EFFECT OF ACCRUALS' QUALITY ON COST OF CAPITAL OF PUBLIC COMPANIES IN KENYA

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Effect of Accruals' Quality on Cost of Capital of Public Companies in Kenya

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DECLARATION

This thesis is my original work and has not been presented for a degree in any other university.

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This thesis has been submitted for examination with our approval as the University Supervisors.

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DEDICATION

I dedicate this Thesis to my late dad whose memory reminds me of his tireless efforts to have me finish this program. This report would never have been a reality had it not been for his consistent nudge.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

ACRONYMS

AMEX	:	American Stock Exchange
AQ	:	Accruals Quality
AQF	:	Accruals Quality Factor
AQR	:	Accruals Quality Rank
BTMF	:	Book to Market Factor
CAPM	:	Capital Asset Pricing Model
CBK	:	Central Bank of Kenya
CEO	:	Chief Executive Officer
CFO	:	Cash Flows from Operations
CMA	:	Capital Markets Authority
CPOCF	:	Current Period Operating Cash Flows
CRSP	:	Centre for Research in Security Prices
CV	:	Coefficient of Variation
DAQR	:	Discretionary Accruals Quality Rank
DISC	:	Discretionary
DTA	:	Debt to Total Assets
EMH	:	Efficient Market Hypothesis
EPR	:	Earnings to Price Ratio
EPS	:	Earnings per Share
FTSE	:	Financial Times Stock Exchange
HADQR	:	High Discretionary Accruals Quality Rank
HAQR	:	High Accruals Quality Rank

HIAQPR	:	High Innate Accruals Quality Portfolio Rank
IAQR	:	Innate Accruals Quality Rank
IAS	:	International Accounting Standards
IASB	:	International Accounting Standards Board
ICPA (K)	:	Institute of the Certified Public Accountants of Kenya
IFRS	:	International Financial Reporting Standards
INN	:	Innate
KRA	:	Kenya Revenue Authority
LAQR	:	Low Accruals Quality Rank
LDAQR	:	Low Discretionary Accruals Quality Rank
LIAQPR	:	Low Innate Accruals Quality Portfolio Rank
LM	:	Lagrange Multiplier
LOOC	:	Length of Operating Cycle
LSE	:	London Stock Exchange
MER	:	Market Excess Returns
MRP	:	Market Risk Premium
NASDAQ	:	National Association of Securities Dealers Automated Quotations
NOLI	:	Number of Incidences of Losses
NSE	:	Nairobi Securities Exchange
NYSE	:	New York Stock Exchange
PADTA	:	Performance Adjusted Discretionary Accruals
PPE	:	Plant Property and Equipment
PPOCF	:	Previous Period Operating Cash Flows

PWC	:	Pricewaterhousecoopers
REV	:	Revenue
SD	:	Standard Deviation
SER	:	Stock Excess Returns
SF	:	Size Factor
SPOCF	:	Subsequent Period Operating Cash Flows
TA	:	Total Assets
TB	:	Treasury Bill
USA	:	United States of America
WC	:	Working Capital
YAQ	:	Accruals Quality Qualitative Index

DEFINITION OF TERMS

Accruals quality: as the extent to which the accruals implied in the business reported earnings map into actual cash flows over successive financial periods (Lobo *et al.*, 2012).

Accruals phenomenon: this is the documented persistence of the negative relationship between accruals and stock returns in some capital markets (Lewellen & Resutek, 2013)

Accruals principle: the fundamental assumption of financial reporting by which earnings and expenses are recorded in the period they arise and when there is an objective evidence of how much is involved regardless of when the related accounts will be settled (Young & Cohen, 2013).

Company capitalization: this is the value of a company listed a securities' market taken as the product of the issued ordinary shares and the prevailing market price per each of those shares. The sum of all the values of firms in a market is taken as market capitalization (Nyberg *et al.*, 2010).

Cost of capital: the average cost of the long term funds of a firm, often taken as the weighted average cost of capital, usually the average of the after tax cost of debt, ordinary equity and preferred equity, the weighting factors being the respective proportionate values of each of the types of finances in a firm's capital structure (Demirkhan *et al.*, 2012).

Market informational efficiency: the phenomenon by which security prices fully reflect available information about a particular security such that there is no other information that could enable investors to earn superior returns to those of the market on average (Brody *et al.*, 2012).

Nairobi Securities Exchange (NSE): the market primarily used for the trade of both debt and equity securities and their related derivatives in Kenya (NSE, 2015).

Prudence principle of financial reporting: this is a principle of accounting also called conservatism that applies a reasonable degree of caution during estimations and accounting judgments to avoid exaggeration of economic values. Prudence helps avoid overstating the values of accounts receivables and the income of the reporting period (Young & Cohen, 2013)

Public Companies: Corporations that are listed on a publicly trading stock market like the Nairobi Securities Exchange (NSE, 2015).

ABSTRACT

This study uses quantitative research design to evaluate the effects of accruals quality on cost of capital and security market returns of public companies in Kenya. It specifically tests the effects of overall, innate, discretionary and qualitative accruals qualities on cost of capital as well as their market pricing at the Nairobi Securities Exchange (NSE) and its various segments. The study's purposive sample of 39 companies is derived from a population of 60 companies quoted at the NSE over the period January 1993 through December 2013. It relies on questionnaire-obtained primary qualitative accruals quality data from statutory audit and on secondary quantitative accruals quality data from annual financial statements as well as monthly trading security prices from the NSE. The cost of capital effect is tested by a panel data linear regression of cost of capital on the accruals quality rank factor to establish the statistical significance of the innate, discretionary, overall and qualitative accruals qualities' coefficients at 95% confidence interval. Accruals quality is estimated as the standard deviation of firm specific residuals obtained from the five-year moving linear regression of working capital on accruals variables. Qualitative accruals quality is established from the accruals quality index of audit analysts' responses on accruals quality data of the companies they externally audit. The security market pricing effect on the other hand is tested using a panel regression of accruals based portfolio decile premiums on market pricing factors to check the statistical significance of the accruals quality based excess returns over the pricing factors. The study rejects the null hypotheses that accruals qualities have no effect on cost of capital and finds out that the overall, innate, discretionary and qualitative accruals qualities of public companies in Kenya have a negative effect on cost of capital. It further indicates that there exists accruals quality market pricing effect overall, innate and qualitative accruals qualities but not for discretionary accruals quality. In addition, the effect of accruals quality on cost of capital varies widely among the various segments of the NSE in tandem with innate characteristics. The study recommends a test of the effect of accruals quality based on alternative measures of accruals quality to cover a wider scope to include non-listed firms in the wider East African region. .

CHAPTER ONE

INTRODUCTION

1.1   Background of the Study

Lobo *et al.* (2012) depict accruals quality as the extent to which the accruals implied in the business reported earnings map into actual cash flows over successive financial periods. The mapping process is necessary because the nature of financial reporting is such that reported earnings of a specified financial period consist of realized cash earnings and accruals that translate into cash flows over future financial periods. Accruals quality is therefore the implied accuracy or reliability of the estimated future cash flows from earnings on the basis of reported accruals figures.

Accruals quality has its roots in the accruals principle which is identified as one of the key pillars of financial reporting (Young & Cohen, 2013). This principle, anchored in the conceptual framework of accounting, dictates that revenues and expenses must be recorded in the financial period they arise and affect and not necessarily when cash is paid or received from them. This, according to these authors is in concomitant with the matching principle that endeavors to accurately reflect financial performance of a business entity by precisely identifying the expenses incurred in the process of earning the income reflected in the financial statements of a specific financial period. Accordingly, at the end of a financial period, accruals reflect accounts receivables and accounts payables arising out of the recognized but yet to be settled incomes and expenses respectively (Young & Cohen, 2013). Current accruals in effect reflect the immediate future cash flows while the current cash flows are to some extent a reflection of the accruals of the past financial periods.

The existence of accruals in form of accounts receivables and accounts payables puts into sharp focus the concept of accruals quality. The fact that accruals are used to shift cash flows over financial periods is demonstrated by Lobo *et al.* (2012). They indicate

that the cash flow shifting process results into a more precise reflection of the earnings of a business entity than would be the case if the cash basis of financial reporting was adopted. Accrual reporting in essence solves the income mismatch and timing problems of financial reporting (Lobo *et al.*, 2012).

Although accrual accounting resolves the timing and mismatch problems of earnings' reporting, it invokes some income, expense, asset, liability and equity approximation assumptions and routines that introduce information risk and uncertainty in the reported earnings (Kent *et al.*, 2010). In line with this view, accruals' quality can be taken as a measure of uncertainty with respect to the reliability of the information provided in corporate earnings as predictors of corporate cash flows. Suffice it to note that whereas business cash flows inherently depend on their accruals structure, the very estimation of accruals is fraught with innate and discretionary judgment limitations which inevitably reduce the reliability of reported earnings.

Literature identifies two types of accruals qualities. These are the discretionary accruals quality and the innate accruals quality (Kent *et al.*, 2010). Discretionary accruals quality reflects creative accounting efforts and relates to intentional manipulation of accruals to manage earnings and reflect a different picture from the actual about the financial condition of an organisation. Doyle, Ge and McVay (2007) indicate that this kind of accruals quality reflects managerial opportunism in manipulating accruals and earnings to achieve a preconceived portrayal of financial performance. They point out that innate accruals quality on the other hand arises from the unintentional errors inherent in the estimation of accruals. The accrual estimation and other judgment errors are an inevitable characteristic of financial reporting. They arise out of the difficulties of predicting the uncertain future and the overt limitations of the financial information estimation tools.

Francis *et al.* (2005) decompose the innate and discretionary accruals qualities to their determinant factors. From this perspective, the innate accruals quality is a function of the

size of a business; the volatility of the cash flows from operations (CFO); revenues' variability; the operating or cash conversion cycle and the incidence of negative earnings. They further identify three components of discretionary accruals quality as the performance, the opportunistic and the noise components. In their view, the performance component arises out of the need to ensure that the reported earnings information accurately reflects the financial performance of an organisation. According to them, the opportunistic component arises out of management opportunism to exploit the inherent limitations of accruals estimation to manipulate the reported earnings. They further point out that the noise component arises out of the genuine errors and inadequate information in the estimation of accruals given that accounting estimation is sometimes subjective and reliant on professional judgment and experience.

In a nutshell, accruals quality can be taken as one of the subcomponents of earnings quality. It in this instance as a measure of earnings quality is based on the observation that where there is a close mapping of earnings into cash flows, then the accrual quality is deemed to be high and vice versa. The McNichols (2002) measure of accruals quality captures the mapping of working capital accruals into cash flows over periods. These as discussed above are the immediate past period, the current period, and the immediate succeeding period of operations. This component of earnings quality is divided into two subcomponents, the discretionary and the innate accruals quality. The Deschow and Dichev (2002), McNichols (2002) and Francis *et al.* (2005) school of thought on accruals quality has largely been the consensus in the accruals quality literature. In an outline, the depiction of accruals quality from this school is illustrated in Figure 1.1.

The quest for shareholder wealth maximization which espouses the predominant paradigm in corporate finance policy, as persuasively articulated by Nyberg *et al.* (2010), requires a judicious alignment of a firm's cash flows and its cost of capital. The structure of the cash flows heavily relies on the operations structure of the business which in turn influences the financial reporting characteristics including the portrayal of

3

accruals and its attendant quality. A critical question that has to be posed regards the effect of such accruals quality of the cost of capital of a firm.
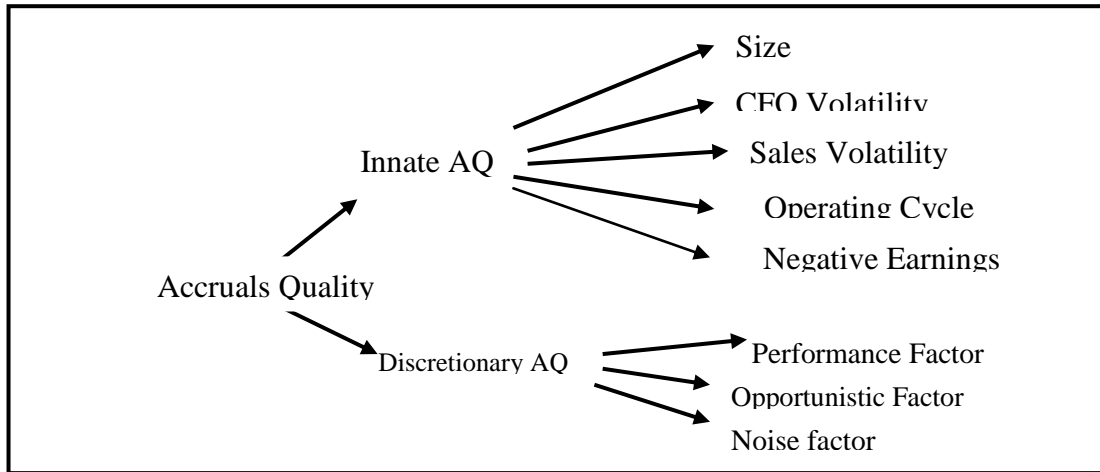
Figure 1.1: Depiction of the Components of Accruals Quality

Cost of capital is fundamental as a hurdle rate for investment decisions in the securities markets particularly in the face of fundamental analysis of businesses. It is mostly taken as the minimum required rate of return to providers of capital (debt, equity and hybrid capital) to a firm (Rosenbaum and Pearl, 2009). Literature links the role of information risk inherent in accruals quality with cost of capital and the expectation that high information uncertainty portent high investing risk to the providers of capital and should attract a high risk premium to compensate for the enhanced risk. Literature is however still not clear on how accruals quality is priced by financial markets (whether as part of market risk or firm idiosyncratic risk) although Armstrong *et al.* (2011) attribute this to the differences in the level of competition in financial markets.

Conceptually, accruals quality as a source of financial information risk (accruals estimation structure is fraught with innate and discretionary judgment limitations) should affect cost of capital. This is because a high quality of financial reporting (high accruals quality) should in general help to reduce the information asymmetry between corporate insiders and outside investors. In conventionality with the efficient market

4

hypothesis (EMH) of Sewell (2012) security prices should readily incorporate information regarding the quality of financial reporting of a business entity. The reality from contemporary literature is that there is lack of clarity on how such information risk is priced by the capital markets let alone if it is priced at all (Armstrong, 2011; Mao & Wei, 2012; Demirkhan *et al.*, 2012; Lambert *et al.*, 2012).

The revolutionary seminal work of Sloan (1996), which first documented the evidence of an accruals' return premium, has had a big influence on the evaluation of the twin concepts of accruals' abnormal returns and accruals quality. The first outcome is that it has helped to unveil and facilitate empirical tests of the factors that affect accruals quality. Accordingly, discretionary accruals quality is influenced by the nature of internal control system (Hogan & Wilkins, 2005; Ashbaugh-Skaife *et al.*, 2008; Altamuro & Beatty, 2010; Van de Poel and Vanstraelen, 2011), corporate governance attributes (Kent et al., 2010), ownership and management structure (Isenmila & Afensimi, 2012), debt structure and related agreements (Garcia-Teruel, 2010; Aldermen & Duncan, 2011), the size and value of the firm (Choi, 2008), levels of cash holding (Mokhtari *et al.*, 2012), corporate reputation (Luchs *et al.*, 2011) and extent of firm segmentation (Demirkhan *et al.*, 2012).

On the flipside, the innate aspect of accruals quality has been found to be affected by the nature of external auditors (Srinidhi and Gul, 2006; Fields & Gupta, 2007; Ittonen *et al.*, 2013) and the regulatory and macroeconomic conditions (Kim & Qi, 2010). Srinidhi and Gul (2006) find a positive association between accruals quality and audit fees charged, a proxy of the nature of the audit firm. Ittonen *et al.* (2013) suggest that since there are gender differences with regard to diligence, conservatism and risk tolerance such that firms with female external auditors are expected to have a higher accrual quality than those with male dominated external audit teams. Their findings in support of this hypothesis lead them to conclude that female auditors have a positive effect on earnings quality and therefore accruals quality because of their ability to limit earnings management. Kim and Qi (2010) show that poor accruals' quality firms are more

adversely affected by macroeconomic shocks than their high accruals' quality counterparts.

