, Mass., USA.
- Hermans, R., & Kauranen, I. (2005). Value creation potential of intellectual capital in biotechnology—empirical evidence from Finland. *R&d Management*, 35(2), 171-185.

- Hermuningsih, S. (2013). Profitability, growth opportunity, capital structure and the firm value. *Buletin Ekonomi Moneter Dan Perbankan*, 16(2), 115-136.
- Hessayri, M., & Saihi, M. (2017). What would influence firm valuation? Financial reporting and shareholder governance. *International Journal of Economics and Financial Issues*, 7(2), 292.
- Hessayri, M., & Saihi, M. (2018). Ownership dynamics around IFRS adoption: emerging markets context. *Journal of Accounting in Emerging Economies*.
- Hidalgo, R. L., García-Meca, E., & Martínez, I. (2011). Corporate governance and intellectual capital disclosure. *Journal of business ethics*, 100(3), 483-495.
- Hirdinis, M. (2019). Capital structure and firm size on firm value moderated by profitability.
- Hitchner, J. R. (2010). *Financial Valuation, + Website: Applications and Models* (Vol. 545): John Wiley & Sons.
- Ho, S. S., & Wong, K. S. (2001). A study of the relationship between corporate governance structures and the extent of voluntary disclosure. *Journal of International Accounting, Auditing and Taxation*, 10(2), 139-156.
- Hsu, I.-C., & Sabherwal, R. (2011). From intellectual capital to firm performance: the mediating role of knowledge management capabilities. *IEEE Transactions on Engineering Management*, 58(4), 626-642.
- Hussein, K., & Kiwia, B. M. (2009). Examining the relationship between female board members and firm performance-a panel study of US firms. *African Journal of Finance and Management*.
- Ilaboya, J., & Lodikero, O. (2017). Board independence and financial statement fraud: A moderating effect of female gender diversity. *Accounting and Taxation Review*, 1(1), 196-221.
- Im, K. S., Pesaran, M. H., & Shin, Y. (2003). Testing for unit roots in heterogeneous panels. *Journal of econometrics*, 115(1), 53-74.
- Irving, J. (2005). Regional integration of stock exchanges in Eastern and Southern Africa: Progress and prospects.
- Jackling, B., & Johl, S. (2009). Board structure and firm performance: Evidence from India's top companies. *Corporate Governance: An International Review*, 17(4), 492-509.
- Jamei, R. (2017). Intellectual capital and corporate governance mechanisms: evidence from Tehran stock exchange. *International Journal of Economics and Financial Issues*, 7(5), 86.
- Jarque, C. M., & Bera, A. K. (1987). A test for normality of observations and regression residuals. *International Statistical Review/Revue Internationale de Statistique*, 163-172.

- Jayaram, N., & Baker, J. W. (2008). Statistical tests of the joint distribution of spectral acceleration values. *Bulletin of the Seismological Society of America*, 98(5), 2231-2243.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behaviour, agency costs and ownership structure. *Journal of financial economics*, 3(4), 305-360.
- Jerubet, S., Chepng'eno, W., & Tenai, J. (2017). Effects of Audit Committee Characteristics on Quality of Financial Reporting among Firms Listed in Nairobi Securities Exchange, Kenya. *International journal of economics, commerce and management*, 1, 553-569.
- Jo, H., & Harjoto, M. A. (2011). Corporate governance and firm value: The impact of corporate social responsibility. *Journal of business ethics*, 103(3), 351-383.
- Johl, S. K., Kaur, S., & Cooper, B. J. (2015). Board characteristics and firm performance: Evidence from Malaysian public listed firms. *Journal of Economics, Business and Management*, 3(2), 239-243.
- Jonas, G. J., & Blanchet, J. (2000). Assessing quality of financial reporting. *Accounting horizons*, 14(3), 353.
- Jose, P. E. (2008). ModGraph-I: A programme to compute cell means for the graphical display of moderational analyses: The internet version. *Victoria University of Wellington, Wellington, New Zealand*.
- Kabeer, N., Haq, L., & Sulaiman, M. (2019). Multi-stakeholder initiatives in Bangladesh after Rana Plaza: Global norms and workers' perspectives: Working Paper Series.
- Kabir, R., & Thai, H. M. (2017). Does corporate governance shape the relationship between corporate social responsibility and financial performance? *Pacific Accounting Review*.
- Kajüter, P., Klassmann, F., & Nienhaus, M. (2019). The effect of mandatory quarterly reporting on firm value. *The accounting review*, 94(3), 251-277.
- Kalsie, A., & Shrivastav, S. M. (2016). Analysis of board size and firm performance: evidence from NSE companies using panel data approach. *Indian Journal of Corporate Governance*, 9(2), 148-172.
- Kamasak, R. (2017). The contribution of tangible and intangible resources, and capabilities to a firm's profitability and market performance. *European Journal of Management and Business Economics*.
- Kang, S. C., & Snell, S. A. (2009). Intellectual capital architectures and ambidextrous learning: a framework for human resource management. *Journal of management studies*, 46(1), 65-92.
- Kankanamage, C. (2015). The relationship between board characteristics and earnings management: evidence from Sri Lankan listed companies.

- Kapetanios, G. (2009). Testing for strict stationarity in financial variables. *Journal of Banking & Finance*, 33(12), 2346-2362.
- Kayiza, A. (2014). An analysis of the financial performance of companies listed on the Uganda Stock Exchange: A case study of Uganda Clays Limited.
- Keliwon, K. B., Shukor, Z. A., & Hassan, M. S. (2018). Internet financial reporting (IFR) disclosure position and firm value. *Asian Journal of Accounting and Governance*, 9, 111-122.
- Kiel, G. C., & Nicholson, G. J. (2003). Board composition and corporate performance: How the Australian experience informs contrasting theories of corporate governance. *Corporate Governance: An International Review*, 11(3), 189-205.
- Kimari, W. (2021). The story of a pump: life, death and afterlives within an urban planning of “divide and rule” in Nairobi, Kenya. *Urban Geography*, 42(2), 141-160.
- Kitson, M., & Michie, J. (2014). *The deindustrial revolution: the rise and fall of UK manufacturing, 1870-2010*: Centre for Business Research, University of Cambridge WP.
- Klapper, L., Sulla, V. c., & Vittas, D. (2004). The development of mutual funds around the world. *Emerging markets review*, 5(1), 1-38.
- Kline, M. D., Michalisin, D. M., & Smith, D. R. (2000). Intangible Strategic Assets and Firm Performance: A Multi-Industry Study of the Resource-Based View. *Journal of Business Strategies*, Fall, 17, N2.
- Kobumanzi, D. A. (2018). *Board Attributes and Financial Performance of Listed Companies in Uganda*. Makerere University.
- Kothari, C. (2004). *Research Methodology 2 rev*: New Age International (P) Limited, Publishers.
- Kouaib, A., & Almulhim, A. (2019). Earnings manipulations and board's diversity: The moderating role of audit. *The Journal of High Technology Management Research*, 30(2), 100356.
- Ku, H. S., Mustapha, U., & Goh, S. (2010). Literature review of past and present performance of the Nigerian manufacturing sector. *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture*, 224(12), 1894-1904.
- Kumar, N., & Singh, J. (2012). Outside directors, corporate governance and firm performance: Empirical evidence from India. *Asian Journal of Finance & Accounting*, 4(2), 39.
- Kweh, Q. L., Lu, W. M., Ting, I. W. K., & Le, H. T. M. (2021). The cubic S-curve relationship between board independence and intellectual capital efficiency: does firm size matter?. *Journal of Intellectual Capital*.

- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (1999). The quality of government. *The Journal of Law, Economics, and Organization*, 15(1), 222-279.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (2000). Investor protection and corporate governance. *Journal of financial economics*, 58(1-2), 3-27.
- La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (2000). Agency problems and dividend policies around the world. *the Journal of Finance*, 55(1), 1-33.
- Lambert, R. A., Leuz, C., & Verrecchia, R. E. (2012). Information asymmetry, information precision, and the cost of capital. *Review of finance*, 16(1), 1-29.
- Lauterbach, B., & Shahmoon, M. (2010). How does the quality of corporate governance affect the market value of business firms in Israel? *Israel Economic Review*, 8(2).
- Le, C., Kim, K. S., & Yi, Y. (2014). Effects of Corporate Governance on the Performance of Private Economic Groups in Vietnam: University Library of Munich, Germany.
- Lehn, K. M., Patro, S., & Zhao, M. (2009). Determinants of the size and composition of US corporate boards: 1935-2000. *Financial management*, 38(4), 747-780.
- Lei, A. C., & Song, F. M. (2012). Board structure, corporate governance and firm value: evidence from Hong Kong. *Applied Financial Economics*, 22(15), 1289-1303.
- Levin, A., Lin, C.-F., & Chu, C.-S. J. (2002). Unit root tests in panel data: asymptotic and finite-sample properties. *Journal of econometrics*, 108(1), 1-24.
- Levine, R., & Zervos, S. (1998). Stock markets, banks, and economic growth. *American economic review*, 537-558.
- Li, Y., & Zhao, Z. (2018). The dynamic impact of intellectual capital on firm value: evidence from China. *Applied Economics Letters*, 25(1), 19-23.
- Lisowsky, P., Barrios, J., & Minnis, M. (2019). Measurement matters: financial reporting and productivity.
- Loh, L., Thomas, T., & Wang, Y. (2017). Sustainability reporting and firm value: Evidence from Singapore-listed companies. *Sustainability*, 9(11), 2112.
- MacKinnon, D. (2012). Beyond strategic coupling: reassessing the firm-region nexus in global production networks. *Journal of Economic Geography*, 12(1), 227-245.
- Maina, L., & Ishmail, M. (2014). Capital structure and financial performance in Kenya: Evidence from firms listed at the Nairobi Securities Exchange. *International Journal of Social Sciences and Entrepreneurship*, 1(11), 209-223.