The second outcome of the evaluation of accruals anomaly and accruals' quality has been the examination of the market pricing of the accruals' quality. In reality, there currently is no consensus on how accruals' quality information risk is priced by the capital markets let alone if it is priced at all as typified by the results of empirical interrogation (Gray, Koh and Tong, 2009; Qi *et al.*, 2010; Armstrong *et al.*, 2011; Demirkhan, *et al.*, 2012; Mao and Wei, 2012). Whereas scholars like Armstrong *et al.* (2011) hold the view that it is not priced at all, others like Mao and Wei (2012) are of the opinion that the pricing effect is directly related to accruals quality. To add onto the confounding effect, scholars like Demirkhan *et al.* (2012) hold a completely opposite view by agreeing to the pricing effect but suggesting an inverse relationship between accruals quality and cost of capital contrary to Mao and Wei (2012) theoretical expectations.

The debate was set-off in the seminal work of Francis *et al.* (2005) who investigated the possible effect of accruals quality on security pricing by investors. Their finding of an inverse relationship between accruals quality and costs of debt and equity imply that accruals quality is a market priced information risk factor. Brousseau and Gu (2011) admit to the inverse pricing effect but restrict it to small size firms because they attribute the pricing effect to size anomaly. They expect the pricing effect to be the exact opposite for large firms. The evidence from Demirkhan *et al.* (2012) also lends credence to the assertion that accruals quality is a priced factor and that poor accruals quality lead to higher cost of capital. Looking at accruals in terms of magnitude and structure, Mao and Wei (2012) support the earnings fixation supposition of Sloan (1996) with their findings that securities with high discretionary accruals quality experience lower returns.

Another literature school of thought contends that accruals quality is a priced risk factor and that the pricing effect is direct and not inverse as suggested by Francis *et al.* (2005).

6

The findings of Brousseau and Gu's (2011) indicate for instance that for large firms the relationship between accruals quality is direct. After controlling for size and liquidity risk, Brousseau and Gu (2011) indicate that on average basis, lower accruals quality correspond with lower returns and therefore low cost of capital.

The supposition that accruals quality is a priced information risk factor is however challenged by Core *et al.* (2008) who attribute the findings of Francis *et al.* (2005) to mis-specification of asset pricing tests particularly because, in their view, it is a fallacy that high accruals quality firms should have a negatively related cost of capital. Core *et al.* (2008) contend that the classical tests of asset pricing do not provide evidence for this conjecture. Du (2011) concurs with Core *et al.* (2008) and warns against misinterpreting the effort of establishing the pricing of accruals quality as proof of information risk. This, according to him is principally so when the two-pass methodology used to test accruals quality is utilized because of the autocorrelation between accruals quality and the accruals quality factor loading. He posits that the evidence of pricing of accruals quality may in fact be as a result of the mispricing of accruals quality characteristic.

In line with the argument that accruals quality is not a priced risk factor, Armstrong *et al.* (2011) find no differences in the cost of equity of firms with varying accruals qualities in perfectly competitive markets. For the less competitive markets, they show that information asymmetry inherent in discretionary accruals quality has a positive relation with an entity's cost of capital. This difference points to the possibility that the degree of market competition could be an important moderating condition in the evaluation of the effect of accruals quality on the cost of capital.

Regardless of the position taken, it seems theoretically conceivable that accruals quality should at least be reflected in security prices given their effect on profitability and returns. This informs the third effect of the scholarly advancement arising from Sloan (1996) seminal work. In this respect, there has been an advancement of various theoretical expositions as to how accruals quality affects cost of capital. The

dichotomization of accruals' quality and exploration of its apparently confounding effect on the cost of capital can only be investigated on the backdrop of financial reporting and capital market theorizations. Logically, the implicit information content of accruals and its possible discretionary manipulation by managers for opportunistic purposes calls for an evaluation of financial information theories. Admittedly, Armstrong *et al.* (2011) observe that in perfectly competitive markets, accruals quality has no discernible effect on the cost of capital. The implication is that the level of information asymmetry in the market plays a significant role with regard to the effect on the cost of capital. This is however only possible when the assumptions of investor rationality are invoked.

A relaxation of the rationality assumptions and a delve into the behavioural biases of investors like investor irrational exuberance and accrual information over-optimism (Hirshleifer *et al.*, 2009); earnings fixation biases (Hirshleifer *et al.*, 2009) as well as overinvestment biases (Fairfield *et al.*, 2003) provides an interesting outlook on how accruals quality is expected to affect cost of capital.

The foregoing discussion implies that the peculiarity of the financial reporting, regulatory and institutional environment are critical to the quality of accruals in financial statements. Gray, Koh and Tong (2009) for instance evaluate the effect of innate accruals quality on cost of capital in the Australian financial reporting and market setting. Their approach recognizes that innate accruals are fundamentally a function of regulatory and institutional regimes as opposed to discretionary accruals that are principally firm specific. They draw some parallels with the findings from other markets particularly the United States of America (USA) while at the same time pointing out that the effect of accruals quality on cost of capital is sensitive to the differences in the regulatory regimes although ultimately accruals quality is a priced risk factor.

Contextually, the Kenyan financial reporting, financial markets' and public corporate regulatory scene is dominated by a number of players. These include The Institute of the Certified Public Accountants of Kenya (ICPAK); The Capital Markets Authority

(CMA); The Nairobi Securities Exchange (NSE) and the Central Bank of Kenya. The financial reporting environment in Kenya is regulated by ICPAK while the institutional framework of public companies is defined by the stipulations of the Companies Act Chapter 486 of the laws of Kenya in conjunction with industry specific regulators and the CMA.

The CMA (2015) explicitly states that the regulatory framework it espouses is drafted in such a way as to encourage self regulation. This implies that managers of public companies in Kenya have a huge influence on discretionary accruals quality of financial reports. This in the context of this study may lead to an expectation of a higher information risk inherent in discretionary accruals quality. It may be enlightening to evaluate the effect of this on firms' cost of capital.

Established under the Capital Markets Act, Cap. 485A of the laws of Kenya, the CMA imposes rules, regulations and guidelines on the appropriate conduct of the players in the Kenyan capital markets (CMA, 2015). Those that have the greatest relevance to accrual quality of corporate financial reports in Kenya include guidelines on corporate governance practices as well as regulations on disclosures required for continued listing in the capital markets. The guidelines on corporate governance published in Kenya Gazette Notice 3362 in the year 2002 provide among other issues guidelines on corporate accountability and audit. The guidelines specifically require that financial reporting for public companies should be in line with the International Accounting Standards. It also requires that there be set up an internal control system and prescribes the role of independent auditors as appointed by shareholders at annual general meetings (AGM).

CMA also has regulations requiring that for continued listing, interim and final financial reports must be prepared in accordance with the International Financial Reporting Standards. These disclosure regulations indicate that these financial statements include the balance sheet (statement of financial position), the income statement, the statement

of changes in equity position, the cash flow statement and the accounting policies and explanatory notes. The CMA regulations and guidelines supplement those stipulated in the Companies Act Cap 486 of the laws of Kenya. Section 7(1) of the Act requires all companies to keep proper books of accounts with respect to the income statement and the balance sheet. These regulations, requirements and guidelines of the CMA and the Companies Act have an impact on financial reporting and the attendant accrual quality. Their overall effect however is a function of the stringency with which CMA enforces these rules and regulations and in the context of this study, should be reflected in the innate component of accruals quality.

The NSE, through which public companies issue their debt and equity securities, has stringent disclosure rules with respect to financial information. The reflection of information inherent in the securities traded at the NSE is revealed in several indices which include the NSE all share index (NASI), the NSE-20 share index, the FTSE NSE Kenyan 15 index and the FTSE NSE Kenyan 25 index. The listed companies at the NSE are divided to ten segments that are identified as Agricultural, Automobiles and Accessories, Banking, Commercial and Services, Construction and Allied, Energy and Petroleum, Insurance, Investment, Manufacturing and Allied as well as Telecommunications and Technology segments as indicated in appendix 1.

First constituted in 1954, the NSE is a member of the East African Securities Exchanges Association (NSE, 2015). For continued listing of a company's securities, the NSE regulations require that public companies must on an ongoing basis provide interim and final financial statements similar to those required by the Companies Act Cap.486. Also to be furnished should be selected notes to the financial statements. The notes provide for the inclusion of accounting policies, which in the context of this study include the mode of dealing with income and expenses' accruals and deferrals. The NSE (2015) regulations require that for continued listing, the accounting measurement rules and procedures followed by a business must ensure that the resulting financial information is reliable. They further indicate that a business should select and apply accounting policies

such that financial statements are consistent with all the relevant and applicable International Accounting Standard (IAS) or International Financial Reporting Standard (IFRS) and the standing interpretation committee of IAS. This requirement implies that the provision of IAS 18, revenue, with regard to revenue accrual and deferral, is consistent with the expectations of NSE for accrual accounting and the International Accounting Standards Board's (IASB) framework of accounting.

The CBK through the provisions of the Banking Act, Cap.488 also has sections 21, 22 and 23 dealing with the treatment of financial statements and emphasizes the importance of the International Financial Reporting Standards in financial reporting in Kenya. The relevant sections however apply to the Kenyan banking financial institutions which are regulated by the Central Bank of Kenya. In a nutshell, the regulatory environment in Kenya seems to be very clear with regard to the recognition rules in the financial statements. However, it should be noted that the International Accounting Standards Board's framework of accounting has very general accounting provisions and allows firms to develop their individual accounting policies. It is this fact that introduces possibilities of managerial opportunism. Coupled with the Kenyan idiosyncratic regulatory environment and capital markets, there arises a need to evaluate how these affect the cost of capital and pricing in the Kenyan capital markets.

Given the foregoing unique contextual regulatory environment, studying the accruals quality and its effect on cost of capital among Kenyan firms should help expose the inter-linkage between the two in a financial and reporting environment with unique attributes like those in the Kenyan environment. There are several empirical efforts that have been directed towards evaluation of financial aspects of the African capital markets in general and the Kenyan capital markets in particular.

Chipo and Biekpe (2007) evaluate the nature of ten African stock markets in terms of their efficiency particularly the weak-form variety. Using the adjusted trade-to-trade approach to compute returns, they find Nairobi, Namibia and Zimbabwe stock

exchanges to be efficient albeit in the weak form. This places NSE among the more efficient stock markets besides Johannesburg Stock Exchange. The rest including those in Egypt, Botswana Mauritius and Ghana were found to be less efficient. This level of efficiency lays a basis for studying the effect of accruals quality on the cost of capital in the relatively vibrant NSE.

From the local perspective, Musyoki (2012) for instance evaluates the changes in share prices as a predictor of accounting earnings for financial firms listed at the Nairobi Securities Exchange over the period 2001 to 2005. Whereas this closely relates to the persistence aspect of accruals and earnings quality, the study does not examine how accruals quality affects cost of capital. In addition, the study is not comprehensive enough in that it only evaluates 11 companies quoted at the NSE which represents less than 20% of the listings at the bourse.

In a nutshell the confounding case for empirical evidence equally applies to the theoretical elucidations with regard to how accruals quality affects cost of capital and how it is perceived and priced by securities markets. In a essence, the efficient market theorizations anchored in Sewell (2012) expect any profit oriented effect to dissipate over time in tandem with the arbitrage behaviour of investors. There however is a gamut of possibilities from perfect consistency with the efficient market rationalization (Wu, Zhang & Zhang, 2007) to the complete opposite as is inherent in the sustenance of the accruals quality effect in some securities markets (Leippold & Lohre, 2012). Suffice it to note that the exploration of this study's research problem should help shed light on these dilemmas particularly for the Kenyan corporate and capital markets environment.

1.2   Statement of the Problem

Whereas it is theoretically plausible to expect accruals quality to affect financial information asymmetry and therefore influence firms' cost of capital in line with Gray *et al.* (2009), empirical evidence is confounding. It is therefore not clear if and how accruals quality affects cost of capital and how it is priced in Kenya's idiosyncratic

financial regulatory environment. Accordingly, the problem necessitating this study is four-fold. Firstly, there is lack of knowledge about the level of accruals quality among Kenyan public companies yet investors and other stakeholders rely of financial statements for vital decision making. Establishing the quality of accruals among Kenyan public companies would bridge this significant literature gap. By splitting accruals quality to its innate and discretionary components, it is possible to establish the effect of firm idiosyncratic and environmental factors on the quality of accruals reported in financial statements. This can be compared with empirical results from elsewhere given that Kenya has adopted the International Financial Reporting Standards framework that is widely used across the globe and which can form a common basis for empirical comparison with other capital markets.

Secondly, the effect of accruals quality on the cost of capital in the Kenyan capital markets is not clear. It is noteworthy from the background provided to this study that Kenya has a unique regulatory and capital market orientation, the effect of which on accruals quality and consequently cost of capital has hitherto not been explored by literature. This wide literature breach calls for this study to evaluate the effect of accruals quality on the overall cost of capital in the market, which is a function of firms' capital structures (Mehri *et al.*, 2011). In addition, existing literature focuses on evaluating effect of innate and discretionary accruals quality on market fundamentals. There is no depiction of accruals quality from a qualitative perspective of accruals quality information yet this should also have an effect on cost of capital.

Thirdly, whereas literature, as shown by Kim and Qi (2010), is still in not clear how the capital markets price accruals quality, the pricing effect is expected to have a direct consequence on expected returns to investors in the publicly listed companies. This is critical given that although accruals quality has been shown to be an information risk factor (Mashruwala & Mashruwala, 2011), it is not yet apparent if it is a part of the market systematic risk or if it is priced separately by the capital markets (Armstrong *et al.*, 2011). In addition, there is lack of knowledge on how accruals quality as a risk

factor is priced in the capital markets of a developing country, where securities markets are undercapitalized with few listed companies, sixty one for the case of the NSE.

Lastly, whereas the tremendous efforts have been expended in studying the efficiency levels at the NSE (Chipo and Biekpe, 2007; Kalunda and Mbaluka, 2012; Owido *et al.*, 2013; Kamau, 2013) have shown the Kenyan equity market to exhibit the weak form informational efficiency; the effect of accruals quality on segmental cost of capital has not been explored. This presents a watershed literature gap given that it is not clear if the idiosyncrasies of the various segments into which companies are quoted affect their respective cost of capital. It is not clear whether there are significant differences in the effect of cost of capital of the various segments or whether the segments have comparable returns the unique accruals quality aspects notwithstanding.

1.3   Research Objectives

To carry out this study, the objectives are categorized into two. These are the general objective and the specific objectives.

1.3.1 General Objective

The general objective is to evaluate the effect of accruals' quality on the cost of capital of public companies in Kenya.

1.3.2 Specific Objectives

In order to achieve the overall objective, the specific objectives of the study are to:
  i.   Determine the effect of innate accruals' quality on cost of capital among public companies in Kenya.
  ii.   Establish the effect of discretionary accruals' quality on cost of capital among public companies in Kenya.
  iii. Determine the effect of innate accruals' quality on cost of capital among public companies in Kenya.

iv.   Find out the effect of qualitative accruals' quality on cost of capital public companies in Kenya.

v.   Examine the effect accruals' quality on security market returns as a cost of capital factor among public companies in Kenya.

vi.   Find out the effect of segmental accruals' quality on cost of capital of public companies listed in the various segments of the Nairobi Securities Exchange.

1.4   Research Hypotheses

The hypotheses of the study are identified as:

Null Hypothesis I

H$_{01}$: Innate accruals quality has no significant effect on cost of capital of public companies in Kenya such that the coefficient of the innate accruals quality rank (β_{IAQR}) in the cost of capital model is not significantly different from zero

$$Mathematically: \beta_{IAQR} = 0 - - - - - - - - - - - - - -(1.1)$$

Null Hypothesis II

H$_{02}$: Discretionary accruals quality has no significant effect on cost of capital of public companies in Kenya such that the coefficient of the discretionary accruals quality rank (β_{DAQR}) in the cost of capital model is not significantly different from zero.

$$Mathematically: \beta_{DAQR} = 0 - - - - - - - - - - - - - -(1.2)$$

Null Hypothesis III

H$_{03}$: Overall accruals quality has no significant effect on cost of capital of public companies in Kenya such that the coefficient of the overall accruals quality rank (β_{AQR}) in the cost of capital model is not significantly different from zero

$$Mathematically: \beta_{AQR} = 0 - - - - - - - - - - - - - - (1.3)$$

Null Hypothesis IV

H$_{04}$: Qualitative accruals' quality has no significant effect on cost of capital of public companies in Kenya such that the coefficient of the accruals quality rank index (β_{YAQ}) in the cost of capital model is not significantly different from zero.

$$Mathematically: \beta_{QAQR} = 0 - - - - - - - - - - - - - (1.4)$$

Null Hypothesis V

H$_{05}$: There is no accruals' quality market return premium such the excess returns (β_0), in a standard asset pricing model, of a low accruals quality portfolio over a high accruals quality portfolio are statistically insignificant

$$Mathematically: \beta_0 = 0 - - - - - - - - - - - - - - - - (1.5)$$

Null Hypothesis VI

H$_{06}$: There is no significant difference between the effects of accruals quality on cost of capital among companies quoted in the different segments of the Nairobi Securities Exchange such that the coefficients of the accruals quality ranks ($\beta_{i,s}AQR$) of the various segments of the NSE are equal and constant (K).

$$Mathematically: \beta_{i,s}AQR = K - - - - - - - - - - - - - - (1.6)$$

1.5   Significance of the Study

This study contributes to knowledge and extends the prevailing literature on accruals quality in a number of ways. Firstly, the findings of the study provide results on the

effect of accruals quality on the cost of capital for public companies in Kenya based on the country's unique structural, economic, legal and market operational distinctive factors. This is instrumental because Gray, Koh and Tong (2009) suggest that institutional and regulatory differences among various countries affect the empirical findings with respect to the effect of accruals quality on the cost of capital. They for instance draw distinctions between the Australian institutional and regulatory regime in their study and those in the American market as shown by Francis *et al.* (2005) and conclude that innate accruals' quality dominates the discretionary accruals quality in Australia.

The importance of the regulatory framework is underscored by Mao and Wei (2012) who show a positive direct relationship between accruals quality and cost of capital in the Dutch financial securities market. This implies that there is a strong influence of the institutional and regulatory idiosyncrasies on how accruals quality affects cost of capital. In line with this argument, the Kenyan institutional and regulatory regime is uniquely different from any other such that identification of the effect of accruals quality on cost of capital in the Kenyan capital markets provides new knowledge likely to impact corporate financing decisions within the Kenyan distinctive regulatory and institutional environment. The fact that Kenya has long adopted the International Financial Reporting Standards (IFRS) framework provides a basis for comparing the findings with existing empirical results and lays a basis for making conclusions based distinctly on the reporting environment as opposed to the reporting standards.

The operating environment in Kenya has been experiencing increasing regulations and corporate governance guidelines all aimed at improving financial reporting and reducing the managerial agency problem in the corporate sector. By establishing the levels of innate accruals quality and managerial opportunism espoused by the discretionary accruals' quality, the study helps to identify the relationship between the regulatory efforts and financial reporting accruals' quality and by extension earnings management. A panel data evaluation of the innate and discretionary accruals quality over the 1993-

2013 study period reveals time series and cross-sectional trends to establish this relationship which is a significant addition to exiting literature.

In addition, the Kenyan equity markets have been shown to exhibit informational efficiency at least of the weak form variety (Chipo & Biekpe, 2007). Given that such a level of efficiency ensures that financial reporting historical data is incorporated in security prices, it forms a sound basis for testing the accruals' quality effect and the relationship between accruals' quality and security market pricing of accruals information among the Kenyan public companies. The findings of the study therefore provide a framework for comparing the accruals quality market pricing with those from developed and more efficient markets.

The study helps to shed light on the nature of accruals quality among Kenyan public companies. By splitting accruals quality to its innate and discretionary components, the study establishes the effect of firm idiosyncratic and environmental factors on the quality of accruals reported in financial statements. This when compared with existing empirical results from other regulatory and market regimes (Johnstone, 2009; Wong, 2009; Westerholm, 2011; Wysocki, 2012; Demirkhan et al., 2012; Perotti and Wagenhofer, 2014; helps identify the determinants of accrual quality in the context of financial reporting in a developing country.

In an approach not adopted before in existing literature, this study reveals the qualitative aspects of accruals quality in the Kenyan market. This is done through an evaluation of the financial audit analysts experience with the relevance, reliability, comparability and understandability of accruals information reported in financial statements of companies in Kenya. This adds onto the existing methodologies of appraising accruals quality. The qualitative accruals quality index adopted in the study is a new methodological approach to evaluating the quality of accruals information in financial statements.

It is also important for this study to establish how the Kenyan capital markets price accruals quality. This is a significant literature contribution given that the pricing effect

of accruals quality is expected to have a direct consequence on expected returns by investors in the Kenyan public companies. This when done in the context of a capital market in a developing country, where the market is undercapitalized with few listed companies, provides results that can be compared with empirical findings from complex and organizationally diverse capital markets. There is need to understand the individual pricing effect of the overall, innate, qualitative and discretionary components of accruals quality in the context of such a capital market.

Theoretically, the research not only summarizes the literature on the accruals quality and cost of capital, but it also bridges the gap between theory and practice of accruals quality evaluation by analyzing the various accruals quality models and the interrelationships with internal control systems, market pricing and segmental effect. This is critical in identifying empirical gaps which form the foundation for recommending areas for further research in the context of accruals quality and its effect on various financial parameters. The research also lays out the current theoretical and empirical perspectives on accruals quality in various regulatory and institutional regimes. This is instrumental in stimulating studies in areas relating to financial reporting and accruals quality in relation to dividend, capital structure and working capital policies.

Besides the literature justification, the findings from this study are of practical importance to a variety of stakeholders. To investors and investment advisors, identifying the relationship between accruals' quality and cost of capital helps them make investment decisions. This is because the investors' required rates of return must always be weighed against cost of capital. A priori understanding of the relationship between cost of capital and accruals quality is likely to help investors to evaluate the expected cost of capital given a firms accruals quality and propensity to managerial opportunism as reflected by the corporate governance structure. More so, the understanding of the accruals quality phenomenon in the Kenyan capital markets is instrumental in making portfolio choices between high accruals quality and low accruals quality investment opportunities.

The understanding of the accruals quality and the related effect on cost of capital is important to public companies that are likely to hinge their financing decisions on cost of capital. Factoring the accruals quality into the determination of cost of capital is likely to yield better quality financing and capital structure decisions than if the effect of accruals quality is not taken into account. This is particularly relevant given the high costs of debt reflected by the generally high lending rates in the Kenyan debt market.

To the market regulators, the study gives an insight on their regulatory actions and their effect on innate accruals quality in the reporting environment. By splitting accruals quality into the innate, qualitative and discretionary components, regulators particularly the Institute of Certified Public Accountants of Kenya (ICPAK) and the Capital Markets Authority are likely to have a better view of the quality of financial reporting among the Kenyan public companies. Naturally, this should help improve the regulatory, institutional and monitoring regimes to help improve the innate accruals quality of financial reporting in Kenya.

To researchers and scholars, the study provides theoretical and empirical tools for appraisal of the accruals quality and the general quality of financial reporting. The accruals quality index factor of representing accruals quality is a particular addition to literature that has hitherto relied on volatility measures of innate and discretionary accruals' qualities. In addition, the recommendations for further study that are provided at the end of the study are likely to provide a further impetus into the academic inquiry of various aspects of accruals quality and cost of capital and possibly bridge the existing gaps in literature.

1.6   Scope of the Study

The study evaluates the effect of accruals quality on the cost of capital and market pricing of all the quoted companies at the Nairobi Securities Exchange over a twenty one year period spanning January 1993 through December 2013. The study focuses on all the companies that meet the accruals quality data criteria from all the 61 quoted firms

20

at the end of 2013.The normal approach to such a study from existing literature is to identify the number of firm years for evaluation. Accordingly, this study is done on 1,281 firm year observations for the sixty one publicly listed companies in Kenya as at December 31, 2013. The focus on public companies is justified on the fact that there are stringent disclosure requirements imposed on these firms by the capital markets regulator. It is these disclosures that provide adequate data necessary for this study. They also provide the pre-requisite context for examining the innate accruals quality because such accruals quality is dependent on the financial regulatory regime of the reporting firms.

Besides the choice of the target firms, the study narrows down on a study period of twenty one years. The twenty one year period used for the study is deemed long enough to provide a wide range of observations required in making accruals quality estimations and the subsequent evaluation of the effect on cost of capital. Francis *et al.* (2005) place an emphasis on such long time study periods to satisfy the data requirements for adequate analysis. Further, the period is long enough to observe the accruals quality pricing effect given that the Kenyan equity markets have been shown to exhibit weak form efficiency characteristics (Chipo & Biekpe, 2007). Above all, it is a period for which data about equity market security prices and other trading data for return evaluation are available. Coincidentally, it is a period that has seen enhanced financial deepening in the Kenyan financial markets in general and the equity market in particular especially after the enactment of the Capital Markets Authority Act in 1989 (CMA,2015). Such deepening is critical for a reasonable basis of computing market and security returns which are paramount to this study.

1.7   Limitations of the Study

There are a number of limitations that were encountered in the process of carrying out the study. Firstly, the number of companies listed at the NSE is relatively small. This numbered to sixty one companies at the time of the study. This limited the number of

firm year observations available for the study over its twenty one year period of January 1993 to December 2013. To overcome this problem, the study focused on all the segments of the NSE to get a clear picture of the market with respect to how accruals quality influences cost of capital. This also increased the number of firm year-observations for acceptable analysis. In addition, studies with similar populations and firm year observations in other developing countries (Mahmood & Ali, 2011; Mehri *et al.*, 2011; Isenmila & Afensimi, 2012) have been undertaken with a wide range of mixed findings.

Secondly, the fixed sample quantitative accruals variables obtained from secondary data of the qualifying firms implied that there was need for a similar response rate from the questionnaire used for the construction of the qualitative accruals quality index. This was required for comparison with the quantitative values. This necessitated personally administered questionnaires to, ensure a 100% response rate, which inevitably took a longer time than that envisaged in the research plan. Obtaining all the data however necessitated the achievement of all the research objectives.

Thirdly, some segments of the NSE did not qualify for analysis because of their relatively recent listings such that the mandatory five-year rolling period for computing accruals quality had not been attained by the companies in these segments. The two which did not qualify are Telecommunications and Technology segment which hand only one recently listed company and the Growth and Enterprise segment whose first listing was in 2013. However this is deemed not limiting enough because the companies listed in the Growth and Enterprise segment are essentially represented in the other analysed segments because these are in effect small and medium size enterprises whose large counterparts are listed in the main segments of the NSE that are analysed in the study.

In addition, accruals quality is based on changes in working capital which is well suited for non-financial institutions. Excluding the financial institutions would have greatly

reduced the sample size given that investment companies, insurance companies and banking institutions constituted about twenty of the sixty one companies listed as of December 2013. To overcome this limitation, the procedure suggested by Uysal (2013) for evaluating accruals quality among the financial institutions was adopted in the study. This enabled assessment of accruals quality among all the qualifying segments of the NSE including the banking, insurance and investment securities segments.

CHAPTER TWO

LITERATURE REVIEW

2.1   Introduction

The intricacies of modern financial reporting amidst the realities of the shortcomings of earnings estimations and the variations in financial reporting's accruals quality, places the need to assess the effect of accruals quality on firms' cost of capital and market returns at the pedestal of scholarly attention. It is therefore critical to appraise the philosophy behind accruals-based financial reporting and the theoretic and empirical significance of the variations in accruals quality on cost of capital and market performance of accruals quality-based securities in world markets in general and the Kenyan market in particular. This chapter presents a critical appraisal of the theories related to accruals quality and their effect on cost of capital. At the end of the theoretical literature review, the chapter appraises the contextual and regulatory financial reporting environment of businesses in Kenya. The chapter ends with the identification of the literature gap after the evaluation of the empirical literature along the lines of the research objectives presented in chapter 1.

2.2   Theoretical Framework

Literature appraisal reveals various theoretical underpinnings of the variations in accruals quality and information asymmetry reflected in the financial reports of accounting entities. This section discusses the nature of accruals quality and evaluates the theoretic explanations of its effect on cost of capital.

The genesis of the concept of accruals quality is the judgmental freedom accorded to accountants, on the basis of accruals principle, to estimate the accruals and deferrals to be included in the reported earnings of a stated financial period. Ideally, good judgment should result in very few disparities between accruals reported in a given financial

period and their translation into cash in the subsequent financial period. Literature (McNichols, 2002; Dechow & Dichev, 2002; Francis *et al.*, 2005; Brousseau and Gu, 2011; Mokhtari *et al.*, 2012) however indicates that there are errors in this estimation process and it is these that are reflective of the accuracy of the accruals estimation process. This accuracy reflects accrual quality (Dechow & Dichev, 2002). The evaluation of this accruals quality has spawned vast theoretical and empirical literature.

Early efforts at analysing accruals quality were made by Francis *et al.* (2005) and Dechow and Dichev (2002) who posited that the accruals quality reflects the extent a firm misrepresents its provisions for unrealizable cash flows. In essence, deferrals and accruals arising from current period earnings create uncertainty with regard to how much they would ultimately translate to future cash flows. This uncertainty according to Dechow and Dichev (2002) introduces noise in the earnings figure. It also basically affords managers opportunities to manipulate earnings and affect discretionary accruals quality of reported earnings.

Conceptually, the accruals that arise in one financial period should reverse in the subsequent accounting period given that accruals are essentially short term assets and liabilities. The implication of this is that at any one time, cash flows of a business can be decomposed into three constituents. These are the cash flows arising from same period's earnings, those arising from earnings of a prior period and those emanating from earnings to be realized from a subsequent financial period.

Accordingly, accruals quality basically reflects financial information risk to investors in the capital markets (Francis *et al.*, 2005). The link between cost of capital and information risk inherent in accruals quality is established through the verity that investors rely on financial information to price securities in the financial market. This is particularly true for rational investors. In general such information could be firm specific or environmental oriented. The classical capital asset pricing model's (CAPM) theoretical orientation seems to suggest that only institutional and market factors affect

cost of capital as reflected through the market beta. From this CAPM framework, firm specific accruals quality should ultimately be diminished by holding a well diversified portfolio since nonsystematic risk is not expected to accrue any benefits to an investor (Easley & O'Hara, 2004).

Irrespective of the conclusions from CAPM and other asset pricing models, the appropriateness of or even the mechanism of pricing information risk has been a matter of an inconclusive debate to date. Scholars like Lambert *et al.* (2012) believe that market beta itself must have a component of information quality for it to be constructive as a measure of risk. In tune with this line of thought, scholars like Francis *et al.* (2005) hold the view that the information risk inherent in accruals is a non diversifiable risk factor that is priced by the capital markets through security prices.

On the extreme end are other academicians who do not believe that accruals quality is a market priced risk factor. In this category is found Core *et al.* (2008) who assert that the difference between poor accruals' quality and good accruals' quality portfolio returns is dependent on the frequency of portfolio rebalancing and not the accruals information risk per see. In their argument, as rebalancing changes progressively from the more frequent daily, weekly or monthly to the less frequent annual rebalancing the significance of the returns difference is increasingly diminished and ultimately eliminated. Their argument here is that accruals quality in itself may have no effect on returns unless it is priced through beta, the market measure of risk. Any observations outside beta, they argue, may merely be due to measurement and methodological issues.

Perplexingly, it is the considered opinion of other scholars that market characteristics have an influence on the pricing of accruals quality in the capital markets. Armstrong *et al.* (2011) for instance are of the view that the effect of accruals quality on cost of capital is heavily dependent on the level of competitiveness of the capital markets. According to them, information asymmetry has no role in determination of the cost of capital when capital markets are perfectly competitive. Armstrong *et al.* (2011) suggest that as the

level of competitiveness varies towards imperfection, information asymmetry variously impacts the cost of capital. This argument has however not been supported by some subsequent empirical studies like that of Brousseau and Gu (2011). Du (2011) on the other hand is in support of Core *et al.* (2008) and suggests that the pricing effect of accruals quality may in fact be due to the accruals phenomenon such that the accruals quality factor may just be a reflection of a more general market sentiment.

From the above exploration, there seems to be no consensus as to whether and how accruals quality is priced and how it affects cost of capital in the capital markets. There are several theoretical arguments that explain accruals quality, the related market returns and the effect of accruals quality on the cost of capital (Easley & O'Hara, 2004; Leuz & Verrecchia, 2005; Gray, Koh & Tong, 2009 and Brousseau & Gu, 2011) as explored further in the ensuing subsections. Corporate governance and agency theory explain why accruals quality is likely to vary among different firms in the same market. The next four theories that include the information uncertainty hypothesis; the information asymmetry conjecture; the exogenous influence supposition and the idiosyncratic security market accruals' quality pricing theory explain the relationship between accruals quality and cost of capital. The rest of the theories explain the security market premium associated with accruals and accruals quality and the market pricing of accruals and accruals quality information.