- Mak, Y. T., & Kusnadi, Y. (2005). Size really matters: Further evidence on the negative relationship between board size and firm value. *Pacific-Basin finance journal*, 13(3), 301-318.
- Makki, M. A. M., & Lodhi, S. A. (2014). Impact of corporate governance on intellectual capital efficiency and financial performance. *Pakistan Journal of Commerce and Social Sciences (PJCSS)*, 8(2), 305-330.
- Maladjian, C., & Khoury, R. E. (2014). Determinants of the dividend policy: an empirical study on the Lebanese listed banks. *International Journal of Economics and Finance*, 6(4), 240-256.
- Manyaga, F., & Taha, A. (2020). Linking firm performance with board diversity: A literature review. *Bussecon Review of Finance & Banking (2687-2501)*, 2(1), 10-18.
- Mardnly, Z., Mouselli, S., & Abdulaouf, R. (2018). Corporate governance and firm performance: an empirical evidence from Syria. *International Journal of Islamic and Middle Eastern Finance and Management*.
- Marimuthu, M., Arokiasamy, L., & Ismail, M. (2009). Human capital development and its impact on firm performance: Evidence from developmental economics. *Journal of international social research*, 2(8).
- Marinova, J., Plantenga, J., & Remery, C. (2016). Gender diversity and firm performance: Evidence from Dutch and Danish boardrooms. *The International Journal of Human Resource Management*, 27(15), 1777-1790.
- Marr, B., Gray, D., & Neely, A. (2003). Why do firms measure their intellectual capital? *Journal of Intellectual capital*.
- Masitha, Z. (2019). Influence of Corporate Governance on Firm Value Through Intellectual Capital and Corporate Social Responsibility. *Journal of Public Administration and Governance*, 9(4), 148-163.
- Maulidi, A. (2016). Analyzing the worst corporate accounting scandals: theoretical framework perspective.
- Meyers, L. S., Gamst, G., & Guarino, A. J. (2016). *Applied multivariate research: Design and interpretation*: Sage publications.
- Mitchell, J., Keane, J., & Coles, C. (2009). Trading up: How a value chain approach can benefit the rural poor. *London: COPLA Global: Overseas Development Institute*.
- Molodchik, M., Shakina, E., & Bykova, A. (2012). Intellectual capital transformation evaluating model. *Journal of Intellectual capital*.
- Mouselli, S., & Hussainey, K. (2014). Corporate governance, analyst following and firm value. *Corporate Governance*.
- Mukras, M. (1993). *Elementary econometrics: Theory, application and policy*: East African Publishers.

- Munir, Q., & Kok, S. C. (2015). Purchasing power parity of ASEAN-5 countries revisited: Heterogeneity, structural breaks and cross-sectional dependence. *Global Economic Review*, 44(1), 116-149.
- Munisi, G. H. (2019). Financial performance of initial public offerings: Companies listed on Dares Salaam Stock Exchange. *Banking, Economics and Business Research (ICMABEBR-19)*.
- Muth, M., & Donaldson, L. (1998). Stewardship theory and board structure: A contingency approach. *Corporate Governance: An International Review*, 6(1), 5-28.
- Mwesigwa, R., Nansiima, C., & Suubi, S. (2014). Corporate governance, managerial competences, accountability and financial performance of commercial banks in Uganda. *International journal of economics, commerce and management*, 2(9), 1-15.
- Mwijuka, A. (2016). Analysis of performance of listed companies on USE and Capital Markets in Uganda 2010-2015.
- Nafiroh, S., & Nahumury, J. (2017). The influence of intellectual capital on company value with financial performance as an intervening variable in financing institutions in Indonesia. *The Indonesian Accounting Review*, 6(2), 159-170.
- Narwal, K. P., & Jindal, S. (2018). Impact of Corporate Governance on the Financial Performance and Market Valuation: An Empirical Study of Indian Manufacturing Sector. *Al-Barkaat Journal of Finance & Management*, 10(1), 1-13.
- Nelima, E. (2018). Effect of Financial Expertise of the Directors on Capital Structure of Firms Listed in the Nairobi Securities Exchange.
- Nimon, K. F. (2012). Statistical assumptions of substantive analyses across the general linear model: a mini-review. *Frontiers in psychology*, 3, 322.
- Nurkumalasari, I. S., Restuningdiah, N., & Sidharta, E. A. (2019). Integrated reporting disclosure and its impact on firm value: Evidence in Asia. *International Journal of Business, Economics and Law*, 18(5), 99-108.
- Obeidat, B. Y., Abdallah, A. B., Aqqad, N. O., Akhoershiedah, A. H. O. M., & Maqableh, M. (2016). The effect of intellectual capital on organizational performance: The mediating role of knowledge sharing. *Communications and Network*, 9(1), 1-27.
- Ojeka, S. A., Mukoro, D. O., & Kanu, C. (2015). Does financial reporting disclosures enhance firm financial performance in the nigerian manufacturing companies? *Mediterranean Journal of Social Sciences*, 6(6), 332-332.
- Olander, H., Hurmelinna-Laukkanen, P., & Heilmann, P. (2015). Human resources—strength and weakness in protection of intellectual capital. *Journal of Intellectual capital*.

- Olaogun, A., Oginni, M., Oyedeji, T. A., Nnahiwe, B., & Olatubi, I. (2011). Assessing the Use of the NANDA-International Nursing Diagnoses at the Obafemi Awolowo University Teaching Hospitals Complex, Ile Ife, Nigeria. *International Journal of Nursing Terminologies and Classifications*, 22(4), 157-161.
- Onyuma, S. O., Mugo, R. K., & Karuiya, J. K. (2012). Does Cross-border listing (still) improve firm financial performance in Eastern Africa? *Journal of business economics and finance*, 1(1), 92-109.
- Ostergaard, C., Schindele, I., & Vale, B. (2016). Social capital and the viability of stakeholder-oriented firms: Evidence from savings banks. *Review of finance*, 20(5), 1673-1718.
- Paminto, U. H. A. (2015). Corporate Governance and Firm Value: The mediating effect of financial performance and firm risk. *Corporate Governance*, 7(35), 18-24.
- Panfiliu, A., & Popa, I. (2011). Failure of corporate governance—intention or negligence. *Journal of Applied Business Information Systems*, 2(4), 171.
- Park, H. M. (2015). Univariate analysis and normality test using SAS, Stata, and SPSS.
- Peng, Z. Y. L. S. L., & Jianxiu, D. (2005). Interaction Effects of Promotional Chances on Marketing Employee Turnover Intention [J]. *Chinese Journal of Management*, 5.
- Peni, E., & Vähämaa, S. (2010). Female executives and earnings management. *Managerial Finance*.
- Penrose, E. (1959). *Theory of the Growth of the Firm*, John Wiley & Sons, New York.
- Peteraf, M. A. (1993). The cornerstones of competitive advantage: a resource-based view. *Strategic management journal*, 14(3), 179-191.
- Petersen, R. (2000). The management of a diverse workforce in the business environment of Israel and possible applications for South Africa.
- Pham, P. K., Suchard, J.-A., & Zein, J. (2011). Corporate governance and alternative performance measures: evidence from Australian firms. *Australian Journal of Management*, 36(3), 371-386.
- Phillips, P. C., & Moon, H. R. (2000). Nonstationary panel data analysis: An overview of some recent developments. *Econometric reviews*, 19(3), 263-286.
- Polit, D. F., & Beck, C. T. (2004). *Nursing research: Principles and methods*: Lippincott Williams & Wilkins.
- Pulic, A. (2000). MVA and VAIC™ Analysis of Randomly Selected Companies from FTSE 250, Austrian Intellectual Capital Research Center, Graz–London.

- Pulic, A. (2000). VAIC™—an accounting tool for IC management. *International journal of technology management*, 20(5-8), 702-714.
- Pulic, A. (2002). National IC-efficiency report of Croatian economy. *available at: www.vaic-on.net (accessed 8 June 2004)*.
- Pulic, A. (2003). Intellectual Capital Efficiency on National and Company Level. *International Business Efficiency Consulting, LLC*.
- Pulic, A. (2012). Value creation efficiency at national and regional levels: Case study—Croatia and the European Union *Intellectual capital for communities* (pp. 204-218): Routledge.
- Purwani, L. D., Sudargo, F., & Surakusumah, W. (2018). *Analysis of student's scientific literacy skills through socioscientific issue's test on biodiversity topics*. Paper presented at the Journal of Physics: Conference Series.
- Putri, A. (2016). Rahasia Sukses Bos-Bos Wanita Pilihan. *SWA Magazine*, 8, 22-27.
- Rahayu, S. M., & Ramadhanti, W. (2019). Corporate governance, intellectual capital, and performance of Indonesian public company. *Journal of Economics, Business, & Accountancy Ventura*, 21(3), 323-332.
- Rahim, N. A., Kamal, M. H. M., & Mat, R. C. (2011). *Structural capital and its effect on organizational performance: A case study of Telekom Malaysia Berhad (TM) headquarters*. Paper presented at the 2011 IEEE Colloquium on Humanities, Science and Engineering.
- Rahimi Esfesalari, D., & Zarei, A. (2013). Studying the effect of voluntary disclosure changes on firm value. *European Online Journal of Natural and Social Sciences*, 2(3 (s)), pp. 130-136.
- Rajhans, R. K. (2013). Financial determinants of firm's value: evidence from Indian firms. *ZENITH International Journal of Business Economics & Management Research*, ISSN, 2249-8826.
- Ramdani, D., & Witteloostuijn, A. v. (2010). The impact of board independence and CEO duality on firm performance: A quantile regression analysis for Indonesia, Malaysia, South Korea and Thailand. *British Journal of Management*, 21(3), 607-627.
- Raza, A. (2012). Impact of relational capital management on firm performance. *Abasyn journal of social sciences*, 6(1), 65-78.
- Reddy, S., & Jadhav, A. M. (2019). Gender diversity in boardrooms—A literature review. *Cogent Economics & Finance*, 7(1), 1644703.
- Restuningdiah, N. (2016). The Mediating Effect of Financial Reporting Quality on the Relation Between Corporate Governance Mechanism and the Stock Price of Consumer Goods Industry Listed in Indonesia Stock Exchange. *South East Asia Journal of Contemporary Business, Economics and Law*, 11(1), 16-21.
- Roos, G., Pike, S., & Fernstrom, L. (2007). *Managing intellectual capital in practice*: Routledge.

- Ruddock, C., Taylor, S. J., & Taylor, S. L. (2006). Nonaudit services and earnings conservatism: Is auditor independence impaired? *Contemporary Accounting Research*, 23(3), 701-746.
- Ruparelia, R. v., & Njuguna, A. G. (2016). Relationship between board remuneration and financial performance in the Kenyan financial services industry.
- Saeed, S., Rasid, S. Z. A., & Basiruddin, R. (2015). The mediating role of Intellectual capital in corporate governance and the corporate performance relationship. *Mediterranean Journal of Social Sciences*, 6(5), 209-209.
- Saeed, S., Rasid, S. Z. A., & Basiruddin, R. (2016). Relationship between intellectual capital and corporate performance of top Pakistani companies: an empirical evidence. *International Journal of Learning and Intellectual Capital*, 13(4), 376-396.
- Safari, M., Mirshekary, S., & Wise, V. (2015). Compliance with corporate governance principles: Australian evidence. *Australasian Accounting, Business and Finance Journal*, 9(4), 3-19.
- Salisu, U., Ishak, Z., & Sawandi, N. (2019). Corporate Board and the Value of Diversified Public Listed Companies in Malaysia. *Journal of Business and Retail Management Research*, 13(3).
- Saona, P., & San Martín, P. (2016). Country level governance variables and ownership concentration as determinants of firm value in Latin America. *International Review of Law and Economics*, 47, 84-95.
- Saruchi, S. A., Zamil, N. A. M., Basiruddin, R., & Ahmad, N. F. G. (2019). Examining the impact of corporate governance on intellectual capital: empirical evidence of Islamic banks. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, 9(3), 104-117.
- Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research methods for business students*: Pearson education.
- Schipper, K., & Vincent, L. (2003). Earnings quality. *Accounting horizons*, 17, 97-110.
- Schmidheiny, K. (2014). The multiple regression model. *Short Guide to Microeconometrics: University Basel, Fall*.
- Schmidt, I. M. (2019). Board gender diversity and firm performance: How do educational levels and board gender quotas affect this relationship? evidence from europe.
- Schofield, L. S. (2015). Correcting for measurement error in latent variables used as predictors. *The annals of applied statistics*, 9(4), 2133.
- Sciarelli, M. (2008). Resource-based theory and market-driven management. *Symphonya. Emerging Issues in Management*(2), 66-80.