2.2.1 Corporate Governance Theory

Drawing from the classical agency theory of corporate management, this conjecture presupposes that the general quality of financial reporting and the quality of accruals in particular is a function of managerial incentive to report in their best interests which sometimes may misreport accruals through discretionary reporting actions. This school of thought advocated by Doyle *et al.* (2007); Ashbaugh-Skaife *et al.* (2008); Kent, Routledge and Stewart (2010) and Lu *et al.* (2011) postulates that managers may use reported earnings and hence accruals to mislead investors about the performance of the

firm to achieve preconceived objectives or maintain their managerial status quo. Wu *et al.* (2010) indicate that there should be a strong negative relationship between current accruals and future returns for firms with weak corporate governance structures. They justify this on the grounds that there is an apparent susceptibility of overinvestment by empire building managers of such firms. The implication of this is that the kind of corporate governance structures, internal control systems and ownership structures can influence or curtail the managerial freedom of earnings management through the representation of accruals in financial statements.

Ashbaugh-Skaife *et al.* (2008) hypothesize that firms with weak controls provide managers with less reliable tools of accurately estimating earnings and accruals leading to poor accruals quality. In the agency problem setup, managers or owner managers can exploit accruals to expropriate wealth from investors and minority shareholders. On the flipside, where there are concentrated ownership structures, it is easy to institute rigorous monitoring measures that may dampen manager-shareholder agency problems. The assertions of Ashbaugh-Skaife *et al.* (2008) are corroborated by the empirical evidence of Kent, Routledge and Stewart (2010) who find that effective corporate governance structures are positively related to both innate accruals quality and discretionary accruals quality. They assert that effective governance is more critical for improving discretionary accruals quality than it is for innate accruals quality.

From a different perspective of corporate governance, Christensen *et al.* (2005) are of the view that the compensation offered to chief executive officers (CEO) has an effect on accruals quality. They posit that accruals noise which proxies for accruals quality is affected by the amount of CEO compensation. In fact Peng (2007) provides evidence that higher accruals quality leads to a greater incentive weight on CEO earnings in CEO compensation contracts. This from an agency problem perspective is plausible given that agent payment contracts are often penned on the basis of observable trends of the agents' efforts, in this case the quality of accruals and hence the quality of earnings of the firm.

Corporate governance effectiveness is reflected by the strength of a firm's internal control system. Doyle *et al.* (2007) show that internal control weaknesses have an inverse association with accruals quality. This, they assert, is more significant for discretionary accruals quality than the innate accruals quality. They associate the low accruals quality with the propensity of a weak control system to allow intentional and unintentional errors in the process of estimation of accruals. This position is empirically supported by Lu *et al.* (2010) who find an overall negative net effect of internal control weaknesses on accrual quality. Lu *et al.* (2010) however suggest that the inherent risk in the weak control system can be overcome by greater audit efforts through comprehensive substantive tests that would reveal discretionary and innate errors in the financial statements.

Another critical aspect of corporate governance that is likely to impact accruals quality is ownership structure. There are various forms of such structures the most common of which are family ownership, block ownership, institutional ownership, insider or managerial ownership and public ownership (Isenmila & Afensimi, 2012). Bhaumik and Gregorio (2009) argue that family ownership aligns the interests of managers and owners and that even where the family hires managers to run a family business, the family ownership structure provides sufficient enticements to monitor managers and hence reduce the managerial opportunistic behavior that could compromise earnings and accruals quality. Wang (2006) provides empirical evidence in support of this theoretical supposition.

Contradictory arguments however point out that a concentrated and block ownership structures akin to that of family ownership may have an undesired entrenchment effect where controlling shareholders may expropriate wealth from their minority counterparts (Prencipe et al., 2008). The findings of Isenmila and Afensimi (2012) suggest that both external block and insider/managerial ownership structures encourage earnings management which compromises earnings and accruals quality. Besides the effect of family ownership, block ownership, insider ownership and institutional ownership can

29

encourage monitoring of managers and reduce managerial negative effect on accruals quality (Isenmila & Afensimi, 2012).

When looked at from the audit perspective as an aspect of corporate governance, the quality of the audit process is expected to restraint earnings management and should therefore contribute towards an improvement in the quality of accruals (Francis *et al.*, 1999). Lacker and Richardson (2004) posit that in an environment where audit independence is compromised, say by the structure of the audit fees, the quality of accounts is usually ultimately also compromised by the use of accruals in an opportunistic way by managers.

In a nutshell, the obvious rationalization from this is that weak systems of internal controls feed the risk of intentional and unintentional errors which in turn leads to poor accruals quality. If this theoretical orientation is validated, then strong corporate governance structures should be positively related to accruals quality since they are likely to reduce the likelihood of earnings management. It may be critical to note however that aspects of corporate governance are specific to particular regulatory environments and the implied idiosyncratic characteristics of the varying regulatory regimes mean that these aspects affect accruals quality differently depending on the reporting environment. Van de Poel and Vanstraelen (2011) for instance indicate that in the Netherlands, where firms are required to describe their internal control systems in their financial reports, the accrual quality is not associated with the description of the internal control system

The foregoing discussion on susceptibility of accruals quality is corroborated by the discount rate orientation to corporate governance derived from Hirshleifer, Hou and Teoh (2009) and Wu *et al.* (2010) is consistent with investor rational behaviour. In their postulation, accruals are expected to be correlated with the ratio of investment to assets and that they should have a high predictive power for future realized returns. In essence, they should readily covary with ex-ante discount rates. In their model, where accruals

are taken as working capital investment, firms consciously adjust accruals as discount rate changes such that accruals are inversely related to discount rates. In their argument Wu *et al.* (2010) posit that a fall in current discount rates is expected to make more firms to become profitable. This leads to an increase in accruals. Conversely, there should be an increase in stock prices as is occasioned by the decreased discount rates. Future returns should however be low because they reflect the current decrease in the discount rates.

Wu *et al.* (2010) argue that since discount rates respond upwards with low returns, current returns should accordingly increase while the future returns plummet since the low discount rates imply low expected future returns. Mao and Wei (2012) test the theorization by Hirshleifer, Hou and Teoh (2009) that aggregate accruals are related to changes in the discount rate. They provide evidence that this association is driven by the discount rate news component. Accordingly, when there are high discretionary accruals, there is expected to be an increase in the discount rate which should then be accompanied by a declined discount rate returns (Mao & Wei, 2012).

If these interrelationships hold, then accruals should bear a positive relationship with current returns and a negative one with the future returns. Given the investment lagging process, accruals should also bear a positive correlation with past returns. The scale of the accruals effect is expected to surge with the degrees of association between accruals on one hand and current and past returns on the other. If this hypothesis holds, then the accrual phenomenon is expected to be dependent on optimal investment fundamentals and not by investors' irrational reaction to excessive growth or firm over-investment.

2.2.2 Information Uncertainty Hypothesis

The information uncertainty hypothesis advanced by Francis *et al.* (2005) contends that accruals quality has an inverse relationship with cost of capital. In their view, although earnings are a good yardstick for predicting future cash flows, the accruals component of

earnings is uncertain. It is this uncertainty of the accruals component that presents information risk to investors and securities analysts. Francis et al.'s (2005) view that accruals are imperfect indicators of firm value implies that financial analysts provide a critical source of supplementary information to decision makers. Inevitably, investors in firms with low accruals quality would demand more analyst information about such firms, given their high information risk. In this regard, Francis *et al.* (2005) argue that accruals quality is a remote indicator of information risk and that since investors make future estimations of cash flows based on current earnings, the poorer the accruals quality, the poorer the future cash flows estimates and hence the higher the cost of capital ceteris paribus.

Although this theorization forms a strong theoretical argument, it assumes that investors are rational in the investment decision making and that they rely on earnings information to make decisions. Whereas this could be hugely true, the theory is ignorant of the fact that some investors are often noise traders whose decisions are mostly uninformed and conceivably irrational. In a nutshell, the fact that there is an accruals quality return premium is indisputable. Empirical evidence from Yee (2006), Brousseau and Gu (2011), Mashruwala and Mashruwala (2011) and Kim and Qi (2010) support this but seem to provide alternative views to those of Francis *et al.* (2005) on the pricing effect of this accruals quality. These views are appraised in the ensuing theories.

2.2.3 Information Asymmetry Conjecture

The information asymmetry conjecture is based on the concept of information heterogeneity between corporate insiders and the investing public. Easley and O'Hara (2004) posit that it is the differences in the content of information that is separately held by the public investors and the corporate insiders which affects cost of capital. The theory argues that the informed insiders have different portfolio weights from the uninformed public which leads to different attributes of their portfolios and their respective costs of capital. According to this argument, private information portent

information risk for the uninformed investors. Accordingly, Easley & O'Hara (2004) provide evidence that the relative magnitudes of public and private information among investors feeds the information risk that is reflected in accruals quality.

The informed investors have more access to private information than the uninformed ones and they adjust their portfolios accordingly while the uninformed investors do not. The relative disadvantage of non-systematic information risk faced by uninformed investors that causes them to underweight good securities while overweighting the poor securities makes them demand a higher return. Inevitably, investors demand a higher return than average in order to hold a portfolio of stocks with a high level of private information (Easley & O'Hara, 2004). They indicate that firms can realign their cost of capital by tinkering with accounting treatments. It is in this context that accruals quality as a source of information asymmetry influences a firms cost of capital.

Still based on information asymmetry, Leuz and Verrecchia (2005) hold a different argument that investors take into consideration an information risk premium arising out of the inability of earnings information to perfectly align firms and investors with respect to capital investments. The magnitude of the information risk premium depends of the perception of investors about the degree of this non-alignment. If the information risk is evaluated from an accruals quality point of view, the conclusion by Francis *et al.* (2005) that cost of capital is inversely related to the accruals quality will also apply in this argument. Empirical tests by Hughes *et al.* (2007) in competitive noisy markets with rational expectations support this theorization.

In yet a different postulation on how information asymmetry influences cost of capital, Lambert, Leuz and Verrecchia (2012) theorize that it is the level of competition in the capital market that influences how information asymmetry affects cost of capital. Their empirical tests show that in a perfectly competitive market, information asymmetry, through information precision, is totally irrelevant in determining the cost of capital. They further show that when the markets are less than perfectly efficient, information

asymmetry influences cost of capital given that investors are expected to bear exogenous risk in such a market structure. In tandem with Lambert, Leuz and Verrecchia (2012), Armstrong *et al.* (2011) had earlier examined the association between information asymmetry among investors and cost of capital in excess of standard risk factors. They show that in perfectly competitive equity markets, cost of capital is irresponsive to information asymmetry.

This is an admittedly coherent argument given that investors always factor into their decisions risk premiums associated with target investments. The argument however takes information risk in general and can only make sense in this context if the entire or most of the information risk premium is directly linked to accruals information. In reality the accruals portion of earnings information may form only a small fraction of earnings information. In addition, accruals are considered as part of short term working capital yet investment decisions are usually long term in nature and to expect earnings information inherent in accruals to cover such a lengthy period is theoretically imprudent.

2.2.4 Idiosyncratic Market pricing Theory

Under this postulation, it is expected that the effect of accruals quality on cost of capital depends on factors other than accruals information. Chen, Dhaliwal and Trombley (2008) find that the association between accruals quality and the cost of capital is a function of fundamental risk, the uncertainty about future dividend payments. They find that there is no relationship between accruals quality and the cost of capital measured as return realizations for low fundamental risk firms. The opposite however applies for the high fundamental risk firms where they show a strong relation between accruals quality and cost of capital.

A relaxation of the investor rationality assumptions and the role of information naturally points to the influence of behavioural biases on how accruals quality affects cost of

capital. Accordingly, behavioural biases of investors like investor irrational exuberance and accrual information over-optimism (Hirshleifer *et al.*, 2009); earnings fixation biases (Hand, 1990) as well as overinvestment biases (Fairfield *et al.*, 2003) provides an indirect outlook on how accruals quality is expected to affect cost of capital.

Looked at from a different perspective, Gray, Koh and Tong (2009), Kim and Qi (2010) and Brousseau and Gu (2011), presuppose that the pricing of accruals quality is indirect through some established anomalous behaviour of securities' markets. Brousseau and Gu (2011) believe that the type of effect of accruals quality on cost of capital depends on the size of the firm under consideration. For them, the inverse relationship between accruals quality and cost of capital applies to only the small size firms and that for their larger counterparts, the relationship is in fact positive. Brousseau and Gu (2011) believe that this trend can be explained through two effects, the dominating differences of opinion effect and the illiquidity effect.

According to the dominating differences in opinion supposition, the uncertainty inherent in the portrayal of the accruals quality presents a dichotomous scenario of optimistic investors and pessimistic investors who face short sale constraints. The optimists are likely to buy a stock given a specified level of accruals quality while the pessimists are unlikely to sale short. In the initial stages, the optimists dominate the market leading to stock overvaluation. When the uncertainty inherent in the accruals quality is resolved, the stock price corrects downwards leading to negative returns. Brousseau and Gu (2011) indicate that the effect is large for small firms. They attribute this to the short sale constraints faced by pessimists which are likely to be magnified for the small firms. This makes their stocks more illiquid than those of the large firms. This is consistent with the illiquidity supposition of Core *et al.* (2008). In summary, the theory expects accruals quality to affect returns through security liquidity and that small firms have higher liquidity risk exposures than the large firms. Intuitively, once the effect of liquidity is controlled, they expect the accruals effect in the small firm portfolio to dissipate. In this

logic accruals quality is directly proportional to the cost of capital and lower accruals quality firms should be expected to have lower costs of capital and vice versa.

Besides the pricing of accruals quality through the size effect, Mashruwala and Mashruwala (2011) examine the calendar timing of returns affects the pricing of accruals quality. In their empirical tests, they examine the pricing of accruals quality in January and compare it with its pricing in the rest of the calendar months of the year. They find out that high accruals quality stocks perform better than low accruals quality stocks in January only and that the reverse is true for the rest of the year. Taken on average, this contradicts the information risk hypothesis and discounts existence of an accruals quality premium because such a premium would not take a systematic time pattern and any observations in January could in effect be due to tax loss selling at the end of the year (Mashruwala & Mashruwala, 2011).

Gray, Koh and Tong (2009) also show that economic fundamentals also have a critical effect on accruals quality and cost of capital. In essence, the way an economy is structured should affect accruals information risk and its effect on cost of capital. Using data from the Australian regulatory environment they show that only the innate accruals quality component (reflecting environmental idiosyncrasies) has an aggressive effect on the cost of capital. In support of this view, Kim and Qi (2010) indicate that the pricing effect of accruals quality changes in tandem with business cycles and macro economic variables. They provide empirical evidence that the accruals quality risk premium is in existence during economic expansion cycles but absent during economic recessions. They further show that the pricing effect of accruals quality is significant, contrary to the assertions of Core *et al.* (2008), once the effect of the low return stocks is controlled for.

2.2.5 Behavioral Biases Postulations

Sloan (1996) attributes the fact that operating accruals can be used as an overall negative predictor of stock returns to the fact that high operating accruals stimulate excessive

36

optimism among investors, particularly the naïve uninformed ones, about future returns. Sloan (1996) notes that the naïve uninformed investors ultimately get surprised when their over-optimism is proved wrong by subsequent low returns of the high accruals firms. The gist of this explanation is that the investors presume that the earnings' data communicate innate information about future market returns. They however go about it without considering the forecast ability of the components of aggregate earnings. This obviously introduces noise to the mechanism of predicting future returns on the foundation of existing accruals. Accordingly, the core argument in this context is that investors fail to account for the non-sustainability of growth inherent in the accruals data and fail to consider the quality of the accruals information. It in effect puts to question the concept of investor rationality.