- Scotland, J. (2012). Exploring the philosophical underpinnings of research: Relating ontology and epistemology to the methodology and methods of the scientific, interpretive, and critical research paradigms. *English language teaching*, 5(9), 9-16.
- Senyonyi, T. (2018). Islamic banking: Can it succeed in Christian dominant Uganda. *Business Focus, Kampala*.
- Shah, S. R., & Al-Bargi, A. (2013). Research Paradigms: Researchers' Worldviews, Theoretical Frameworks and Study Designs. *Arab World English Journal*, 4(4).
- Shiu, H.-J. (2006). The application of the value added intellectual coefficient to measure corporate performance: evidence from technological firms. *International Journal of management*, 23(2), 356.
- Shleifer, A., & Vishny, R. W. (1997). A survey of corporate governance. *the Journal of Finance*, 52(2), 737-783.
- Shuaibu, K., Ali, I., & Amin, I. (2019). Company attributes and firm value of listed consumer goods companies in Nigeria. *Journal of Research in Humanities and Social Science*, 7(5), 40-49.
- Siagian, F., Siregar, S. V., & Rahadian, Y. (2013). Corporate governance, reporting quality, and firm value: evidence from Indonesia. *Journal of Accounting in Emerging Economies*.
- Sikuka, K. (2017). Is there a link between democracy and development in Africa? *conflict trends*, 2017(3), 3-10.
- Singh, M., & Davidson III, W. N. (2003). Agency costs, ownership structure and corporate governance mechanisms. *Journal of Banking & Finance*, 27(5), 793-816.
- Singla, C., & George, R. (2013). Internationalization and performance: A contextual analysis of Indian firms. *Journal of Business Research*, 66(12), 2500-2506.
- Sloan, R. G. (1996). Do stock prices fully reflect information in accruals and cash flows about future earnings? *Accounting review*, 289-315.
- Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. *Sociological methodology*, 13, 290-312.
- Sonmez, M., & Yildirim, S. (2015). A theoretical aspect on corporate governance and its fundamental problems: Is it a cure or another problem in the financial markets. *Journal of Business law and Ethics*, 3(1), 20-35.
- Srivastav, A., & Hagendorff, J. (2016). Corporate governance and bank risk-taking. *Corporate Governance: An International Review*, 24(3), 334-345.
- Stähle, P., Stähle, S., & Aho, S. (2011). Value added intellectual coefficient (VAIC): a critical analysis. *Journal of Intellectual capital*.

- Studenmund, A. (2011). *using Econometrics: A practical Guide*, pears-on. *New York*, 440-447.
- Subaida, I., Nurkholis, N., & Mardiyati, E. (2018). Effect of Intellectual Capital and Intellectual Capital Disclosure on Firm Value. *Jurnal Aplikasi Manajemen*, 16(1), 125-135.
- Suhendra, E. S. (2015). *The Influence of Intellectual Capital on Firm Value towards Manufacturing Performance in Indonesia*. Paper presented at the International Conference On Eurasian Economies.
- Sydler, R., Haefliger, S., & Pruksa, R. (2014). Measuring intellectual capital with financial figures: can we predict firm profitability? *European Management Journal*, 32(2), 244-259.
- Tan, H. P., Plowman, D., & Hancock, P. (2007). Intellectual capital and financial returns of companies. *Journal of Intellectual capital*.
- Tarus, D. K., & Aime, F. (2014). Board demographic diversity, firm performance and strategic change: A test of moderation. *Management Research Review*.
- Tarus, D. K., & Ayabei, E. (2016). Board composition and capital structure: evidence from Kenya. *Management Research Review*.
- Tarus, J. K. (2020). Effect of Firm-Specific Attributes on Environmental Accounting Disclosure. Evidence from Firms Listed in the Nairobi Securities Exchange, Kenya. *African Journal of Education, Science and Technology*, 5(4), 1-15.
- Tejedo-Romero, F., Araujo, J. F. F. E., & Emmendoerfer, M. L. (2017). Corporate governance mechanisms and intellectual capital. *Revista brasileira de gestão de negócios*, 19, 394-414.
- Terjesen, S., Couto, E. B., & Francisco, P. M. (2016). Does the presence of independent and female directors impact firm performance? A multi-country study of board diversity. *Journal of Management & Governance*, 20(3), 447-483.
- Theriou, N. G., Aggelidia, V., & Theriou, G. (2009). A theoretical framework contrasting the resource-based perspective and the knowledge-based view.
- Thomsen, S. (2008). A minimum theory of boards. *International Journal of Corporate Governance*, 1(1), 73-96.
- Timmerman, T. A. (2000). Racial diversity, age diversity, interdependence, and team performance. *Small group research*, 31(5), 592-606.
- Topak, M. S. (2011). The effect of board size on firm performance: Evidence from Turkey. *Middle Eastern Finance and Economics*, 14(1), 1450-2889.
- Tseng, C.-Y., & Lin, C.-Y. (2013). The relationship between corporate governance and intellectual capital: Empirical study of Taiwanese electronics manufactures. *International Business Research*, 6(7), 255-284.

- Turyahebwa, A., Sunday, A., Aluonzi, E., Yahaya, B., & Sumil, N. (2013). Business efficiency in Small and Medium Enterprises (SMEs) in selected districts in western Uganda.
- Turyahikayo, E. (2015). Challenges faced by small and medium enterprises in raising finance in Uganda. *International Journal of Public Administration and Management Research*, 3(2), 21-33.
- Tvedten, K., Hansen, M. W., & Jeppesen, S. (2014). Understanding the rise of African business: In search of business perspectives on African enterprise development. *African Journal of Economic and Management Studies*.
- Tyrowicz, J., Terjesen, S., & Mazurek, J. (2020). All on board? New evidence on board gender diversity from a large panel of European firms. *European Management Journal*, 38(4), 634-645.
- Union, A. (2015). AGENDA 2063. Report of the Commission on the African Union Agenda 2063. The Africa We Want in 2063. ASSEMBLY OF THE UNION Twenty-Fourth Ordinary Session 30–31 January 2015 Addis Ababa, ETHIOPIA.
- Uyar, A. (2016). Evolution of corporate reporting and emerging trends. *Journal of Corporate Accounting & Finance*, 27(4), 27-30.
- Uzun, K. (2016). Critical investigation of a qualitative research article from ontological and epistemological perspectives. *International Journal of Social Sciences and Education Research*, 2(3), 836-842.
- Van Slyke, D. M. (2007). Agents or stewards: Using theory to understand the government-nonprofit social service contracting relationship. *Journal of public administration research and theory*, 17(2), 157-187.
- Venkatesh, V., Brown, S. A., & Bala, H. (2013). Bridging the qualitative-quantitative divide: Guidelines for conducting mixed methods research in information systems. *MIS quarterly*, 21-54.
- Vintilă, G., & Gherghina, S. C. (2013). Board of directors independence and firm value: empirical evidence based on the bucharest stock exchange listed companies. *International Journal of Economics and Financial Issues*, 3(4), 885-900.
- Vo, D., & Phan, T. (2013). Corporate governance and firm performance: Empirical evidence from Vietnam. *Journal of Economic Development*, 7(1), 62-78.
- Vong, P. I., & Chan, H. S. (2009). Determinants of bank profitability in Macao. *Macau Monetary Research Bulletin*, 12(6), 93-113.
- Wang, J. C. (2008). Investigating market value and intellectual capital for S&P 500. *Journal of Intellectual capital*.
- Wang, Z., Wang, N., Cao, J., & Ye, X. (2016). The impact of intellectual capital–knowledge management strategy fit on firm performance. *Management Decision*.

- Watanabe, A., Xu, Y., Yao, T., & Yu, T. (2013). The asset growth effect: Insights from international equity markets. *Journal of financial economics*, 108(2), 529-563.
- Watundu, S., Kaberuka, K., Mwelu, N., & Tibesigwa, W. (2015). Testing for volatility and market efficiency of uganda securities exchange. *Journal of Research in Business, Economics and Management*, 4(4), 437-445.
- Wen, X., Quacoe, D., Dodor, A., Quacoe, D., & Bediako, I. A. (2017). Financial Performance of Listed SMEs: A Comparative Analysis Between China and America. *Journal of Small Business and Entrepreneurship Development*, 5(2), 48-58.
- Williams, S. M. (2001). *Corporate governance diversity and its impact on intellectual capital performance in an emerging economy*. Calgary: University of Calgary, Faculty of Management.
- Winarto, J. (2015). The determinants of manufacturer firm value in Indonesia stock exchange. *International Journal of Information, Business and Management*, 7(4), 323.
- Won, N. C., Wan, C. Y., & Sharif, M. Y. (2017). Effect of leadership styles, social capital, and social entrepreneurship on organizational effectiveness of social welfare organization in Malaysia: Data screening and preliminary analysis. *International Review of Management and Marketing*, 7(2), 117-122.
- Wu, F., Yenyurt, S., Kim, D., & Cavusgil, S. T. (2006). The impact of information technology on supply chain capabilities and firm performance: A resource-based view. *Industrial Marketing Management*, 35(4), 493-504.
- Xu, J., & Wang, B. (2018). Intellectual capital, financial performance and companies' sustainable growth: Evidence from the Korean manufacturing industry. *Sustainability*, 10(12), 4651.
- Yameen, M., Farhan, N. H., & Tabash, M. I. (2019). The impact of corporate governance practices on firm's performance: An empirical evidence from Indian tourism sector. *Journal of International Studies*, 12(1).
- Yammeesri, J., & Herath, S. K. (2010). Board characteristics and corporate value: evidence from Thailand. *Corporate Governance: The international journal of business in society*.
- Yasser, Q. R., Al Mamun, A., & Rodrigs, M. (2017). Impact of board structure on firm performance: evidence from an emerging economy. *Journal of Asia Business Studies*.
- Yasuda, T. (2005). Firm growth, size, age and behavior in Japanese manufacturing. *Small Business Economics*, 24(1), 1-15.
- Yermack, D. (1996). Higher market valuation of companies with a small board of directors. *Journal of financial economics*, 40(2), 185-211.