This theoretical rationalization contends that investors can be dichotomized into informed and the unsophisticated investor segments. The unsophisticated investors, according to the Sloan (1996) view, consider earnings in a cumulative fashion without contemporaneously considering the cash flow and accrual components of such earnings. Ultimately however, if accruals are less accurate in forecasting earnings when compared to cash flows, then investors would have a more than commensurate level of optimism when the accruals component of earnings is high. Hirshleifer *et al.* (2009) indicate that the excessive and supposedly unwarranted optimism would lead to overvaluation of a firm culminating in subsequent low returns when the correction takes place. The vice versa is true for a low accruals' firm.

Empirical tests by Ali, Hwang and Trombley (2000) however fail to support the naïve investor postulation. They argue that some market segments, particularly those concerned with large firms, are knowledgeable and that they are expected to understand the differential persistence of accruals and cash flows. From their evidence, where they find that the negative association between accruals and subsequent returns is stronger for the large firms supposedly more closely analysed than the ignored small firms, they emphatically reject the naïve investor hypothesis. Their counterargument however

heavily relies on a strong positive correlation between firm size and investor and analyst interest which may not readily be forthcoming.

Whereas this theory powerfully explains the negative relationship between accruals and subsequent market returns, it fails to explain the effect of sophisticated investors on the future returns. The theory only holds true if the market is dominated by the naïve investors yet in reality this may not be the case. In a rational market, the effect of the less discerning investors should at least be reduced if not cancelled by the activities of the sophisticated investors. In any case, as Ali, Hwang and Trombley (2000) find out, the level of sophistication among the investors may not have a significant impact on the accruals effect.

From a different behavioural perspective, some scholars have attributed accruals security market returns to functional fixation hypothesis (Sloan, 1996). In its classical form, the functional fixation hypothesis presupposes that investors, contrary to efficient market hypothesis, may interpret accounting data in total disregard of the accounting rules that are used to produce such data. This may cause security prices to be superficially related to the reported earnings data. With its roots in psychology and in conformity with investor irrationality behaviour and cognitive biases, the classical functional fixation outlook is of the view that investors are always unsophisticated such that they fail to decode the true cash flow implications of accounting earnings data. Their fixation with the traditional use of accounting data does not allow them to adjust their expectations in tandem with the inherent accrual data in the financial statements (Sloan, 1996). In essence, the fixation with earnings is a powerful distraction of investors from the consideration of the true value-relevant information about firms' earnings and their subsequent security returns.

Here, the traditional function of earnings data is to indicate financial performance data and investors may not go farther to split the earnings into their accruals and realised cash flows components. This leads to the persistence of the accruals phenomenon (Sloan,

1996). Functional fixation is heavily dependent on the accounting approach used in recognizing accruals and earnings. If the market fails to take notice of the differences and/or changes in accounting methods and earnings recognition approaches, there are bound to be differences in firm values unrelated to rational estimates of variations in the future cash flows.

The fixation by investors on earnings implies that some investors ignore the differential valuation connotation of the constituents of reported earnings, but rather adjust their market expectations and trading based on aggregate reported earnings only. In a nutshell, the functional fixation hypotheses seek to shed light on the classical dilemma with regard to whether or not markets are sophisticated enough as not to be fooled by cosmetic accounting changes. Accordingly, this school of thought is closely intertwined with the naïve investor hypothesis (Ali, Hwang and Trombley, 2000).

Just like is the case for naïve investor hypothesis, the postulations of the functional fixation hypothesis are contrary to the expectations of the efficient market hypothesis where investors are always discerning and they accurately incorporate accounting data into security prices. A seeming compromise between this two is the proposal by Hand (1990) of the extended functional fixation hypothesis in which a firm's stock price could be set by either a complicated marginal investors or in other cases by unrefined marginal investors. In this case the ability of accruals to predict returns is dependent on the magnitude of participation of sophisticated and noise traders in the equity securities of a firm.

While the functional fixation rationalization seems to be intuitively appealing, its importance in explaining the accruals quality phenomenon has sometimes been discounted. Ball and Kothari (1991) for instance attributed it to estimation errors and the size effect in Hand's (1990) study while Ali, Hwang and Trombley (2000) fail to find empirical evidence to support it. Further, Zach (2006) finds that extreme accruals quality firms tend to remain so at least in two consecutive years and that they are associated

with future abnormal returns. This puts to doubt the notion of earnings fixation that could otherwise point towards accrual reversals in successive years contrary to Zach (2006) who explains that while it may be an explanation to the accruals phenomenon, accruals fixation is less likely to be the major cause.

Puzzlingly, Collins *et al.* (2003) provide evidence that the level of complexity of investors influences the accrual returns in a way that is in line with the naive fixation explanation. In corroboration of this evidence, Kraft, Leone and Wasley (2006) after performing robustness tests reveal a u-shaped relationship between buy-and-hold abnormal returns and total accruals. Such a relationship is inconsistent with the functional fixation hypothesis suggesting a possible other explanation for abnormal returns to the accruals buy-and-hold investment strategy.

Grounded in the investor behavioural biases elucidations, Hirshleifer *et al.* (2009) propose the investor limited attention postulation which contends that the limited attention to earnings and accruals information details by investors can be used to explain how they price accruals information and how this contributes to their time endurance. The attention deficiency is rooted in the assumption that investors usually have a limited amount of time and the requisite cognitive resources to process accrual information. In their assertion, Hirshleifer *et al.* (2009) are of the view that investors weight information depending on its salient features and its need for cognitive processing. Accordingly, information is heavily weighted if it is directly obvious from the financial statements or if it requires less cognitive processing.

The overriding assumption is that in market equilibrium with incompletely attentive investors, it is unlikely that the earnings information would be adequately analysed to discern the cash flow and accrual implications on future earnings. If such information is over-weighted by the transient accruals, investment strategies derived from it are likely to yield low returns in the future when accruals reverse as suggested by Sloan (1996). In this regard, the investors' limited attention to details and the general averseness to

deeper analysis of accruals information lead them to overweight their value in earnings leading to poor subsequent returns of their investments owing to the volatile and transient nature of accruals.

This theory seems reasonable given that it deviates from the often cited investor rational behaviour rooted in market efficiency theories yet markets have been shown to have protracted returns to some trading strategies akin to the Sloan (1996) accrual phenomenon. It recognizes the fact that investors have constrained cognitive resources and that it is reasonable to expect the human brain to have limitations in processing financial information, the earnings and accrual information included. The theory is however limited by the inability to carry out clear empirical tests given that it may be difficult to model the determinants of investor attention.

2.3   Conceptual Framework

The interrelationships between accruals quality and cost of capital are as indicated in Figure 2.1 which illustrates the conceptual structure. The framework distinguishes the discretionary accruals from the innate accruals quality in order to help evaluate the nature of accruals quality in the Kenyan capital markets. For the purpose of assessing of the effect of accruals quality on cost of capital, the overall accruals quality is expected to be used.

The study is contextualized in the Kenyan capital markets to appraise how accruals quality is priced in these markets and how it affects the cost of capital. In addition, the existence of the accruals quality effect is examined through evaluating the accruals quality return premium. The key therefore is to link the components of accruals quality on one hand as explanatory variables to cost of capital components as the explained variables. In this regard the model that has been widely used in literature, the modified Dechow and Dichev (2002), is used to map accruals into the accruals components which are then used to derive the measures of dispersion for evaluating both innate and discretionary accruals quality.

The evaluation of literature shows that the pricing effect of accruals quality is done by augmenting existing asset pricing models with accruals quality factors (Choi, 2008; Altamuro & Beatty, 2010; Van de Poel & Vanstraelen, 2011; Demirkhan *et al.*, 2012; Isenmila & Afensimi, 2012). In this respect the framework involves the interlinking of accruals quality to cost of capital through the asset pricing variables identified from literature (market risk factor, size factor and book to market factor). The accruals effect on the other hand involves linking market returns to the accruals in a direct way on the basis of the single factor asset pricing model augmented by the accruals returns.
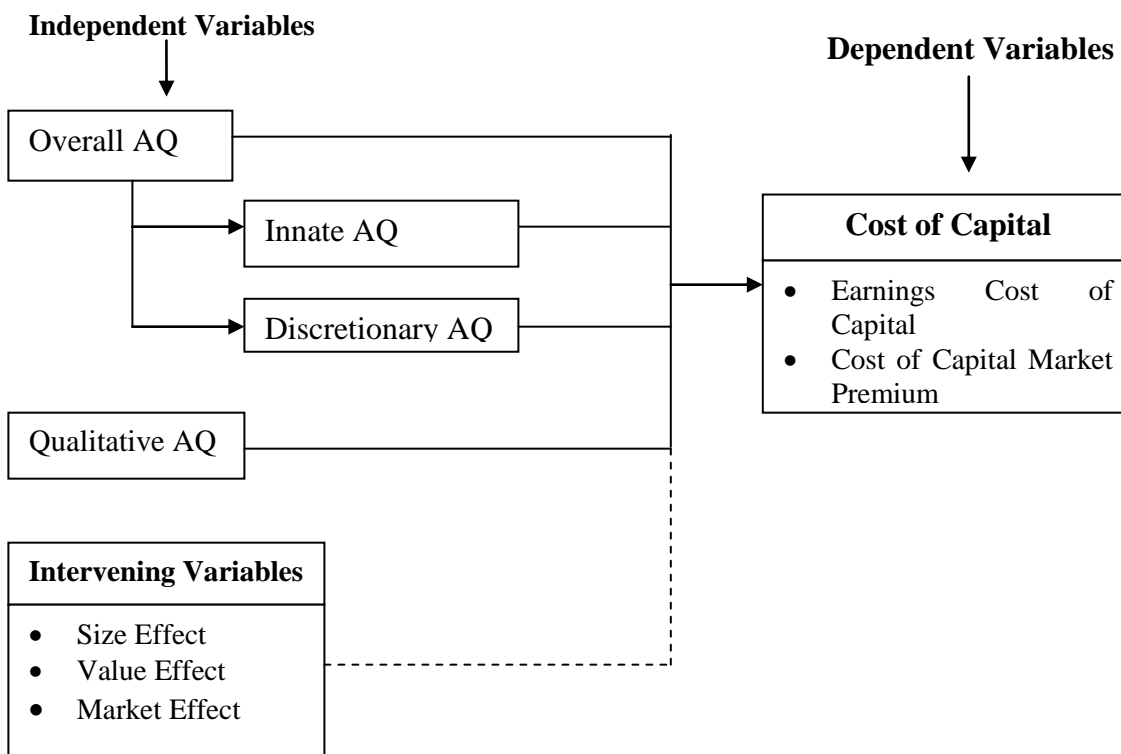
Figure 2.1 Conceptual Framework

The framework has been structured to allow for the testing of the six hypotheses stated in section 1.4. The first step for the testing of the first null hypothesis is to estimate both the innate and the discretionary accruals quality. This is based on the mapping of

working capital into the one year leading operating cash flows, current year operating cash flows, year lagging operating cash flows, change in revenues and property plant and equipment. Both discretionary accruals quality and innate accruals quality are estimated from the random disturbance terms of this mapping equation.

From the framework, all aspects of accruals quality: overall accruals quality, innate accruals quality, discretionary accruals quality and qualitative accruals quality are tested to check their effect not only on the cost of capital, but also how they are priced i.e. the nature and statistical significance of the implied accruals quality return premium. Since the accruals quality factor is augmented in the regular three factor pricing models of Fama and French (1993), the three recognized return factors (size effect factor, value effect factor and market risk factor) are also taken as independent variables to test the residual effect, if any, of the accruals quality factor in the return valuation. The resultant models in effect becomes four factor cost of capital and market return pricing models that allow the testing of the statistical significance of the accruals factor as augmented in the models. The same approach is applied to the overall market and to the various segments at the Nairobi Securities Exchange.

2.4   Review of Variables

The variables that are used in the study as are reviewed in the following subsections.

2.4.1 Accruals Quality

Accruals quality, the independent variable in this study, comprises the innate accruals quality and the discretionary accruals quality (Francis *et al.*, 2005). In summary, when accruals quality is regressed against the five components of innate accruals quality (length of the operating cycle, volatility of cash flows from operations, sales volatility, firm size and the frequency of negative earnings) the resulting error term represents the discretionary accruals quality. Demirkhan *et al.* (2012) indicate that the key is to identify appropriate proxies for these variables. The innate component of accruals quality is by

43

its very nature related to the elemental business model and reporting environment. Discretionary accruals quality on the other hand relates closely to information quality which is a close proxy of managerial opportunism with regard to financial reporting.

Literature has developed numerous methods of measuring accruals quality and its components although earnings volatility is the most widely used. Anderson and Yohan (2002) suggested an alternative method of appraising accruals quality. This is the historical accounting restatements. This method involves binary variables indicative of whether a firm has ever had a restatement or correction of its financial statements as forced by the accounting regulator. The indicator is a binary variable that assumes a value of one for firms that have had restatements and zero for those that have not. The restatements in the context of accrual quality are indicative of the frequency of errors in the financial statements. Although the method is recognized for its simplicity, it cannot be applied in diverse financial reporting regulatory regimes. This is because it can only apply in a reporting setting where regulatory accounting bodies force firms to re-state their financial statements after discovery of anomalies say in portrayal of accruals. In most regimes, this never applies and the qualification of audit report suffices.

Schipper and Vincent (2003) provide earnings persistence as another approach to evaluating the quality of accruals. This measure is based on the assumption that if earnings are more time enduring, then they are reflective of a high level of earnings and thus accruals quality. In essence, the measure is based on the proposition that the persistence of current earnings performance is decreasing in the magnitude of the accrual component of earnings and increasing in the magnitude of the cash flow component of earnings. According to Schipper and Vincent (2003), persistence is measured as the gradient estimated from the first order autoregressive model for annual split-adjusted earnings per share of a firm. The earnings are more persistent when the gradient tends towards one and less persistent when it tends towards zero. Whereas this measure has been used to show the quality of earnings, it is less effective when used to show accruals quality. This is because accruals quality is only a sub-set of earnings

quality and a good measure of accruals quality should be able to distinguish it from other aspects of earnings quality such as timeliness, smoothness, opacity, conservatism and in-formativeness. Earnings persistence does not do this.

Abnormal accruals and its variants have also been suggested as a measure of accruals quality (Francis *et al.*, 2005). This is a measure of accruals quality that is derived from the residuals of regression equation of the ratio of total accruals on the ratio of changes in revenues to total assets and that of plant and equipment to total assets. The assets are lagged one year to the time of analysis (Francis *et al.*, 2005). The estimation can be based on firm specific time series approach or from a year-industry- year cross sectional point of view. Francis *et al.* (2005) indicate that this measure of accruals quality is mostly used in literature to capture the discretionary aspects of accruals quality. The measure can be taken in absolute terms to show accruals quality from a magnitude point of view regardless of the direction of the accruals or it can capture the extent of earnings manipulation by having signed abnormal accruals. The signed value is used to indicate either upward or downward manipulation of earnings (Boone, Khurana & Raman, 2011). According to Boone, Khurana and Raman (2011), large values of abnormal accruals indicate a poor accruals quality while a small value is indicative of high accruals quality.

Although abnormal accruals is a good measure of accruals quality that takes to account the firm fundamentals through the use of assets ratios, it may not be suitable to treat abnormal accruals as a measure of discretionary aspects of accruals as done in literature because it also captures some innate aspects of accruals quality. Besides, just like accruals volatility very large data requirements are placed on this measure and it is not possible to evaluate shorter- term changes in accruals quality given that the measures are based on annual or quarterly financial reports.

Ecker *et al.* (2006) suggest e-loadings as alternative measures of accruals quality. Their measure is based in market returns and the common single factor and three factor capital

asset pricing models. Accordingly, e-loading is the slope coefficient from the regression of excess returns on the accruals quality factor after controlling for the other factors that affect market returns identified as market risk premium, firm size and book-to-market ratio. In essence, e-loading is the coefficient estimate on accruals quality factor in asset pricing regressions that incorporate accruals quality as an explanatory variable of returns. The measure reflects a firm's sensitivity to poor earnings quality in an identified financial period such that it is positively related to poor earnings quality. Large e-loadings point towards high sensitivity of a firm to poor earnings quality while smaller e-loadings indicate a low level of sensitivity to poor earnings (Ecker *et al.*, 2006). To verify its efficacy in representing accruals quality, Ecker *et al.* (2006) conduct tests which confirm that firms with high e-loadings are indicative of poor accruals quality as shown by their low earnings response coefficients, high bankruptcy filings and low accuracy of analyst forecasts.