- Yichi, Z., Ying, G., & Peng, L. (2005). Moderating Effects of PO Fit in Turnover Intention Model: A Case of Foreign Pharmaceutical Companies in China [J]. *Nankai Business Review*, 3.
- Zattoni, A., & Cuomo, F. (2008). Why adopt codes of good governance? A comparison of institutional and efficiency perspectives. *Corporate Governance: An International Review*, 16(1), 1-15.
- Zattoni, A., Witt, M. A., Judge, W. Q., Talaulicar, T., Chen, J. J., Lewellyn, K., . . . Puffer, S. (2017). Does board independence influence financial performance in IPO firms? The moderating role of the national business system. *Journal of World Business*, 52(5), 628-639.
- Zhang, L., & Wang, J. (2018). Research on the relationship between relational capital and relational rent. *Cogent Economics & Finance*, 6(1), 1431091.
- Zhang, Y., Liang J.-p., Liu, P., & Deng, J.-x. (2005). Moderating Effect of Individual Value in the Model for Employee Turnover Intention. *Journal of China University of Geosciences (Social Sciences Edition)*(3).
- Zhu, J., Ye, K., Tucker, J. W., & Chan, K. J. C. (2016). Board hierarchy, independent directors, and firm value: Evidence from China. *Journal of Corporate Finance*, 41, 262-279.
- Zhussupova, Z., Onyusheva, I., & Baizylidayeva, U. (2016). *Corporate governance and firm value of Kazakhstani companies in the conditions of sanctions against the Russian Federation*. Paper presented at the International Conference on Management, Leadership & Governance.

APPENDICES

Appendix I: Effect of the Controls on Firm Value

Random-effects GLS regression	Number of obs	=	536
Group variable: companyid	Number of groups	=	67
R-sq: within = 0.109	Obs per group: min	=	8
between = 0.169	Avg	=	8.0
overall = 0.148	Max	=	8
	Wald chi2(2)	=	61.98
corr(u_i, X) = 0 (assumed)	Prob > chi2	=	0.00

FV	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]
FA	-.869	.149	-5.85	0.000	-1.161 - .577
FS	-.187	.037	-5.04	0.000	-.260 - .115
_cons	2.449	.445	5.50	0.000	1.577 3.323
sigma_u	.545				
sigma_e	.345				
Rho	.715 (fraction of variance due to u_i)				

Table 5 Hausman Test

	---- Coefficients ----			
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	fe	Re	Difference	S.E.
FA	-.9909724	-.8693263	-.1216461	.1726069
FS	-.2963096	-.1874897	-.1088199	.0319227

b = consistent under Ho and Ha; obtained from xtreg
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$$\chi^2(2) = (b-B)'[(V_b-V_B)^{-1}](b-B)$$

$$= 12.59$$

$$\text{Prob}>\chi^2 = 0.0018$$

Appendix III: Moderating Effect of Financial Reporting Quality on Board Structure and Firm Value- Output

Fixed-effects (within) regression	Number of obs	=	473			
Group variable: companyid	Number of groups	=	60			
R-sq: within = 0.3268	Obs per group: min	=	2			
between = 0.2899	Avg	=	7.9			
overall = 0.2970	Max	=	8			
	F(7,406)	=	28.16			
corr(u_i, Xb) = -0.0074	Prob > F	=	0.0000			
FV	Coef.	Std. Err.	t	P>t	[95% Conf. Interval]	
FA	-.745	.244	-3.05	0.002	-1.22	-.265
FS	-.131	.044	-3.00	0.003	-.217	-.045
BS	-.347	.106	-3.28	0.001	-.554	-.139
BD	-.128	.039	-3.29	0.001	-.204	-.051
BI	.115	.037	3.08	0.002	.041	.189
BE	.333	.056	5.91	0.000	.222	.444
FR	.061	.016	3.76	0.000	.029	.093
_cons	2.537	.619	4.10	0.000	1.32	3.754
sigma_u	.533					
sigma_e	.307					
Rho	.751				(fraction of variance due to u_i)	
F test that all u_i=0:		F(59, 406) =	10.83		Prob > F =	0.0000

Random-effects GLS regression
 Number of obs = 473
 Group variable: companyid Number of groups = 60
 R-sq: within = 0.308 Obs per group: min = 2
 between = 0.6925 Avg = 7.9
 overall = 0.5678 Max = 8
 Wald chi2(7) = 280.42
 corr(u_i, X) = 0 (assumed) Prob > chi2 = 0.000

FV	Coef.	Std. Err.	Z	P>z	[95% Conf.	Interval]
FA	-.213	.106	-2.01	0.044	-.419	-.006
FS	-.086	.029	-2.96	0.003	-.143	-.029
BS	-.303	.094	-3.22	0.001	-.488	-.119
BD	-.103	.036	-2.88	0.004	-.173	-.033
BI	.231	.035	6.66	0.000	.163	.298
BE	.371	.054	6.87	0.000	.265	.477
FR	.077	.016	4.85	0.000	.046	.108
_cons	1.296	.384	3.37	0.001	.543	2.049
sigma_u	.317					
sigma_e	.307					
Rho	.517					(fraction of variance due to u_i)

---- Coefficients ----				
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	Fe	re	Difference	S.E.
FA	-.7448494	-.2125967	-.5322528	.2200229
FS	-.1309723	-.0859752	-.0449971	.0326001
BS	-.3468061	-.303246	-.0435601	.0478983
BD	-.1277374	-.1026099	-.0251275	.0153565
BI	.1151071	.2304677	-.1153606	.0142036
BE	.3332189	.3710247	-.0378058	.0163675
FR	.061133	.0768119	-.0156789	.0036025

b = consistent under Ho and Ha; obtained from xtreg
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg
 Test: Ho: difference in coefficients not systematic

$$\text{chi2}(7) = (b-B)'[(V_b-V_B)^{-1}](b-B)$$

$$= 106.37$$
 Prob>chi2 = 0.0000

Fixed-effects (within) regression	Number of obs	= 413
Group variable: companyid	Number of groups	= 59
R-sq: within = 0.3580	Obs per group: min	= 1
between = 0.2935	Avg	= 7.0
overall = 0.3206	Max	= 8
	F(8,346)	= 24.11
corr(u_i, Xb) = -0.0049	Prob > F	= 0.00

FV	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
FA	-.802	.254	-3.16	0.002	-1.301	-.303
FS	-.131	.045	-2.88	0.004	-.220	-.041
BS	-.343	.110	-3.11	0.002	-.559	-.126
BD	-.106	.041	-2.57	0.011	-.188	-.025
BI	.107	.041	2.60	0.010	.026	.188
BE	.349	.058	5.96	0.000	.234	.464
FR	.075	.019	4.01	0.000	.038	.111
BS_FR	-.016	.005	-3.21	0.001	-.026	-.006
_cons	2.660	.646	4.11	0.000	1.388	3.931
sigma_u	.539					
sigma_e	.307					
Rho	.754	(fraction of variance due to u_i)				
F test that all u_i=0: F(58, 346) = 8.36 Prob > F = 0.0000						

Random-effects GLS regression	Number of obs	=	413			
Group variable: companyid	Number of groups	=	59			
R-sq: within = 0.3309	Obs per group: min	=	1			
between = 0.7505	Avg	=	7.0			
overall = 0.6349	Max	=	8			
	Wald chi2(8)	=	305.86			
corr(u_i, X) = 0 (assumed)	Prob > chi2	=	0.0000			

FV	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]	
FA	-.208	.099	-2.09	0.036	-.402	-.013
FS	-.079	.029	-2.71	0.007	-.136	-.022
BS	-.277	.096	-2.89	0.004	-.464	-.089
BD	-.083	.037	-2.25	0.025	-.156	-.011
BI	.255	.037	6.84	0.000	.182	.328
BE	.369	.060	6.60	0.000	.260	.479
FR	.101	.018	5.56	0.000	.065	.137
BS_FR	-.020	.005	-4.00	0.000	-.030	-.010
_cons	1.202	.382	3.15	0.002	.453	1.95
sigma_u	.280					
sigma_e	.307					
Rho	.453 (fraction of variance due to u_i)					

	---- Coefficients ----			
	(b) Fe	(B) Re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
FA	-.8019759	-.2077238	-.5942521	.2333565
FS	-.1309804	-.0786526	-.0523278	.0350183
BS	-.3427177	-.2766932	-.0660245	.0549166
BD	-.1064559	-.0834628	-.022993	.0182848
BI	.1073028	.2552585	-.1479557	.0175198
BE	.3487206	.3694127	-.0206921	.0168969
FR	.0746015	.1012155	-.026614	.003781
BS_FR	-.01592	-.0202566	.0043366	.

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$$\chi^2(8) = (b-B)'[(V_b-V_B)^{-1}](b-B)$$

$$= 396.85$$

$$\text{Prob}>\chi^2 = 0.0000$$

(V_b-V_B is not positive definite)

Fixed-effects (within) regression	Number of obs	=	374
Group variable: companyid	Number of groups	=	57
R-sq: within = 0.3772	Obs per group: min	=	1
between = 0.2548	Avg	=	6.6
overall = 0.2792	Max	=	8
	F(9,308)	=	20.73
corr(u_i, Xb) = -0.2026	Prob > F	=	0.0000

FV	Coef.	Std. Err.	t	P>t	[95% Conf. Interval]
FA	-.903	.258	-3.50	0.001	-1.412 -.395
FS	-.150	.048	-3.14	0.002	-.244 -.056
BS	-.286	.116	-2.47	0.014	-.514 -.058
BD	-.099	.042	-2.35	0.019	-.183 -.016
BI	.103	.043	2.40	0.017	.019 .186
BE	.328	.062	5.27	0.000	.205 .450
FR	.090	.020	4.52	0.000	.051 .129
BS_FR	-.015	.005	-2.70	0.007	-.025 -.004
BD_FR	.014	.005	2.90	0.004	.005 .026
_cons	2.905	.671	4.33	0.000	1.585 4.226
sigma_u	.572				
sigma_e	.308				
Rho	.775				(fraction of variance due to u_i)

F test that all u_i=0: F(56, 308) = 7.45 Prob > F = 0.0000

Random-effects GLS regression	Number of obs =	374					
Group variable: companyid	Number of groups =	57					
R-sq: within = 0.3472	Obs per group: min =	1					
between = 0.7383	Avg =	6.6					
overall = 0.5650	Max =	8					
	Wald chi2(9) =	274.54					
corr(u_i, X) = 0 (assumed)	Prob > chi2 =	0.0000					
FV	Coef.	Std. Err.	z	P>z	[95% Conf. Interval]		
FA	-.264	.106	-2.49	0.013	-.471	-.057	
FS	-.074	.031	-2.36	0.018	-.135	-.012	
BS	-.242	.100	-2.42	0.016	-.439	-.046	
BD	-.084	.039	-2.16	0.031	-.159	-.008	
BI	.240	.039	6.18	0.000	.164	.316	
BE	.349	.059	5.91	0.000	.233	.465	
FR	.115	.020	5.86	0.000	.077	.154	
BS_FR	-.018	.005	-3.33	0.001	-.029	-.007	
BD_FR	.015	.005	2.92	0.003	.005	.024	
_cons	1.137	.403	2.82	0.005	.347	1.928	
sigma_u	.291						
sigma_e	.308						
Rho	.471	(fraction of variance due to u_i)					

	---- Coefficients ----			
	(b) fe	(B) Re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
FA	-.9033837	-.2638637	-.6395201	.2356507
FS	-.149813	-.0737873	-.0760257	.0360586
BS	-.2859986	-.2421606	-.0438381	.0583228
BD	-.0995707	-.0836029	-.0159677	.0170175
BI	.1026661	.2400912	-.1374251	.0176849
BE	.3277516	.3488293	-.0210777	.0195326
FR	.0904364	.1152962	-.0248598	.0037502
BS_FR	-.0145124	-.0181237	.0036114	.
BD_FR	.0140489	.0145242	-.0004753	.

b = consistent under Ho and Ha; obtained from xtreg
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg
 Test: Ho: difference in coefficients not systematic

$$\text{chi2}(9) = (b-B)'[(V_b-V_B)^{-1}](b-B)$$

$$= 79.08$$
 Prob>chi2 = 0.0000
 (V_b-V_B is not positive definite)

Fixed-effects (within) regression	Number of obs	=	370			
Group variable: companyid	Number of groups	=	57			
R-sq: within = 0.389	Obs per group: min	=	1			
between = 0.264	Avg	=	6.5			
overall = 0.275	Max	=	8			
	F(10,303)	=	19.34			
corr(u_i, Xb) = -0.249	Prob > F	=	0.00			
FV	Coef.	Std. Err.	T	P>t	[95% Conf.	Interval]
FA	-.966	.258	-3.74	0.000	-1.474	-.458
FS	-.165	.048	-3.46	0.001	-.259	-.071
BS	-.249	.116	-2.15	0.032	-.477	-.021
BD	-.104	.042	-2.46	0.014	-.187	-.021
BI	.111	.043	2.60	0.010	.027	.196
BE	.319	.062	5.12	0.000	.196	.441
FR	.097	.020	4.81	0.000	.057	.136
BS_FR	-.016	.006	-2.99	0.003	-.027	-.006
BD_FR	.0217	.006	3.78	0.000	.010	.033
BI_FR	-.0219	.009	-2.40	0.017	-.040	-.004
_cons	3.079	.671	4.58	0.000	1.757	4.400
sigma_u	.572					
sigma_e	.306					
Rho	.777	(fraction of variance due to u_i)				
F test that all u_i=0: F(56, 303) = 7.39 Prob > F = 0.000						

Random-effects GLS regression	Number of obs	=	370			
Group variable: companyid	Number of groups	=	57			
R-sq: within = 0.3578	Obs per group: min	=	1			
between = 0.7463	Avg	=	6.5			
overall = 0.5727	Max	=	8			
	Wald chi2(10)	=	287.22			
corr(u_i, X) = 0 (assumed)	Prob > chi2	=	0.00			
FV	Coef.	Std. Err.	Z	P>z	[95% Conf.	Interval]
FA	-.284	.105	-2.69	0.007	-.490	-.077
FS	-.083	.031	-2.68	0.007	-.145	-.022
BS	-.213	.099	-2.14	0.032	-.409	-.018
BD	-.090	.038	-2.34	0.019	-.165	-.014
BI	.246	.039	6.38	0.000	.171	.322
BE	.339	.059	5.77	0.000	.224	.455
FR	.122	.019	6.19	0.000	.083	.160
BS_FR	-.020	.006	-3.71	0.000	-.031	-.009
BD_FR	.024	.006	4.20	0.000	.013	.036
BI_FR	-.029	.009	-3.15	0.002	-.047	-.011
_cons	1.201	.402	2.99	0.003	.414	1.988
sigma_u	.290					
sigma_e	.306					
rho	.472					(fraction of variance due to u_i)

	(b) Fe	(B) re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
FA	-.9661351	-.2836172	-.6825179	.235607
FS	-.1650829	-.0837476	-.0813353	.0360369
BS	-.2488744	-.2134851	-.0353894	.0587954
BD	-.103828	-.0898491	-.0139789	.0172012
BI	.1112297	.2464278	-.1351981	.018538
BS	.3188319	.3394482	-.0206163	.0204479
FR	.0968721	.1215729	-.0247008	.004382
BS_FR	-.0164776	-.0204835	.0040059	.
BD_FR	.0216521	.024435	-.002783	.
BI_FR	-.0218561	-.0290137	.0071576	.

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$$\text{chi2}(10) = (b-B)'[(V_b-V_B)^{-1}](b-B)$$

$$= 55.82$$

$$\text{Prob}>\text{chi2} = 0.0000$$

(V_b-V_B is not positive definite)

Fixed-effects (within) regression	Number of obs	=	368			
Group variable: companyid	Number of groups	=	56			
R-sq: within = 0.4027	Obs per group: min	=	1			
between = 0.3020	Avg	=	6.6			
overall = 0.2951	Max	=	8			
	F(11,301)	=	18.44			
corr(u_i, Xb) = -0.2362	Prob > F	=	0.0000			
FV	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
FA	-.950	.257	-3.70	0.000	-1.455	-.445
FS	-.155	.048	-3.25	0.001	-.248	-.061
BS	-.245	.115	-2.14	0.034	-.471	-.019
BD	-.109	.042	-2.61	0.009	-.191	-.027
BI	.107	.043	2.52	0.012	.023	.191
BE	.313	.062	5.07	0.000	.192	.435
FR	.094	.020	4.68	0.000	.054	.133
BS_FR	-.013	.006	-2.19	0.029	-.024	-.001
BD_FR	.018	.006	3.16	0.002	.007	.029
BI_FR	-.025	.00	-2.75	0.006	-.043	-.007
BE_FR	.041	.016	2.54	0.012	.009	.073
_cons	2.927	.671	4.36	0.000	1.607	4.247
sigma_u	.555					
sigma_e	.304					
Rho	.770					(fraction of variance due to u_i)
F test that all u_i=0: F(55, 301) = 7.02 Prob > F = 0.0000						

Random-effects GLS regression	Number of obs	=	368			
Group variable: companyid	Number of groups	=	56			
R-sq: within = 0.3707	Obs per group: min	=	1			
between = 0.7683	Avg	=	6.6			
overall = 0.5951	Max	=	8			
	Wald chi2(11)	=	310.59			
corr(u_i, X) = 0 (assumed)	Prob > chi2	=	0.0000			
FV	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
FA	-.278	.102	-2.72	0.007	-.479	-.078
FS	-.064	.031	-2.06	0.040	-.125	-.003
BS	-.220	.098	-2.24	0.025	-.412	-.028
BD	-.100	.038	-2.64	0.008	-.175	-.026
BI	.239	.038	6.25	0.000	.164	.313
BE	.330	.058	5.56	0.000	.209	.437
FR	.114	.019	5.90	0.000	.076	.153
BS_FR	-.014	.006	-2.39	0.017	-.025	-.002
BD_FR	.019	.006	3.18	0.001	.007	.030
BI_FR	-.033	.009	-3.57	0.000	-.050	-.015
BE_FR	.059	.016	3.65	0.000	.0276	.090
_cons	.974	.397	2.45	0.014	.196	1.751
sigma_u	.280					
sigma_e	.304					
Rho	.460				(fraction of variance due to u_i)	

	---- Coefficients ----			
	(b) Fe	(B) Re	(b-B) Difference	$\sqrt{\text{diag}(V_b - V_B)}$ S.E.
FA	-.9504432	-.278323	-.6721203	.2352932
FS	-.1547145	-.0639486	-.0907659	.0360713
BS	-.2453883	-.2198541	-.0255342	.0598594
BD	-.1094583	-.1002832	-.0091751	.0177337
BI	.1070707	.2385122	-.1314415	.0188787
BE	.3133151	.3229191	-.009604	.0211762
FR	.0937048	.11486	-.0211552	.0046231
BS_FR	-.0124805	-.0138709	.0013904	.
BD_FR	.018379	.0188672	-.0004881	.
BI_FR	-.0251149	-.0327483	.0076334	.
BE_FR	.041339	.058689	-.01735	.0027726

b = consistent under H_0 and H_a ; obtained from xtreg

B = inconsistent under H_a , efficient under H_0 ; obtained from xtreg

Test: H_0 : difference in coefficients not systematic

$$\chi^2(11) = (b-B)'[(V_b - V_B)^{-1}](b-B)$$

$$= 87.61$$

$$\text{Prob} > \chi^2 = 0.0000$$

($V_b - V_B$ is not positive definite)

Appendix IIIII: Effect of Board Structure on Intellectual Capital

Random-effects GLS regression	Number of obs	=	536					
Group variable: companyid	Number of groups	=	67					
R-sq: within = 0.1415	Obs per group: min	=	8					
between = 0.4970	Avg	=	8.0					
overall = 0.3619	Max	=	8					
	Wald chi2(6)	=	117.02					
corr(u_i, X) = 0 (assumed)	Prob > chi2	=	0.0000					
IC	Coef.	Std. Err.	Z	P>z	[95% Conf.	Interval]		
FA	.494	.354	1.39	0.164	-.201	1.189		
FS	-.326	.105	-3.11	0.002	-.532	-.121		
BD	-.219	.107	-2.05	0.041	-.430	-.009		
BI	.535	.123	4.34	0.000	.293	.777		
BE	.955	.198	4.83	0.000	.567	1.342		
BS	-.100	.317	-2.87	0.004	-1.531	-.289		
_cons	6.094	1.306	4.66	0.000	3.534	8.655		
sigma_u	1.075							
sigma_e	1.184							
Rho	.453	(fraction of variance due to u_i)						

Fixed-effects (within) regression	Number of obs	=	469			
Group variable: companyid	Number of groups	=	60			
R-sq: within = 0.1449	Obs per group: min	=	2			
between = 0.4426	Avg	=	7.8			
overall = 0.3288	Max	=	8			
	F(6,403)	=	11.38			
corr(u_i, Xb) = 0.2364	Prob > F	=	0.0000			

IC	Coef.	Std. Err.	t	P>t	[95% Conf. Interval]
FA	.682	.942	0.72	0.470	-1.170 2.533
FS	-.187	.185	-1.01	0.312	-.550 .176
BD	-.263	.122	-2.16	0.032	-.503 -.023
BI	.354	.142	2.48	0.013	.074 .634
BE	.979	.222	4.42	0.000	.544 1.415
BS	-.843	.375	-2.25	0.025	-1.581 -.105
_cons	4.059	2.458	1.65	0.099	-.774 8.892
sigma_u	1.246				
sigma_e	1.182				
Rho	.526				(fraction of variance due to u_i)

F test that all u_i=0: F(59, 403) = 7.32 Prob > F = 0.0000

	---- Coefficients ----			
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	Fe	Re	Difference	S.E.
FA	.6816952	.4936203	.1880749	.8725648
FS	-.1870966	-.3261417	.1390451	.1519312
BD	-.263095	-.2194647	-.0436304	.058166
BI	.3540279	.5351704	-.1811426	.0712268
BE	.979391	.9547115	.0246796	.1001309
BS	-.8433459	-.9099545	.0666086	.20095