As a measure of accruals quality, the e-loading of Ecker *et al.* (2006) may be desirable because of its relatively small data requirements when compared to the other measures of accruals quality. This emanates from the fact that returns data can be provided on a daily, weekly or monthly basis as opposed to income and cash flow data in other accruals quality measures that is available only on an annual basis or sometimes on a quarterly basis. One requires a long period of time to evaluate accruals quality given that for a single measure, one requires three annual data reflecting the one period lagged, current and one period leading financial statement information. In addition, it is possible to estimate e-loadings on the basis of the daily data that is not necessarily aligned to the reporting periods as would be the case in the other methods. Regardless of these advantages, it suddenly becomes clear that for estimating of e-loading, an accrual factor needs to be estimated for incorporation in the regression equation. This requirement limits the extent of the aforementioned advantages.

Van dePoel and Vanstraelen (2011) identify working capital accruals as another measure of accruals quality. They take this as the change in non-cash working capital. When

expected working capital is subtracted from realized working capital, the resulting measure of accruals quality is called abnormal working capital accruals (Van dePoel & Vanstraelen, 2011). They indicate that expected working capital is estimated as a constant proportion of revenues from previous financial periods. The abnormal working capital accruals are usually scaled by the value of the lagged assets and could be adjusted for industry variations when using it as a metric for accruals quality (Van dePoel &Vanstraelen, 2011). Butt, Chamberlain and Sarkar (2012) indicate that this measure can be used in its absolute form to indicate the non directional extent of accruals quality or could be signed so as to indicate the level of managerial opportunism inherent in the manipulation of the accounting numbers.

Lastly, the commonly used method of representing accruals quality is the earnings volatility approach. The earnings volatility as a measure of accruals quality was first developed by Dechow and Dichev (2002) modified by McNichols (2002) and concretized by Francis *et al.* (2005). The method measures accruals quality as the standard deviation of the residuals from the regression equation that maps accruals into the components of accruals. These influence the innate accruals quality. The discretionary accruals quality is influenced by the performance, opportunistic and noise factors (Francis *et al.*, 2005). In this regard high volatility levels are indicative of poor accruals quality while low volatility levels point towards high levels of accruals quality.

This method is applied in the evaluation of both innate accruals quality and the discretionary accruals quality and is therefore very encompassing. One of the most limiting characteristic of this measure of accruals quality is the need to link computations to annual or quarterly reporting periods. This directly implies that the method cannot be used to evaluate shorter- term changes in accruals quality. Additionally, the accruals quality cannot be linked to a specified financial year given that the data used involves lagged values, current values as well as leading values which all cut across at least three financial periods. Despite these limitations, the method has received near unanimous acceptance in finance and accounting literature in the empirical

evaluation of accruals quality. Collins, Pungaliya and Vijh (2012) believe that when applied on a quarterly basis, the commonly used volatility measure of accruals quality of Francis *et al.* (2005) does not adequately control for nondiscretionary working capital accruals, which they assert arise due to firm growth. They advocate that the Francis *et al.* (2005) type models should be adjusted for items that reduce accruals noise and timely loss recognition to better capture accruals quality.

The modified Dechow and Dichev (2002) model of measuring accruals quality has received wide applicability and acceptance chiefly because of its theoretical and practical plausibility. Firstly, it captures the effect of both intentional and unintentional errors in the estimation of accruals (Francis *et al.*, 2005). It accordingly provides the basis over which to establish the effect of accruals quality on the cost of capital regardless of the source of that accruals quality. It is from this background that it is possible to designate, from this overall accruals quality measure, the innate and discretionary aspects of accruals quality. The intuitive appeal of this measure is further enhanced by the fact that it does not require any contemporaneous identification of intentional earnings management in determining the accruals quality. This is inherent in the volatility measure.

Secondly, and more fundamental to this study, the measure links the pricing of information risk intrinsic in the accruals in earnings information to the mechanisms of the capital markets. By fashioning accruals quality as volatility of the residuals of the mapping of working capital to its individual components, the method leads to a direct consistency with other measures of risk in finance literature, where cash flow and return volatilities are key indicators of financial risk. In essence it captures, as any other effective measure of risk should, the accruals quality as a measure of risk.

Finally, the modified Dechow and Dichev (2002) volatility measure of accruals quality does not require information restatement, owing to financial reporting errors, as is the case with the binary variables model of Doyle *et al.* (2007). This is important because in

some regulatory environments, Kenya included, audited financial statements do not require public restatement unless in particular cases as demanded by the International Financial Reporting Standards. This puts a limit as to the reporting environments in which this measure can be used to evaluate accruals quality.

Besides the quantitative accruals quality reflected by the overall accruals quality, the innate accruals quality and the discretionary accruals quality, a new contribution by this study is the identification of a new measure of accruals quality fashioned as the qualitative accruals quality. This is conceived from the realization that useful accruals quality information must have the established qualitative aspects of useful financial information. IASB (2014) identifies the desirable qualities of useful financial information as reliability, comparability, relevance and understandability. Accordingly, an accruals quality index can be computed to establish how useful accruals quality information is to users of financial statements. External auditors, being independent assurance professionals, can provide this information for constructing an index to reflect the quality of accruals information provided by the financial statements. Based on the IASB (2014) framework, the relevance, reliability, comparability and understandability qualitative aspects of accruals information can be considered to be collectively exhaustive with an ability to be assessed on a likert-type scale. This is the approach adopted in this study for the assessment of the qualitative aspects of accruals quality.

2.4.2 Cost of Capital

Cost of capital, one of the dependent variables in this study is fundamental as a hurdle rate for investment decisions in the securities markets particularly in the face of fundamental analysis of businesses. It is mostly taken as the minimum required rate of return to providers of capital (debt, equity and hybrid capital) to a firm (Rosenbaum and Pearl, 2009). Literature links the role of information risk inherent in accruals quality with cost of capital and the expectation that high information uncertainty portent high investing risk to the providers of capital and should attract a high risk premium to

49

compensate for the enhanced risk. Literature is however still not clear on how accruals quality is priced by financial markets (whether as part of market risk or firm idiosyncratic risk) although Armstrong *et al.* (2011) attribute this to the differences in the level of competition in financial markets.

Earnings-based cost of capital reflects the earnings to price ratio computed as earnings per share divided by the market price per share (Atyeh and Al-Rashid, 2015). This reflects the rate of return on equity based on the current valuation of the equity investment. A high ratio reflects a high cost of capital while a low ratio portrays a low cost of capital. The ratio can also be identified as an earnings yield. The rate of return on capital as measured in the current valuation of equity. From an accruals quality perspective, it is expected that firms with poor accruals quality should have a high cost of capital to compensate the equity holders for the enhanced risk. They should therefore have a high earnings yield. Conversely, those with excellent accruals quality should have a low earnings yield because of the diminished accruals quality information risk premium.

The effect of accruals quality on cost of capital can be evaluated by comparing the market return premium of a low accruals quality portfolio over the high accruals quality portfolio. The statistical significance of the premium over the standard market return control variables of Fama and French (1993) - size, market risk and value effects - should help identify if the accruals quality is a market priced factor as well as the nature of the pricing effect whether negative or positive.

2.4.3 Accruals Quality Market Return Premium

Accruals quality security market premium, the other dependent variable in the study, is taken as the excess of the returns on an accruals-quality-based portfolio over the risk free rate of return often taken as the return on government short term debt instruments. In Kenya the return on the 91-day Treasury bill is taken to approximate this risk free

50

rate. The premium on various accruals quality portfolios- innate accruals portfolios; discretionary accruals quality portfolios; qualitative accruals quality portfolios and overall accruals quality portfolios- (arranged in magnitude from low to high accruals quality) can be used to evaluate the accruals effect and its nature. Mao and Wei (2012) provide evidence that the accruals' effect results from underperformance in the cash flow news component of returns.

2.4.4 Accruals Quality Returns

Accruals quality returns, the other independent variable in the study, is taken as the coefficient on the accruals quality augmentation component in the standard asset pricing models. The accepted multifactor pricing models often consider market risk premium, size factor and book-to-market factor as the determinants of equity market returns (Fama and French, 1993). The import of accruals quality returns largely depends on whether it is a priced risk factor or not. Literature has mostly been confounding with Francis *et al.* (2005) and their ilk believing that it is a priced risk factor while others like Core *et al.* (2008) discounting this fact.

2.4.5 Qualitative Accruals Quality

The International Accounting Standards Board (IASB, 2014) in its conceptual framework of financial reporting defines the qualitative characteristics of accounting information as the desirable characteristics of financial accounting information. These are identified as relevance, reliability, understandability and comparability. It is these that make accruals quality information useful for decision making and valuation by fundamental analysts. Understandability is a quality that refers to the presentation of financial information and the financial statements in such a way as to enhance the ability of the users to readily comprehend such information (IASB, 2014). Comparability on the other hand is a financial statement presentation characteristic that enhances the ability of users to weigh financial information against information in other financial statements

51

either of other firms or of the same accounting firms at different points in time (IASB, 2014).

Relevance describes the ability of information to influence decision making (IASB, 2014). Information is described as relevant if it can sway the decisions of users in one way or the other. Irrelevant information has no bearing on a decision and a user will arrive at the same decision in spite of that piece of information. Accordingly, financial information should be prepared and presented in such a way that it influences decision making of users. Relevant information must be provided on time and should encompass the values of forecast-ability and confirmation. Accordingly, relevance is enhanced when financial statements and in this context accruals quality information is timely, can be used for future predictions and when it can be used for feedback value purposes.

According to IASB (2014) information is reliable if it is factually accurate and free from misstatements, omissions, errors, biases and misrepresentations. Such information should accurately represent what it can reasonably be expected to characterize about the financial performance, financial position and financial adaptability of an accounting entity. This is the case if the aspects of faithful representation, substance over form, neutrality, prudence, accuracy and completeness are incorporated not only in the general financial statements, but also in the inherent accruals quality information.

Combining these four aspects of qualitative attributes of financial information in general and accruals quality information in particular forms an accruals quality index that is instrumental in assessing the usefulness of accruals quality data on the basis of the desirable characteristics of useful financial information. This measure can be used to supplement the information derived from the innate and discretionary measures of accruals quality.

2.4.6   Standard Asset Pricing Variables

The standard asset pricing models incorporate the factors already known to influence returns from the standard multifactor asset pricing models. Accordingly, the relationship between accruals quality and cost of capital can only be possible after augmenting the standard pricing models with an accruals quality factor (Francis *et al.*, 2005). These factors therefore represent the other independent variables in the cost of capital model. The most common of the multifactor pricing models is the Fama and French (1993) approach which establishes the standard asset pricing factors as size of a firm, the value effect and the market risk effect. The market effect suggests that market returns are influenced by the market systematic risk as indicated by market beta derived from classical portfolio pricing of the capital asset pricing model.

Fama and French (1993) show that the size of a firm as well as the value effect shown by the relationship between the book value and the market value of a firm do also affect market pricing of securities. Fama and French (1993) and subsequent empirical validations have shown that the security returns are also affected by the size of the trading companies. Accordingly, the size effect has shown that small capitalization companies often have higher market returns than large capitalization companies. Testing the effect of accruals quality on cost of capital and other market aspects may therefore have to take value, size and market risk as basic model factors to be augmented by the accruals quality factor.

2.5   Empirical Literature Review

Extant studies on accruals quality, its pricing effect and the implications of the accruals phenomenon are appraised in the ensuing subsections. They indicate the existing strengths, weaknesses and relevant literature gaps in the existing empirical research on accruals quality.

2.5.1 Studies on Accruals Quality, Pricing Effect and Cost of Capital

Xie (2001) examines the mispricing of discretionary accruals to test if stock prices rationally reflect the persistence of these accruals over a 22 year period of 1971 to 1992. Persistence is reflected by the returns one-year-ahead when compared to the period before. The study uses regression analysis of accruals on plant property and equipment as well as change in revenues using a sample of 56,692 firm-year observations. Operating cash flows are estimated from change in current assets; change in cash; change in current liabilities; change in short term debt and funds from operations. The findings show that the market not only prices, but actually overprices accruals. The market overestimates the persistence of discretionary accruals leading to their overpricing. Hence according to Xie's (2001) findings, the total accruals mispricing revealed by Sloan (1996) is driven by discretionary accruals and that the market fails to correctly assess persistence of accruals. Whereas it provides useful pricing information, this study fails to examine the separable effects of discretionary and innate accruals and merely attributes the Sloan (1996) findings to the discretionary effect.

Francis *et al.* (2005) test the market pricing effect of accruals quality using 91,280 US large firm year observations over the 1970 to 2001 period. Using time series regressions of contemporaneous stock returns they test the pricing effect of innate and discretionary accruals quality for both cost of debt and cost of equity. They use the one factor and three factor accruals quality factor mimicking portfolio asset pricing models in the evaluation of the pricing effect. Their findings show that accruals quality is related to cost of capital such that low accruals quality firms have higher costs of capital than their high accrual quality counterparts. They show that accruals quality, a proxy for information risk, is a market priced risk factor. Their findings also indicate that innate and discretionary accrual qualities positively affect the cost of capital although the innate effect is more pronounced and significant that the discretionary effect on cost of capital.

The Francis *et al.* (2005) study is perhaps the most influential in literature with regard to the pricing of information risk particularly accruals quality. It has formed the basis of later studies on this area. Despite this, it can be critiqued on a number of areas. Firstly, the results could have been biased by its focus on the large-size sample of companies only. It would be interesting to evaluate the same effect on a sample consisting of significantly smaller firms especially after controlling for the small firm effect. Besides, the study relies on the Dechow and Dichev (2002) model which focuses on current accruals to the complete exclusion of longer term accruals. In addition, despite the data requirements constraints imposed by the accruals quality estimation model, the study covers a long period of time over which there are likely to be changes in fundamentals over the reported accruals quality due to managerial changes and the dynamics of the innate environment. Lastly, the study fails to take into account the effect of market competitiveness in the pricing effect yet in reality various financial markets vary in their degrees of competitive perfection. Despite these challenges, the model has formed a benchmark reference point for studies on pricing of information risk and has spurned a lot of theoretical and empirical literature that has immensely added onto this area of study.

Core *et al.* (2008) cast doubt on the conclusions of Francis *et al.* (2005) and carry out an invalidation examination of the methodology used by Francis *et al.* (2005) in a bid to show that the Francis *et al.* (2005)'s time-series asset-pricing regressions approach constituted a mis-specification of the pricing determination approach and that in deed accruals quality is not an information risk priced factor. They study the period April 1971 to March 2002 and use the two stage cross sectional regressions approach where accruals monthly excess returns are regressed on risk factor betas. Their study fails to find any evidence that accruals quality is a priced risk factor. The study is useful in that it provides an opportunity to re-examine accruals as a priced risk factor using a different methodology. This is important because it helps literature to refocus on model specification errors and provides a basis for further evaluation of accruals quality.

Chen, Shevlin and Tong (2007) examine whether accruals quality as an information risk factor (based on information precision) is a priced risk factor in a setting with changing dividend policy. They use the Dechow and Dichev (2002) measure of accruals quality as augmented in the Fama-French three factor asset pricing model. They find results consistent with investors treating information risk associated with financial statement precision as a priced risk factor. Both precision and pricing change in predictable directions around dividend changes. Although the study sheds light on the effect of the dividend environment on accruals quality, it fails to control the changes in the firm operating risk. This is bound to affect the results and it is not possible to rule out their effect on the pricing of the reported accruals quality.

Chen, Dhaliwal and Trombley (2008) study the effect of fundamental risk on the market pricing of accruals quality. They examine the hypothesis that the forecast effect of accruals quality on cost of capital increases with fundamental risk over the period 1980 to 2004. They use multiple linear regression inherent in asset pricing tests, based on a sample of 53,048 firm year observations. They conduct asset tests using both the single factor and three factor Fama-French return factors plus the accruals quality factor based on the monthly excess returns as the dependent variable. They find that there is no relation between accruals quality and cost of capital as measured by future return realizations for firms with the lowest fundamental risk but a strong relation between accruals quality and future return realizations for high fundamental risk firms. Further, the pricing effect of accruals quality is a function of fundamental risk. The findings are however limited by the fact that the study focuses on total earnings quality risk yet Yee (2006) indicates that only the systematic component of risk should affect cost of capital while the diversifiable component does not. The study does not address this concern.