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$$\chi^2(6) = (b-B)'[(V_b-V_B)^{-1}](b-B)$$

$$= 11.07$$

$$\text{Prob}>\chi^2 = 0.0863$$

Appendix IV: Mediating Effect of Intellectual Capital

Fixed-effects (within) regression	Number of obs	=	469				
Group variable: companyid	Number of groups	=	60				
R-sq: within = 0.3750	Obs per group: min	=	2				
between = 0.5158	Avg	=	7.8				
overall = 0.4861	Max	=	8				
	F(7,402)	=	34.46				
corr(u_i, Xb) = -0.0361	Prob > F	=	0.0000				
FV	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]	
IC	.089	.013	7.04	0.000	.064	.114	
FA	-.690	.252	-2.74	0.006	-1.185	-.194	
FS	-.102	.042	-2.41	0.016	-.185	-.019	
BS	-.387	.102	-3.81	0.000	-.587	-.187	
BD	-.123	.037	-3.28	0.001	-.196	-.049	
BI	.093	.036	2.56	0.011	.021	.164	
BE	.2709	.056	4.84	0.000	.161	.381	
_cons	2.142	.608	3.52	0.000	.946	3.338	
sigma_u	.441						
sigma_e	.296						
Rho	.689						(fraction of variance due to u_i)
F test that all u_i=0: F(59, 402) = 10.14 Prob > F = 0.0000							

Random-effects GLS regression		Number of obs =	469			
Group variable: companyid		Number of groups =	60			
R-sq: within = 0.3612		Obs per group: min	2			
between = 0.6783		avg	7.8			
overall = 0.6019		max	8			
		Wald chi2(7)	357.27			
corr(u_i, X) = 0 (assumed)		Prob > chi2	0.0000			
FV	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
IC	.091	.012	7.37	0.000	.067	.115
FA	-.475	.114	-4.18	0.000	-.697	-.252
FS	-.026	.028	-0.94	0.347	-.080	.028
BS	-.323	.089	-3.62	0.000	-.499	-.148
BD	-.104	.034	-3.03	0.002	-.171	-.037
BI	.187	.034	5.58	0.000	.121	.252
BE	.308	.053	5.85	0.000	.205	.411
_cons	1.004	.364	2.76	0.006	.291	1.717
sigma_u	.306					
sigma_e	.296					
Rho	.516	(fraction of variance due to u_i)				

---- Coefficients ----				
	(b)	(B)	(b-B)	sqrt(diag(V_b-V_B))
	Fe	Re	Difference	S.E.
IC	.0887397	.0911429	-.0024032	.0024916
FA	-.6896401	-.4745856	-.2150545	.2249187
FS	-.1018822	-.0259557	-.0759264	.0319324
BS	-.3872258	-.3237932	-.0634326	.0485349
BD	-.1225949	-.1040432	-.0185516	.0148088
BI	.0929227	.1868112	-.0938886	.0141147
BE	.2709095	.3079802	-.0370707	.0187645

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$$\chi^2(7) = (b-B)'[(V_b-V_B)^{-1}](b-B)$$

$$= 49.24$$

$$\text{Prob}>\chi^2 = 0.0000$$

**Appendix V: Moderating Effect of Financial Reporting Quality on the Indirect
Effect of Intellectual Capital**

Random-effects GLS regression	Number of obs	=	473			
Group variable: companyid	Number of groups	=	60			
R-sq: within = 0.4158	Obs per group: min	=	2			
between = 0.7819	Avg	=	7.9			
overall = 0.6691	Max	=	8			
	Wald chi2(9)	=	442.72			
corr(u_i, X) = 0 (assumed)	Prob > chi2	=	0.0000			
FV	Coef.	Std. Err.	Z	P>z	[95% Conf.	Interval]
IC	.112	.012	9.01	0.000	.087	.136
FA	-.132	.094	-1.41	0.160	-.316	.052
FS	-.068	.028	-2.44	0.015	-.123	-.013
BD	-.069	.028	-2.44	0.015	-.124	-.013
BI	.196	.032	6.22	0.000	.134	.258
BE	.267	.051	5.29	0.000	.168	.366
BS	-.235	.086	-2.74	0.006	-.403	-.067
FR_IC	.032	.009	3.47	0.001	.014	.051
FR	.039	.016	2.42	0.016	.007	.071
_cons	.688	.353	1.95	0.051	-.004	1.379
sigma_u	.282					
sigma_e	.282					
Rho	.500	(fraction of variance due to u_i)				

Fixed-effects (within) regression	Number of obs	=	473			
Group variable: companyid	Number of groups	=	60			
R-sq: within = 0.4328	Obs per group: min	=	2			
between = 0.4663	Avg	=	7.9			
overall = 0.4562	Max	=	8			
	F(9,404)	=	34.25			
corr(u_i, Xb) = 0.1064	Prob > F	=	0.0000			
FV	Coef.	Std. Err.	T	P>t	[95% Conf.	Interval]
IC	.105	.013	8.32	0.000	.080	.129
FA	-.530	.225	-2.36	0.019	-.973	-.088
FS	-.143	.044	-3.24	0.001	-.230	-.056
BD	-.062	.031	-2.03	0.043	-.123	-.002
BI	.101	.034	2.95	0.003	.033	.168
BE	.232	.054	4.33	0.000	.127	.337
BS	-.321	.097	-3.30	0.001	-.513	-.129
FR_C	.022	.009	2.36	0.019	.004	.040
FR	.033	.016	2.00	0.046	.001	.065
_cons	2.190	.596	3.67	0.000	1.018	3.362
sigma_u	.465					
sigma_e	.282					
Rho	.731					(fraction of variance due to u_i)
F test that all u_i=0: F(59, 404) = 9.50 Prob > F = 0.0000						

	---- Coefficients ----		
	(b) (B) fe re	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
IC	.1046911 .1117983	-.0071072	.0021093
FA	-.5304043 -.1321199	-.3982843	.2046631
FS	-.1433649 -.0681395	-.0752254	.0342579
BD	-.0624589 -.0687475	.0062886	.0122564
BI	.1005934 .19608	-.0954866	.0131022
BE	.2319473 .2671252	-.0351779	.0176897
BS	-.3212521 -.2352422	-.08601	.0458509
FR_IC	.02207 .0322749	-.0102049	.0008074
FR	.0326255 .0389397	-.0063142	.0023564

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$$\chi^2(9) = (b-B)'[(V_b-V_B)^{-1}](b-B)$$

$$= 53.46$$

$$\text{Prob}>\chi^2 = 0.0000$$

(V_b-V_B is not positive definite)

Appendix IVI: Test For Normality Output

SKTEST MYRESIDUALS

Skewness/Kurtosis tests for Normality

----- joint -----

Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
myresiduals	428	0.5194	0.4627	0.96	0.6188

.jb myresiduals**Jarque-Bera normality test: .7474 Chi(2) .6882****Jarque-Bera test for Ho: normality:**

Appendix VII: Autocorrelation Output

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	58.65846	Prob. F(2,87)	0.0000
Obs*R-squared	55.12233	Prob. Chi-Square(2)	0.0000

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Date: 09/14/20 Time: 14:30

Sample: 1 96

Included observations: 96

Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BSIZE	0.005131	0.009869	0.519890	0.6045
BDIV	-0.020896	0.104409	-0.200141	0.8418
BEXP	-0.124824	0.114493	-1.090225	0.2786
BIND	-0.099713	0.116694	-0.854481	0.3952
VAIC	-2.16E-05	3.97E-05	-0.545247	0.5870
FREP	-0.003166	0.001268	-2.497910	0.0144
C	0.107461	0.158594	0.677587	0.4998
RESID(-1)	0.761473	0.103708	7.342488	0.0000
RESID(-2)	0.029150	0.103929	0.280478	0.7798
R-squared	0.574191	Mean dependent var		-4.76E-17
Adjusted R-squared	0.535036	S.D. dependent var		0.248726
S.E. of regression	0.169602	Akaike info criterion		-0.621663
Sum squared resid	2.502544	Schwarz criterion		-0.381255
Log likelihood	38.83983	Hannan-Quinn criter.		-0.524486
F-statistic	14.66462	Durbin-Watson stat		2.046848
Prob(F-statistic)	0.000000			

Appendix VIIIIV: Data Collection Schedule

<p>Board size = number of board members Board Diversity = female board members / total number of directors Board independence = Non- executive directors / total number of directors Board expertise = Board members with financial professional knowledge / total number of directors VAHC=Value added human capital coefficient VA=Value Added(Outputs-Inputs) HC=Human Capital(Investment in Human Capital Or Total salaries+ Incentives) VACA=Value created by one unit of capital employed CA= Capital Employed(Total Assets- Intangible assets) STVA=Value added structural capital coefficient SC=Structural Capital(VA-HC) MVE=Market Value of Equity(Share Price * Number of Common Stock) DEBT=short term liabilities – short term assets + long term debts TA= Total Assets</p> <p>Target Population=118 Companies Registered on NSE,USE, DSE and RSE (exchanges in East Africa) NB: Study is targeting companies that consistently traded between 2012 to 2019(8 years).</p>						
			Variables			
			Board Structure	Intellectual capital	Financial reporting quality	Firm value
		Measurement	Board size Board diversity Board independence Board expertise	Value Added Intellectual capital coefficient = VAHC (VA / HC) +VACA (VA / CA) + STVA (SC / VA)	(Change in current assets – change in cash – change in current liabilities + change in short term debt – depreciation) / Average total Assets	Tobin’s Q = (MVE +DEDT) / TA
	Company					
	KENYA (NSE)					
1	Eaagads Ltd					
2	Kakuzi Limited					
3	Kapchorua Tea Factory					
4	Limuru Tea Kenya Ltd.					

5	Williamson Tea Kenya					
6	Sasini Limited					
7	Car & General Kenya					
8	Sameer Africa					
9	Barclays Bank of Kenya					
10	Bank of Kigali					
11	CfC Stanbic Holdings					
12	Diamond Trust Bank Group					
13	Equity Group Holdings					
14	Housing Finance Company of Kenya					
15	I&M Holdings Limited					
16	Kenya Commercial Bank Group					
17	National Bank of Kenya					
18	National Industrial Credit Bank					
19	Standard Chartered of Kenya					
20	Cooperative Bank of Kenya					
21	Deacons East Africa PLC					
22	Express Kenya Limited					
23	Kenya Airways					
24	Longhorn Publishers					
25	Nairobi Business Ventures					
26	National Media Group					
27	Standard Group Limited					

28	TPS Eastern Africa Limited					
29	Uchumi Supermarket					
30	WPP Scan Group Limited					
31	ARM Cement Limited					
32	Bamburi Cement Limited					
33	Crown-Berger (Kenya)					
34	East African Cables Limited					
35	East Africa Portland Cement Co					
36	Ken Gen Company					
37	The Kenya Power & Lighting Co					
38	Total Kenya Limited					
39	Umeme Limited					
40	Britam Limited					
41	CIC Insurance Limited					
42	Jubilee Holdings Limited					
43	Kenya Reinsurance Corporation					
44	Liberty Kenya Holdings Limited					
45	Pan Africa Insurance Company (Sanlam)					
46	Centum Investment Company					
47	Olympia Capital Holdings Limited					