Gray, Koh and Tong (2009) test whether information risk, as proxied by the Francis *et al.* (2005) accruals quality, is a capital market priced systematic risk factor in Australia. They undertake this to compare with the findings of Francis *et al.* (2005) from the US market and justify their exploration on the grounds of the salient institutional and

regulatory differences between the Australian and the American business environments. They for instance indicate the overreliance on private debt as opposed to public debt finance in Australia than the USA and the continuous disclosure regime in Australia as factors that reduce information asymmetry in the Australian environment. In their methodology, Gray, Koh and Tong (2009) use the Dechow and Dichev (2002) metric to capture accruals quality and information precision. They represent cost of debt using interest as a proportion of total debt and industry adjusted earnings to price ratio to proxy for cost of equity. They use financial data over the eight year period of 1998 to 2005 leading to 2057 and 1362 firm year observations for cost of debt and cost of equity models respectively.

After carrying out regression analysis and evaluation of accruals quality and its components, they find that accruals quality is a priced risk factor for both cost of debt and cost of equity and that it affects cost of capital in Australia although their findings hint that contrary to the effect in the USA, in Australia the costs of debt and equity are largely influenced by innate accruals quality as opposed to the discretionary accruals quality. This finding is consistent with the expectation that that the strict disclosure requirements in Australia reduce discretionary flexibility of managers and hence diminish the effect of discretionary accruals quality as an information risk factor on cost of capital.

Whereas the results are consistent with theorization, there is a danger that the method employed to estimate accruals quality is defective since the residuals over the innate variables of accruals quality could also potentially contain non-systematic noise which may bias the accuracy of estimation of accruals quality. This problem can be compounded when it is considered that it is possible some accruals quality factors beyond those specified in the Francis *et al.* (2005) model are left out of the analysis. From a wider perspective, the findings may be unique to the Australian market although Gray, Koh and Tong (2009) justify them on the basis of the institutional and regulatory peculiarities of Australia.

Measuring accruals quality using the residual volatility approaches of Francis *et al.* (2005), Kim and Qi (2010) test whether accruals quality affects cost of equity especially in the context of varying business cycles and macroeconomic variables. They use a period of 444 months from January 1970 to December 2006 that yields 103,682 firm-year observations. They obtain their data from the CRSP/Compustat merged annual data to obtain monthly stock returns and annual financial reporting information. They use the two-stage cross sectional regression tests with poor minus good (PMG), the return on a zero investment portfolio of buying long the top 40 percent and selling short the bottom 40 percent firms in terms of accruals quality, acting as the accruals quality risk factor.

Kim and Qi (2010) find that controlling for low-priced stocks leaves accruals quality as a significantly priced risk factor that varies systematically with business cycles and macro economic variables. They find a greater pricing effect for the total and innate accrual qualities in an economic expansion and a negligible effect for the discretionary accruals quality. In a nutshell, they take their findings to indicate that accruals quality contributes to the cost of equity in such a way that the pricing effect is related to a firm's fundamental risk. After controlling for the common risk factors, they relate the 12-month-future macroeconomic variables to the accruals risk factor and find that the accruals risk premium and the spread of accruals quality between the poorest and the best earnings quality firms are significantly related to future economic activities including dividend yield, economic growth and expansion of employee compensation.

Mashruwala and Mashruwala (2011) scrutinize the effect of seasonality on the pricing of the modified Dechow and Dichev (2002) accruals quality measure (AQ). They use 447 monthly and 9,399 daily portfolio returns over the January 1971 to December 2008 study period. They use the Fama and French (1993) four factor time series regressions and regress portfolio excess returns on the four factors viz CSRP market excess returns, size, book to market and the momentum effect. The findings indicate that it is only in January that high accruals quality stocks outperform low accruals quality stocks with about 50% of the accruals quality premium happening in the first 5 trading days in

January. The accruals quality premium is related to the stock price effects of tax loss selling and not the information risk premium. Although the study rejects the notion that accruals quality is a priced information risk factor, it fails to explain if the January regularity of the accruals premium can be replicated in non tax loss selling environments

Brousseau and Gu (2011) examine how accruals quality is priced by the stock market using the CSRP data over the period 1980 to 2005. They use sample of 61,756 firm year observations with 741,072 monthly returns and decile assignments and regress portfolio excess returns against the Fama and French portfolio return factors. The findings indicate that the relationship where lower accruals quality firms exhibit higher returns is driven by a small number of the smallest firms through liquidity risk while for majority of the firms, low accruals quality translates to low returns. Although useful, the study fails to shed light on the pricing effect in smaller equity markets as it is based on data from the North America CSRP database.

Bandyopadhyay, Huang, and Wirjanto (2011) evaluate the pricing of accruals quality using quarterly accounting variables over the period 1976 to 2010 for the CRSP/Compustat database for firms listed on NYSE, AMEX and NASDAQ. They regress the accrual portfolio excess returns against the Fama-French factors of market, size, book to market and momentum effect. The findings reveal a strong and long-lasting positive relation between the accrual quality measure of Dechow and Dichev (2002) and future returns with robust findings against the common risk factors and alternative accruals quality metrics implying that managers do not improve the firm's accrual quality over time leading to a more or less constant degree of uncertainty. On the flip side, the study is only possible where quarterly accounting results are issued. In Kenya this may apply to financial institutions only yet literature (Francis *et al.*, 2005) shows that these kinds of companies have different accruals characteristics and may not be evaluated using the Dechow and Dichev (2002) accruals quality measures.

Geng *et al.* (2013) examine if earning quality risk magnifies its influence on cost of capital, measured by earnings-price ratio, as fundamental risk increases based on the empirical data of Shanghai Stock Exchange non financial businesses over the period 1999 to 2009. They carry out asset pricing tests on the basis of Fama-French risk factors and incorporate accruals quality measure in the regression of excess returns against these factors. They find that as fundamental risk rises, accruals quality's influence on cost of capital is enhanced, although this influence on cost of capital does not exceed that of low-fundamental-risk enterprises. The study fails to disentangle total risk into the systematic and nonsystematic components hence fails to show the effect of each on cost of capital in order to compare with Yee (2006)'s assertion that only systematic risk is connected to the cost of capital.

2.5.2   Studies on the Accruals Quality Phenomenon

Zach (2004) investigates the possible sensitivity of accruals effect with other recorded trends in finance literature particularly mergers, divestitures, acquisitions, other finance market effects and the context of the market in which the accruals are experienced. The study further evaluates the existing methods of computing abnormal returns and their possible effect on the accruals phenomenon. This is done by examining the relationship between standard errors of mean abnormal returns to the accruals strategies and extreme skewness of long term abnormal returns on one hand and the degree of cross-sectional and time series dependence within portfolios of extreme accruals on the other. The study uses two samples of 15,961 New York Stock Exchange/American Stock Exchange (NYSE/AMEX) observations and 42,635 NYSE/AMEX observations over the 1988 to 1999 and 1970 to 1999 respectively. Zach (2004) adopted this approach to facilitate comparison over the two separate study periods given that cash flow information became available from the year 1988. The study uses both descriptive analysis of abnormal deciles' hedge returns as well as regressions of one-year-ahead size-adjusted returns on deflated accruals or ranks of deflated accruals.

60

The findings indicate that all the coefficients on the accrual variables are negative and statistically significant. Accordingly it is found out that both mergers and divestitures have an effect on the returns generated by the accrual strategy whose effect is significantly reduced when the mergers and acquisitions' coefficients are eliminated from the analysis. The study further finds that the method of calculating benchmark portfolio returns has insignificant effect on the returns of the accrual strategy. The study further finds that accruals returns are more significant among the National Association of Securities Dealers Automated Quotations (NASDAQ) companies than the non NASDAQ firms. Finally, the study finds out that when book-to market is used in addition to size in controlling for normal returns, accruals returns decline by about a fifth. The study concludes that besides the tested relationships, a big portion of market returns remains unexplained.

LaFond (2005) examines the pervasiveness of accrual anomaly around the globe by studying the implications of accruals in 17 countries with large developed international equity markets over the period July 1989 to December 2003. The objective of the study is to find the effect of institutional attributes in explaining the accruals phenomenon across these equity markets. The specific attributes evaluated by the study are the effect of management discretion, information environments and ownership structure on abnormal accruals returns. The countries in the sample include Australia, Belgium, Canada, Denmark, France, Germany, Hong Kong, Italy, Japan, the Netherlands, Norway, Singapore, Spain, Sweden, Switzerland, the U.K., and U.S.A. The study utilizes calendar time monthly total accruals hedge portfolio three factor (market risk, size and book-to-market) asset pricing regressions to assess the existence and pervasiveness of accruals excess returns and cross country spearman correlations to establish the similarities between factors causing the anomaly across the countries. The findings of the evaluation of country-specific accruals indicate that the accrual anomaly is a global phenomenon. It further shows that the effect is most prominent for the current asset component of working capital accruals. Interestingly however, the study finds out

that there is no single dominant factor that explains the anomaly globally and instead the driving forces of the accruals effect vary across various countries.

The study is instrumental in that it evaluates the accruals effect in numerous market jurisdictions to rationalize the factors that drive accruals abnormal returns. It therefore goes beyond the one market study similar to Sloan (1996). It however could still be biased by its focus on the most developed markets since it may be of interest to ascertain if the factors that drive accruals effect are similar in both advanced and developing equity markets. In addition, the study uses the calendar time approach to measure long horizon returns which does not allow the mimicking of returns earned by investors as would have done the buy-and-hold strategy. This approach may also lead to low power regressions. It however is appreciated that this approach is desirable given the multi market analysis nature of the study.

Wu, Zhang and Zhang (2007) use stocks returns data from monthly return data for NYSE, AMEX and NASDAQ to probe accrual anomaly in the USA for a sample period of 36 years starting from 1970 and ending in 2005. The data translates to 127,103 firm year observations which exclude utility and financial firms which they consider to be highly regulated and different from other industries. The two objectives of the study are first to ascertain the predictive power of accruals for future stock returns and second to explore the effect of investment factors on the accruals anomaly. They use accruals size to rank assign firms to ten deciles at the beginning of each of the year of analysis. Interpreting accruals as working capital investment, the study presents the hypothesis that firms rationally adjust their investment to respond to discount rate changes. The findings show that the predictive power of accruals for future stock returns increases with the covariations of accruals with past and current stock returns. In addition, they show that the magnitude of the accrual anomaly is reduced when investment-oriented stocks are considered in standard factor regressions. Wu, Zhang and Zhang (2007) attribute this finding to the general mechanism of the optimal investment hypothesis of explaining the accrual phenomenon.

Leippold and Lohre (2012) evaluate the global accrual anomaly in the context of data snooping. They test for accruals mispricing in twenty six countries (Australia, Belgium, Canada, Denmark, France, Germany, Greece, Hongkong, India, Indonesia, Ireland, Italy, Japan, Malaysia, Netherlands, New Zealand, Norway, Singapore, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, UK, and USA) over the period May 1994 to April 2008. Their approach involves decomposition of earnings into cash flows and accruals with standardization using total assets. They use a multiple regression equation of the accruals long-short hedge excess returns on market, size, value, and momentum metrics. After accounting for multiple testing to detect incidences of data snooping, they find robust results for existence of accruals anomaly in some ten countries.

They attribute their findings of the effect in some the markets to spurious evidence, consistent with the arguments of Kraft, Leone and Wasley (2006), because of data snooping biases that are inherent in the simultaneous testing of numerous hypotheses. In addition, after controlling for the international momentum effect, they conclusively reject the efficient market hypothesis in the Australia, Denmark, Italy and USA, with the rest of the sampled markets having spotty results. Further, although they find the continued existence of the effect in numerous countries, they show that in some countries where the effect was previously robust, it is dissipating over time suggesting exploitation of the effect by investors. Whereas it covers a wide range of market, the study however fails to test for the accruals effect in some geographical regions particularly in the equity markets of Latin America, the Middle East and Africa. They in this regard fail to unearth the trends of this effect in these markets which leaves a glaring literature gap and biases their findings to relatively advanced equity markets.

Lewellen and Resutek (2013) examine whether accrual anomaly can be explained by investment over the period May 1972 to December 2010 based on the CSRP database with return data based on monthly returns over the period constituting 464 months. They evaluate a sample of 157,411 firm years which they reduce to 60,149 firm years on exclusion of tiny firms. They further decompose a firm's total accruals into investment-

related and non-transaction accruals like depreciation which does not represent new investment expenditures. They rely on descriptive and multiple regression analysis. They find results in support of earnings fixation hypothesis since investment does not explain a significant portion of the accruals anomaly. A long-short portfolio based on non-transaction accruals has a significant average return of 0.71% which compares favorably with working capital and investment accrual portfolios. Although there are numerous theories that try to explain the accruals phenomenon, the study fails to categorically show which of the theories explain this effect. This is particularly critical because it does not fully discount the earnings fixation hypothesis.

2.5.3 Studies on Accruals Quality and Idiosyncratic Firm Environments

Doyle and Ge (2007) examine the relationship between accruals quality and the strength of internal controls. They test over the August 2002 to November 2005 period whether a weak control environment allows for biased accruals through earnings and unintentional errors in the estimation of accruals in the United States of America. Out of the population of 1,210 firms, they select a sample of 705 firms that disclosed at least one material weakness in their internal control system. They test two null hypotheses that firstly material weaknesses in internal controls are negatively associated with accruals quality and secondly that company level material weaknesses have a stronger negative relation with accruals quality than account specific material weaknesses.

Doyle and Ge (2007) measure accruals in four ways using McNichols (2002) volatility measure, average accruals, earnings persistence and the historical restatement of accruals. Their findings indicate that weaknesses are generally associated with poorly estimated accruals that are not realized as cash flows. This indicates that there is a relation between a weak internal control system and lower accruals quality that is driven by disclosures relating to the overall company level controls. This study presents a view to discretionary accruals quality that evaluates the role of the internal reporting and control environment. This enriches literature by looking at control aspects of

discretionary accruals quality. It however uses data that places a lot of reliance on self disclosure of material weaknesses. This in itself may not be a good proxy for internal weaknesses because there may be a systematic bias in the choice of the disclosure parameters.

Fields and Gupta (2007) evaluate accruals quality within a specified debt maturity structure environment to examine the relation between firms' debt maturity structures and accruals quality. They use a sample of firms with positive assets from the Compustat database over the period 1973 to 2003 translating to 63,512 firm-year observations. They use annual cross sectional one year lagged asset adjusted cross sectional regression of total accruals against the difference between change in sales and change in accounts receivables, plant, property and equipment and cash flows from operations to estimate accruals. From this they follow the Dechow and Dichev (2002) volatility measures to evaluate accruals.

There are four findings by the study that firstly indicate that firms with more current debt have lower quality accruals and secondly that firms that are risky and those which face debt market constraints exhibit a negative relation between short term debt and accruals quality. Thirdly, their findings show that auditor quality attributes reduce this negative relation and that finally some corporate governance characteristics particularly institutional ownership or shareholder protection do not have major effects on the relation between short-term debt and accrual quality. They conclude that significant amounts of short term debts in firms' financing structures is likely to induce their managers to manage earnings, hence reduce accruals quality, so induce lenders and fend off the liquidity crises likely to emanate from efforts to raise new debt funds.

Aboody, Hughes and Liu (2005) had earlier examined a market idiosyncrasy based on privately informed investors. They test to find if privately informed traders can earn superior profits by trading stocks with higher exposure to the asymmetric information risk factor. To identify firms prone to privately informed trading, they use four different

accrual-based measures of earnings quality. These are the absolute value of abnormal total accruals; the absolute value of abnormal current accruals and the two Dechow and Dichev (2002) measures of earnings quality. They obtain their cash flow data from Compustat and their returns data from Centre for Research in Security Prices. The study covers the period January 1985 to November 2003. They evaluate the Nyberg's alphas on regressions of earnings quality hedge portfolio returns on the common risk factors of market, size and book to value returns as augmented by an earnings quality factor. They find that the alpha measures vary from 0.99% to 1.18% per month depending on the earnings quality measure used in the regression. They indicate that taken on average, firm insiders trade more profitably in firms that are more exposed to the accruals risk factor. They therefore show a significant pricing effect in an environment associated with private information trading, albeit with weak statistical significance values. They also show abnormal returns to accruals quality trading hedge strategy.