48	Trans century Limited					
49	Home Afrika Limited					
50	Kurwitu Ventures Limited					
51	Nairobi Securities Exchange					
52	Boc Kenya Limited					
53	British American Tobacco Kenya					
54	Carbacid Investments Limited					
55	East African Breweries Limited					
56	Eveready East Africa Limited					
57	Mumias Sugar Company Limited					
58	Unga Group Limited					
59	Flame Tree Group Holdings					
60	Kenya Orchards					
61	Safaricom Limited					
62	Stanlib Fahari I-Reit					
63	New Gold Kenya ETF					
	UGANDA (USE)					
1	Bank of Baroda (Uganda)					
2	British American Tobacco					
3	DFCU Group					
4	East African Breweries					

5	Jubilee Holdings					
6	Kenya Airways					
7	KCB Group					
8	Newvision Group					
9	Stanbic Bank Uganda Limited					
10	Uganda Clays Limited					
11	Equity Group Holdings Limited					
12	National Insurance Corporation					
13	Uchumi supermarkets					
14	Nation Media Group					
15	Centum Investments					
16	UMEME					
17	Cipla Quality chemical industries limited					
	DARES SALAAM (DSE)					
1	CRDB Bank					
2	DCB Commercial Bank					
3	Dar es salaam Stock Exchange					
4	East African Breweries Limited					
5	Jubilee Holdings Limited					
6	Kenya Airways					
7	Kenya Commercial Bank					
8	Maendeleo Bank					
9	Mwalimu Commercial Bank					
10	Mkombozi Commercial					

	Bank					
11	MuCoBa Bank					
12	National Investment Company Limited					
13	National Microfinance Bank					
14	Nation Media Group					
15	Precision Air Services					
16	Swala Oil and Gas					
17	east African Breweries Limited					
18	Tanzania Breweries					
19	Tanzania Cigarette Company					
20	Tanga Cement					
21	TCCIA Investment Company Limited					
22	TOL Gases Limited					
23	Tanzania Portland Cement Company Ltd					
24	Tanzania Tea Packers					
25	Uchumi Supermarket					
26	Vodacom Tanzania Limited					
27	Yetu Micro finance Bank					
28	JATU Plc					
	RWANDA Stock Exchange (RSE)					

1	Bank of Kigali					
2	I&M Bank Rwanda					
3	Equity Bank Group					
4	Kenya Commercial Bank					
5	National Media Group					
6	Uchumi Supermarket Ltd					
7	Bralirwa					
8	Crystal telecom					
9	RH Bophelo					
10	Cimerwa					
	Dar es salaam Stock Exchange (DSE)					
	CRDB Bank					
2	DCB Commercial Bank					
3	Dar es salaam Stock Exchange					
4	East African Breweries Limited					
5	Jubilee Holdings Limited					
6	Kenya Airways					
7	Kenya Commercial Bank					
8	Maendeleo Bank					
9	Mwalimu Commercial Bank					
10	Mkombozi Commercial Bank					
11	MuCoBa Bank					
12	National Investment Company Limited					

13	National Microfinance Bank					
14	Nation Media Group					
15	Precision Air Services					
16	Swala Oil and Gas					
17	east African Breweries Limited					
18	Tanzania Breweries					
19	Tanzania Cigarette Company					
20	Tanga Cement					
21	TCCIA Investment Company Limited					
22	TOL Gases Limited					
23	Tanzania Portland Cement Company Ltd					
24	Tanzania Tea Packers					
25	Uchumi Supermarket					
26	Vodacom Tanzania Limited					
27	Yetu Micro finance Bank					
28	JATU Plc					

COMPANIES LISTED ON THE NAIROBI STOCK EXCHANGE (NSE)						
S/N	COMPANY	CODE	SECTOR	YEAR LISTED	PRIMARY LISTING	COMMENT
1	Eaagads Ltd	EGAD	Agriculture	1972	NSE	Listed before 2012
2	Kakuzi Limited	KUKZ	Agriculture	1951	NSE	Listed before 2012
3	Kapchorua Tea Factory Ltd.	KAPC	Agriculture	1972	NSE	Listed before 2012
4	Limuru Tea Kenya Ltd.	LIMT	Agriculture	1967	NSE	Listed before 2012
5	Williamson Tea Kenya	WTK	Agriculture	1972	NSE	Listed before 2012
6	Sasini Limited	SASN	Agriculture	1965	NSE	Listed before 2012
7	Car & General Kenya	G & G	Automobiles & Accessories	1950	NSE	Listed before 2012
8	Sameer Africa	FIRE	Automobiles & Accessories	1995	NSE	Listed before 2012
9	Barclays Bank of Kenya	BBK	Banking	1986	NSE	Listed before 2012
10	Bank of Kigali		Banking	2018	RSE	primarily listed on RSE
11	CfC Stanbic Holdings	CFC	Banking	1970	NSE	Listed before 2012
12	Diamond Trust Bank Group	DTK	Banking	1972	NSE	Listed before 2012
13	Equity Group Holdings	EQTY	Banking	2006	NSE	Listed before 2012
14	Housing Finance Company of Kenya	HFCK	Banking	1992	NSE	Listed before 2012
15	I&M Holdings Limited	I & M	Banking	2013	NSE	Listed after 2012
16	Kenya Commercial Bank Group	KCB	Banking	1989	NSE	Listed before 2012
17	National Bank of Kenya	NBK	Banking	1994	NSE	Listed before 2012
18	National Industrial Credit Bank	NIC	Banking	1971	NSE	Listed before 2012
19	Standard Chartered of Kenya	SCBK	Banking	1988	NSE	Listed before 2012
20	Cooperative Bank of Kenya	COOP	Banking	2008	NSE	Listed before 2012
21	Deacons East Africa PLC	DCON	Commercial and Services	2016	NSE	Listed after 2012 & had a suspension in 2018
22	Express Kenya Limited	XPRS	Commercial and Services	1978	NSE	Listed before 2012

23	Kenya Airways	KQ	Commercial and Services	1996	NSE	Listed before 2012
24	Longhorn Publishers	LKL	Commercial and Services	2012	NSE	listed on 30th May, 2012 and so did not have financial reports for 2012
25	Nairobi Business Ventures	NBV	Commercial and Services	2016	NSE	Listed after 2012
26	National Media Group	NMG	Commercial and Services	1973	NSE	Listed before 2012
27	Standard Group Limited	SGL	Commercial and Services	1954	NSE	Listed before 2012
28	TPS Eastern Africa Limited	TPSE	Commercial and Services	1997	NSE	Listed before 2012
29	Uchumi Supermarket	UCHM	Commercial and Services	relisted in 2011	NSE	Listed before 2012
30	WPP Scan Group Limited	WPP	Commercial and Services	2006	NSE	Listed before 2012
31	ARM Cement Limited	ARM	Construction & Allied	1997	NSE	Listed before 2012 but had a suspension in 2018, 2019 & 2020
32	Bamburi Cement Limited	BAMB	Construction & Allied	1951	NSE	Listed before 2012
33	Crown-Berger (Kenya)	BERG	Construction & Allied	1992	NSE	Listed before 2012
34	East African Cables Limited	CABL	Construction & Allied	1973	NSE	Listed before 2012
35	East Africa Portland Cement Co	PORT	Construction & Allied	1972	NSE	Listed before 2012
36	Ken Gen Company	KEGN	Energy & Petroleum	2006	NSE	Listed before 2012

37	The Kenya Power & Lighting Co	KPLC	Energy & Petroleum	1954	NSE	Listed before 2012
38	Total Kenya Limited	TOTL	Energy & Petroleum	1988	NSE	Listed before 2012
39	Umeme Limited	UMME	Energy & Petroleum	2012	USE	looked at under USE
40	Britam Limited	BRIT	Insurance	2011	NSE	Listed before 2012
41	CIC Insurance Limited	CIC	Insurance	2012	NSE	Listed before 2012
42	Jubilee Holdings Limited	JUB	Insurance	1984	NSE	Listed before 2012
43	Kenya Reinsurance Corporation	KNRE	Insurance	2006	NSE	Listed before 2012
44	Liberty Kenya Holdings Limited	CFCI	Insurance	2007	NSE	Listed before 2012
45	Pan Africa Insurance Company (Sanlam)	PAFR	Insurance	1963	NSE	Listed before 2012
46	Centum Investment Company	ICDCI	Investment	1977	NSE	Listed before 2012
47	Olympia Capital Holdings Limited	OCH	Investment	1974	NSE	Listed before 2012
48	Trans century Limited	TCL	Investment	2011	NSE	Listed before 2012
49	Home Afrika Limited	HAFR	Investment	2013	NSE	Listed after 2012
50	Kurwitu Ventures Limited	KURV	Investment	2014	NSE	Listed after 2012
51	Nairobi Securities Exchange	NSE	Investment services	2014	NSE	Listed after 2012
52	Boc Kenya Limited	BOC	Manufacturing & Allied	1969	NSE	Listed before 2012
53	British American Tobacco Kenya	BAT	Manufacturing & Allied	1969	NSE	
54	Carbacid Investments Limited	CARB	Manufacturing & Allied	1972	NSE	Listed before 2012
55	East African Breweries Limited	EABL	Manufacturing & Allied	1972	NSE	Listed before 2012
56	Eveready East Africa Limited	EVRD	Manufacturing & Allied	2006	NSE	Listed before 2012
57	Mumias Sugar Company Limited	MSC	Manufacturing &	2001	NSE	Listed before 2012 but

			Allied			had a suspension in 2019 & 2020
58	Unga Group Limited	UNGA	Manufacturing & Allied	1971	NSE	Listed before 2012
59	Flame Tree Group Holdings	FTGH	Manufacturing & Allied	2015	NSE	Listed after 2012
60	Kenya Orchards	ORCH	Manufacturing & Allied	1959	NSE	listed before 2012
61	Safaricom Limited		Telecommunication & Technology	2008	NSE	Listed before 2012
62	Stanlib Fahari I-Reit		Real Estate Investment Trust	2015	NSE	Listed after 2012
63	New Gold Kenya ETF		Exchange Traded Funds	2017	NSE	Listed after 2012

COMPANIES LISTED ON THE UGANDA STOCK EXCHANGE (USE)						
S/N	COMPANY	CODE	SECTOR	YEAR LISTED	PRIMARY LISTING	COMMENT
1	Uganda Clays Ltd	UCL	Construction & Allied	18-01-00	USE	Listed before 2012
2	British American Tobacco	BATU	Manufacturing & Allied	28-06-00	USE	Listed before 2012
3	Bank of Baroda (U) Ltd	BOBU	Banking	14-11-02	USE	Listed before 2012
4	DFCU Ltd	DFCU	Banking	16-12-04	USE	Listed before 2012
5	New Vision Printing and Publishing Co	NVL	Publishing, printing & Broad casting	2004	USE	Listed before 2012
6	Stanbic Bank Uganda Ltd	SBU	Banking	2007	USE	Listed before 2012
7	National Insurance Corporation	NIC	Banking	2010	USE	Listed before 2012

8	UMEME Limited	UMEME	Energy & Petroleum	2012	USE	Suspended operations for 2 weeks in 2014 & 2016
9	Cipla Quality Chemical Industries Ltd.	CQCIL	Manufacturing & Allied	2018	USE	Listed after 2012
10	East African Breweries Ltd	EABL	Manufacturing & Allied	2001	NSE	Cross listed at both NSE & DSE
11	Kenya Airways	KA	Commercial & Services	2002	NSE	Cross listed at both NSE & DSE
12	Jubilee Holdings Ltd	JHL	Insurance	2006	NSE	Cross listed at both NSE & DSE
13	Equity Bank Ltd	EBL	Banking	2009	NSE	Cross listed on NSE & RSE
14	Kenya Commercial Bank	KCB	Banking	2008	NSE	Cross listed at NSE , USE and RSE
15	Nation Media Group	NMG	Commercial & Services	2010	NSE	Cross listed on NSE,DSE & RSE
16	Centum	CENT	Investment	2011	NSE	Cross listed on NSE
17	UCHUMI Supermarket	UCHM	Commercial & Services	2013	NSE	Cross listed on NSE,DSE & RSE
Source: Author (2020). Data from USE						
COMPANIES LISTED ON THE RWANDA STOCK EXCHANGE (RSE)						
S/N	COMPANY	CODE	SECTOR	YEAR LISTED	PRIMARY LISTING	COMMENT
1	Bank of Kigali	BK	Banking	31/06/2011	RSE	Listed before 2012 and trading consistently
2	I&M Bank Rwanda	IMR	Banking	31-03-17	RSE	Listed after 2012

3	Equity Bank Group	EQTY	Banking	12-02-15	NSE	Cross listed on NSE & USE
4	Kenya Commercial Bank	KCB	Banking	18-06-09	NSE	Cross listed on NSE,DSE & USE
5	National Media Group	NMG	Commercial and Services	02-11-10	NSE	Cross listed on NSE,DSE & USE
6	Uchumi Supermarket Ltd	UCHM	Commercial and Services	15-10-13	NSE	Cross listed on NSE,DSE & USE
7	Bralirwa	BRL	Commercial and Services	31-01-11	RSE	Listed before 2012 and trading consistently
8	Crystal telecom	CTL	Telecommunications	14-04-15	RSE	Listed after 2012
9	RH Bophelo	RHB	Investment	01-06-20	RSE	Listed after 2012
10	Cimerwa	CMR	Cement	03-08-20	RSE	Listed after 2012
Source: Author (2020). Data from RSE						
COMPANIES LISTED ON THE DAR ES SALAAM STOCK EXCHANGE (DSE)						
S/N	COMPANY	CODE	SECTOR	YEAR LISTED	PRIMARY LISTING	COMMENT
1	CRDB Bank	CRDB	Banking	17-06-09	DSE	listed before 2012 and consistently trading
2	DCB Commercial Bank	DCB	Banking	16-09-08	DSE	listed before 2012 and consistently trading
3	Dar es salaam Stock Exchange	DSE	Investment services	12-07-16	DSE	Listed after 2012
4	East African Breweries Limited	EABL	Manufacturing & Allied	29-06-05	NSE	Cross listed at both NSE and USE
5	Jubilee Holdings Limited	JHL	Insurance	20-12-06	NSE	Cross listed at both NSE and USE

6	Kenya Airways	KA	Commercial Services	01-10-04	NSE	Cross listed at both NSE and USE
7	Kenya Commercial Bank	KCB	Banking	17-12-08	NSE	Cross listed at NSE , USE and RSE
8	Maendeleo Bank	MBP	Banking	04-11-13	DSE	Listed after 2012
9	Mwalimu Commercial Bank	MCB	Banking	27-11-15	DSE	Listed after 2012
10	Mkombozi Commercial Bank	MKCB	Banking	29-12-15	DSE	Listed after 2012
11	MuCoBa Bank	MUCOB	Banking	10-09-16	DSE	Listed after 2012
12	National Investment Company Limited	NICO	Investment services	03-06-18	DSE	Listed after 2012
13	National Microfinance Bank	NMB	Banking	06-11-08	DSE	listed before 2012 and consistently trading
14	Nation Media Group	NMG	Commercial and Services	21-02-11	NSE	Cross listed at NSE , USE and RSE
15	Precision Air Services	PAL	Commercial and Services	21-12-11	DSE	listed before 2012 and consistently trading
16	Swala Oil and Gas	SWALA	Oil and Gas	11-08-14	DSE	Listed after 2012
17	east African Breweries Limited	SWISS	Commercial and Services	26-09-03	SWISS	listed before 2012 and consistently trading
18	Tanzania Breweries	TBL	Manufacturing & Allied	09-09-98	DSE	listed before 2012 and consistently trading
19	Tanzania Cigarette Company	TCC	Manufacturing & Allied	16-11-00	DSE	listed before 2012 and consistently trading
20	Tanga Cement	SIMBA	Manufacturing & Allied	26-09-02	DSE	listed before 2012 and consistently trading
21	TCCIA Investment Company Limited	TICL	Investment services	16-03-18	DSE	Listed after 2012
22	TOL Gases Limited	TOL	Manufacturing & Allied	15-04-98	DSE	listed before 2012 and consistently trading
23	Tanzania Portland Cement Company Ltd	TPCC	Manufacturing & Allied	29-09-06	DSE	listed before 2012 and consistently trading
24	Tanzania Tea Packers	TTP	Agriculture	17-12-99	DSE	listed before 2012 and

						consistently trading
25	Uchumi Supermarket	UCL	Commercial and Services	15-08-14	NSE	Cross listed at NSE , USE and RSE
26	Vodacom Tanzania Limited	VODA	Telecommunication services	15-08-17	DSE	Listed after 2012
27	Yetu Micro finance Bank	YETU	Banking	10-03-16	DSE	Listed after 2012
28	JATU Plc	JATU	Manufacturing & Allied	20-11-20	DSE	Listed after 2012

Source: Author (2020). Data from DSE

COMPANIES LISTED ON THE DAR ES SALAAM STOCK EXCHANGE (DSE) AND MEET THE INCLUSION AND EXCLUSION CRITERIA			
S/N	Company	S/N	
1	CRDB Bank	7	Tanzania Cigarette Company
2	DCB Commercial Bank	8	Tanga Cement
3	National Microfinance Bank	9	TOL Gases Limited
4	Precision Air Services	10	Tanzania Portland Cement Company Ltd
5	Swissport Tanzania	11	Tanzania Tea packers
6	Tanzania Breweries	12	Maendeleo Bank
COMPANIES LISTED ON THE RWANDA STOCK EXCHANGE (RSE) AND MEET THE INCLUSION AND EXCLUSION CRITERIA			
S/N	COMPANY		
1	Bank of Kigali		
2	Bralirwa		
COMPANIES LISTED ON THE UGANDA STOCK EXCHANGE (USE) AND MEET THE INCLUSION AND EXCLUSION CRITERIA			
S/N			
1	Uganda Clays Ltd		
2	Bank of Baroda (U) Ltd		
3	DFCU Ltd		
4	New Vision Printing and Publishing Co		
5	National Insurance Corporation		
COMPANIES LISTED ON THE NAIROBI STOCK EXCHANGE (NSE) AND MEET THE INCLUSION AND EXCLUSION CRITERIA			
S/N			
1	Eaagads Ltd	25	Bamburi Cement Limited
2	Kakuzi Limited	26	Crown-Berger (Kenya)

3	Kapchorua Tea Factory Ltd.	27	East African Cables Limited
4	Limuru Tea Kenya Ltd.	28	East Africa Portland Cement Co
5	Williamson Tea Kenya	29	Ken Gen Company
6	Sasini Limited	30	The Kenya Power & Lighting Co
7	Car & General Kenya	31	Total Kenya Limited
8	Sameer Africa	32	Britam Limited
9	Barclays Bank of Kenya	33	CIC Insurance Limited
10	CfC Stanbic Holdings	34	Jubilee Holdings Limited
11	Diamond Trust Bank Group	35	Kenya Reinsurance Corporation
12	Equity Group Holdings	36	Liberty Kenya Holdings Limited
13	Housing Finance Company of Kenya	37	Pan Africa Insurance Company (Sanlam)
14	Kenya Commercial Bank Group	38	Centum Investment Company
15	National Bank of Kenya	39	Olympia Capital Holdings Limited
16	National Industrial Credit Bank	40	Trans century Limited
17	Standard Chartered of Kenya	41	Boc Kenya Limited
18	Cooperative Bank of Kenya	42	British American Tobacco Kenya
19	Express Kenya Limited	43	Carbacid Investments Limited
20	Kenya Airways	44	East African Breweries Limited
21	National Media Group	45	Eveready East Africa Limited
22	Standard Group Limited	46	Unga Group Limited
23	TPS Eastern Africa Limited	47	Kenya Orchards
24	WPP Scan Group Limited	48	Safaricom Limited
S/N	COMPANIES LISTED ON THE FOUR EXCHANGES (NSE, USE, DSE & RSE) AND MEET THE INCLUSION AND EXCLUSION CRITERIA		
1	Eaagads Ltd	37	Liberty Kenya Holdings Limited
2	Kakuzi Limited	38	Pan Africa Insurance Company (Sanlam)

3	Kapchorua Tea Factory Ltd.	39	Centum Investment Company
4	Limuru Tea Kenya Ltd.	40	Olympia Capital Holdings Limited
5	Williamson Tea Kenya	41	Trans century Limited
6	Sasini Limited	42	Boc Kenya Limited
7	Car & General Kenya	43	British American Tobacco Kenya
8	Sameer Africa	44	Carbacid Investments Limited
9	Barclays Bank of Kenya	45	East African Breweries Limited
10	CfC Stanbic Holdings	46	Eveready East Africa Limited
11	Diamond Trust Bank Group	47	Unga Group Limited
12	Equity Group Holdings	48	Kenya Orchards
13	Housing Finance Company of Kenya	49	Safaricom Limited
14	Kenya Commercial Bank Group	50	Uganda Clays Ltd
15	National Bank of Kenya	51	British American Tobacco
16	National Industrial Credit Bank	52	Bank of Baroda (U) Ltd
17	Standard Chartered of Kenya	53	DFCU Ltd
18	Cooperative Bank of Kenya	54	New Vision Printing and Publishing Co
19	Express Kenya Limited	55	Stanbic Bank Uganda Ltd
20	Kenya Airways	56	National Insurance Corporation
21	National Media Group	57	Bank of Kigali
22	Standard Group Limited	58	Bralirwa
23	TPS Eastern Africa Limited	59	CRDB Bank
24	Uchumi Supermarket	60	DCB Commercial Bank
25	WPP Scan Group Limited	61	National Microfinance Bank
26	Bamburi Cement Limited	62	Precision Air Services
27	Crown-Berger (Kenya)	63	Swissport Tanzania
28	East African Cables Limited	64	Tanzania Breweries
29	East Africa Portland Cement Co	65	Tanzania Cigarette Company
30	Ken Gen Company	66	Tanga Cement
31	The Kenya Power & Lighting Co	67	TOL Gases Limited
32	Total Kenya Limited	68	Tanzania Portland Cement Company Ltd
33	Britam Limited	69	Tanzania Tea packers

34	CIC Insurance Limited		
35	Jubilee Holdings Limited		
36	Kenya Reinsurance Corporation		