Van de Poel and Vanstraelen (2011) explore the relationship between internal control regulations and the quality of financial reporting as proxied by the magnitude of abnormal accruals. Their study was carried out in Netherlands chiefly because the country employs an internal control regime called "comply or explain" which is different from the approach used in North America where a statement of effective internal control is often required. There was therefore a need to test if the regulatory regime had an impact on accruals quality. The study uses all Dutch listed firms on the Amsterdam Stock Exchange over the 2004-2005 period excluding financial institutions because of their unique reporting requirements. From a population of 219 firms 171 firm year observations were sampled. In their methodology, Van de Poel and Vanstraelen (2011) use three proxies for accruals quality. Firstly is the industry adjusted abnormal total accruals; secondly is the industry adjusted working capital accruals and lastly they use the discretionary accruals quality. The first two are used to overcome the limitations of regression analysis on the basis of Dechow and Dichev (2002) used in the study because of the small samples in the study. In addition to regression analysis, they use

sensitivity analysis of accruals quality for the various characteristics of size, leverage, performance, firm characteristics, management, industry dummies and block-holder ownership.

The findings by Van de Poel and Vanstraelen (2011) indicate that accruals quality is not associated with the description of the internal control system. This may seem to make discretionary component of accruals quality less significant than the innate component. In addition, they find a positive association between the statement of effective internal controls and accruals quality. This implies that there is a consistency between the quality of reporting and the statements offered by reporting entities regarding existence of effective internal controls. In this regard they find that companies that report effective internal control systems have significantly lower abnormal accruals than those that do not. Finally Van de Poel and Vanstraelen (2011) find that accruals quality is not associated with the description of the internal control system. This study is critical in directing accruals quality towards the unique reporting environment consistent with discretionary accruals quality. It however falls short on the basis of the limited firm years that are studied which may not offer robust results. In addition, it focuses only on one regulatory regime in a bid to contrast it with the practice in North America. This ignores multiples of other regulatory regimes including those in Africa in general and Kenya in particular. In addition the study faces serious measurement errors and bias since the measurement of the description of an internal control system as used in the study is largely subjective.

Lu, Richardson and Salterio (2011) study the effects of internal control weaknesses on accrual quality in the Canadian regulatory setting which has its unique distinctiveness. The uniqueness of the Canadian financial disclosure environment arises from the fact that they are expected to be made in management discussion and analysis reports. Lu, Richardson and Salterio (2011) indicate that the disclosures in Canada are cheap yet arguably unreliable given that they are provided to investors without definition of the reportable weaknesses, testing of the effectiveness of implementation, direct

management certification nor external audit of such disclosures. They measure accruals quality following Dechow and Dichev (2002) metric and use regression of unexplained accruals on internal control weaknesses. This involves using OLS regression, two stage regressions and recursive path analysis embedded in a structural model to examine the association between the strength of internal control and accrual quality. Their data is drawn from all 1,230 Canadian companies in the Compustat database in the year 2006 which are used to derive a sample of 470 firms with active and complete data necessary for Dechow and Dichev (2002) accruals quality measures. The regression results show a positive association between disclosed internal control weaknesses and unsigned unexplained accruals. This indicates an overall negative net effect of internal control weaknesses on accrual quality is refined by recursive path analysis which suggests that lower cost disclosures are credible.

The study provides useful insights in the cost of disclosures versus benefit debate given that the cheap cost in the Canadian system seems not to interfere with reporting quality. It can however be critiqued on the basis of the assumptions made in carrying out the study. The study assumes that the internal controls in 2006 are similar to those in the previous 5 years needed to compute the accruals quality metric. If these vary, they compromise the findings. The study also assumes stability of accruals quality over this period which may not necessarily be the case although this assumption is common in other accruals quality studies. It is also not possible to tell if the assumptions in the Canadian regulatory regime can be replicated in other similar regulatory environments.

In a developing market set-up Valipour and Moradbeygi (2011) study the relationship between earnings quality -as proxied by total accruals- and corporate debt financing. They use data collected from 81 firms listed at the Tehran Stock Exchange over the five year period of 2005 to 2009. They test their hypothesis using multiple regression analysis. The findings of the study indicate that there is a negative and meaningful relationship between debt and earnings quality as measured by total accruals. Further, they find that in an environment where there is low level of debt, the negative influence

of debt is dominated by the positive influence on earnings quality such as to result is a positive and significant relation between earnings quality and debt levels. The opposite applies at introduction and where there are high levels of debt. Although the study provides meaningful insights to the relationship between earnings quality and debt financing, it focuses on only one aspect of accruals, the total accruals. They further rely on multiple regression analysis but fail to take into account tests of robustness of the relationship to validate their results. Besides, the use of the total accruals model requires longer period because of the three years required to complete each of the accruals variables in the total accruals regression. Their study period of five years may be grossly inadequate for provision of robust results.

2.5.4 Related Studies in the Kenyan Environment

Musyoki (2012) evaluates the changes in share prices as a predictor of accounting earnings for financial firms listed at the Nairobi Securities Exchange over the period 2001 to 2005. Using information relating to earnings per share, dividend yield, price earnings ratio and share prices, he uses ordinary least squares on eleven study companies to relate earnings with market prices. He finds a positive relationship between share prices and accounting earnings. The study further found out a mixed relationship between accounting measures and NSE information ranging from strong positive to weak correlations. Whereas this study sheds light on the relationship between accounting earnings and market performance, it fails to test the nature of the earnings and its quality and how such affects market performance. In addition, it covers a relatively short period and small sample size both of which may reduce the robustness of the findings.

Oluoch and Waita (2015) carry out a longitudinal empirical survey, which covers the 12 year period of January 2001 to December 2012, to examine the persistence of earnings among commercial banks in Kenya. They test two null hypotheses first that earnings among banks are not transitory over time and second that there is no significant

difference between the earnings persistence of size based portfolio quartiles. They measure the persistence of earnings of size-based portfolio quartiles by obtaining the coefficient of the autoregressive model of order one of current common size earnings against one financial period lagged common size earnings.

Their study fails to reject the first null hypothesis for all the size portfolios and finds that the earnings of commercial banks are not transitory and are therefore of a high quality. It however rejects the second null hypothesis and finds that the large size commercial banks have higher persistence coefficients than the small size commercial banks. The findings suggest that the investors in a Kenyan commercial bank can have access to highly predictable earnings data given the high quality of financial reporting by the banks. On the flipside however, their study indicates that large commercial banks seem to have relatively better quality earnings data than the small commercial banks. Their findings are limited by the small size of the commercial banking sector in Kenya which constraints the opportunities available for the assessment of earnings' quality inherent in financial reports.

2.6   Research Gaps

Emerging from the literature review, there are several literature gaps that are filled by this study. Firstly, there is lack of knowledge with respect to the level of accrual quality among Kenyan public companies yet investors and other stakeholders rely of financial statements for vital decision making. The studies done on the effect of accrual quality have almost exclusively been derived from securities' markets outside of Kenya particularly USA, Canada, Australia and similar advanced financial markets. The seminal work of Francis *et al.* (2005) in USA has been followed up by Core, Guay and Verdi (2008) and Broussaeu and Gu (2011) all with confounding results from the American markets.

The study by Gray, Koh and Tong (2009) added an Australian perspective but instrumentally showed how the idiosyncrasies in the operating and regulatory

70

environment affect accruals quality and its possible effect on the cost of capital. The importance of the regulatory environment has also been emphasized by Lu, Richardson and Salterio (2011) while studying accruals quality in the unique Canadian reporting environment. From this perspective, studying the accruals quality and its effect on cost of capital among Kenyan firms helps expose the inter-linkage between the two in a financial reporting environment with unique attributes like those in the Kenyan environment.

Secondly, from a methodological perspective, empirical literature (Francis *et al.*, 2005; Choi, 2008; Aldermen & Duncan, 2011; Brousseau & Gu, 2011; Butt, Chamberlain & Sarkar, 2012; Demirkhan, Radhakrishnan & Urcan 2012; Oluoch & Waita, 2015) has focused on the quantitative measures of accruals quality particularly the volatility measure of Dechow and Dichev (2002) as well as accruals based measures. This totally ignores the qualitative aspects of accruals information. This is glaring because IASB (2014) provides the desirable qualities of accounting information of relevance, reliability, comparability and understandability yet these attributes have not been incorporated in the measurement of accruals quality. Incorporating these aspects, which are more critical to investors who rely on earnings information, is likely to provide a new empirical measure of accruals quality not hitherto existing in earnings quality literature.

Thirdly, literature is still in complete darkness with regard to how the Kenyan capital markets price accruals quality. This is a significant literature gap given that the pricing effect of accruals quality is expected to have a direct consequence on expected returns to investors in the Kenyan public companies. This is even more critical given that accruals quality has been shown to be an information risk factor (Francis *et al.*, 2005) yet it is not clear if it is a part of the market systematic risk or if it is priced separately by the capital markets. In addition, there is lack of knowledge on how accruals quality as a risk factor is priced in the capital markets of a developing country, where the market is undercapitalized with few listed companies, sixty one for the case of the NSE. Studies

that have been done to relate accounting data to market have not gone on to establish effect of accounting information on cost of capital.

Musyoki (2012) for instance evaluates the changes in share prices as a predictor of accounting earnings for financial firms listed at the Nairobi Securities Exchange over the period 2001 to 2005. Whereas this closely relates to the persistence aspect of accruals and earnings quality, the study does not examine how accruals quality affects cost of capital. In addition, the study is not comprehensive enough in that it only evaluates 11 companies quoted at the NSE which represents less than 20% of the listings at the bourse. This represents critical gaps that are covered by the hypotheses proposed in this study

In addition, it is not clear how accruals quality affects cost of capital in the Kenyan capital markets. This is particularly critical because literature is still confounding on how accruals quality influences cost of capital. Whereas studies like those of Core, Guay and Verdi (2008); Mohanram and Rajgopal (2009); Armstrong *et al.* (2011) Lambert *et al.* (2012) refute the existence of an effect, Brousseau and Gu (2011) and Mao and Wei (2012) are of the view that there is a positive effect of accruals quality on cost of capital while Francis *et al.* (2005); Gray, Koh and Tong (2009); Qi *et al.* (2010) and Demirkhan *et al.* (2012) agree to the pricing effect but believe that such effect is negative. This provides a gap where this study contributes towards building a consensus on the pricing effect of accruals quality.

Lastly, whereas tests of efficiency levels in the Kenyan equity market have revealed mixed results (Chipo & Biekpe, 2007; Musyoki, 2012; Owido, 2013; Kamau, 2013), the existence and even pervasiveness of the accruals quality phenomenon has never been established. This presents a watershed literature gap given that it is not clear if high accruals quality firms and low accruals quality firm have comparable returns or if the investor biases akin to earnings fixation inherent in accruals affect investors in the

72

Kenyan capital markets. This study forms a sound basis for testing the accrual quality phenomenon among the Kenyan public companies.

2.7   Summary

There is lack of consensus as to whether and how accruals quality affects cost of capital. One extreme view holds that there is often research data anomalies and defective research design that allegedly provide a misleading view that accruals quality is a priced information risk factor yet in reality, in the view of this school of thought, it is not priced at all. Core, Guay and Verdi (2008) lead this onslaught and are supported Mohanram and Rajgopal (2009). Other scholars have a moderate perspective and they indicate that in reality the existence and pervasiveness of a pricing effect is dependent on moderating factors within the regulatory context. Armstrong *et al.* (2011) for instance pins this moderating condition as the information market structure where for perfectly competitive markets, they foresee no pricing effect of accruals quality yet the situation varies with the degree of information market competitive imperfections.

Assuming that markets are seldom perfectly competitive and that some levels of frictions have to exist in a market, then Armstrong *et al.* (2011)'s view is largely more theoretical than practical and that data manipulation considerations aside, it is safe to consider that accruals quality affects cost of capital and that it is a priced information risk factor. This is particularly persuasive given that empirical findings from studies that have applied multiple measurement approaches like that of Leippold and Lohre (2012) and Brousseau and Gu (2011) still find the existence of the pricing effect. There however are divergent views as to the nature of this effect with some scholars (Easley & O'Hara, 2004; Brousseau, Mao & Wei, 2012) perceiving a positive pricing effect of accruals quality while others (Francis *et al.*, 2005; Gray *et al.*, 2009) alluding to a negative pricing effect.

From this it is logical to conclude that the effect of accruals quality on cost of capital is a function of numerous moderating variables within a financial reporting and markets

regulatory environment. The factors that are explicitly identified in literature are the level of competition (Armstrong *et al.*, 2011); size of the firm, segmentation and its value (Brousseau & Gu, 2011; Choi, 2008; Demirkhan *et al.*, 2012); the level of risk particularly fundamental risk (Chen, Dhaliwal & Trombley, 2008); dividend characteristics (Chen *et al.*, 2007); corporate governance and internal control characteristics and agency risk (Doyle, Ge and McVay, 2007; Ashbaugh-Skaife *et al.*,2008; Kent, Routledge & Stewart, 2010; Altamuro & Beatty, 2010; Lu, Ricahrdson & Salterio, 2011; Demirkhan *et al.*, 2012); ownership and debt structure (Isenmila &Afensimi, 2012; Butt, Chamberlain & Sarkar, 2012) as well as corporate reputation (Luchs, Stuebs & Sun, 2011). Whereas all these factors have been considered in several empirical studies, the literature has been biased towards developed markets yet these have different fundamentals expected to impact cost of capital differently from emerging markets like the Nairobi Securities Exchange. Part of the bias could admittedly be due to the yawning lack of data for markets like NSE and the significantly small size of such markets.

Besides the anomalous behaviour of stock returns that presupposes an indirect effect of accruals quality on cost of capital, all the theoretical explanations of the pricing effect of accruals quality reflect a behavioural angle that presupposes that investors are keen and discerning in the evaluation of financial statements and the attendant accruals quality. They underlying tone in the information uncertainty hypothesis of Francis *et al.* (2005), the information asymmetry conjecture of Leuz and Verrecchia (2005) and the rational expectations hypothesis of Easley and O'Hara (2004) is that accruals quality communicates financial condition information whose differential perception by investors affects cost of capital in different ways. From these, it can be concluded that indeed accruals quality is an information risk factor. However, whether this risk factor is a priced risk factor at all and how such pricing takes effect or affects cost of capital is a matter that literature has not yet reached a consensus on. This is more the case when the

effect on cost of capital is evaluated for a small and undercapitalized stock market in a developing country like the Nairobi Securities Exchange.

In a nutshell, the literature review provides watershed literature gap that provides the basis for this study. It indicates that there is lack of knowledge with respect to the level of accrual quality among Kenyan public companies yet investors and other stakeholders rely of financial statements for vital decision making. In addition existing literature totally ignores the qualitative aspects of accruals information yet relevance, reliability, understandability and comparability aspects of accruals information in financial statements should provide an alternative approach to the evaluation of accruals quality of financial statements. Further, literature is still in complete darkness with regard to how the Kenyan capital markets price accruals quality. , it is not clear how accruals quality affects cost of capital in the Kenyan capital markets. In the overall, the existence and even pervasiveness of the accruals quality phenomenon in the Kenyan capital markets has never been established.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The broad aim in this chapter is to provide the rationale for the research method used to explore the effect of accruals quality on the cost of capital and market pricing of publicly listed firms in Kenya. It explores the research design, population, sample and sampling methods as well as the techniques of manipulating the data to test the hypotheses identified in chapter 1. The details of variables that were to test the hypotheses and the pretesting rationalizations are also explained. Ultimately, the techniques that are used to analyse the data together with the study models are also presented.

3.2 Research Design

The study adopts the quantitative research design. Three quantitative research aspects are used. Firstly, it helps establish the relationship between accruals quality on one hand and the cost of capital on the other. In the same vein, accruals quality is interrelated with market returns for accruals based portfolios just as accruals quality is correlated with market prices. In this regard, the study fits into the fundamentals of a correlational research design. Secondly, it relies on the historical ex post equity prices and financial statement values to establish historical holding period returns of the respective equity portfolios, the market returns and the accounting accruals so as to ascertain relationships that are exist between those returns, accruals quality, market risk and established return characteristics. On this front, the study fits into the realm of historical research design. Lastly, the study is done focusing on market aspects, accruals quality and returns characteristics over a prescribed twenty one year period from January 1993 to December 2013. This fits into a time series research plan. From the foregoing the research plan

proposed for this study can aptly be described a historical correlational time series research design.

3.3 Target Population

The study aims to assess the effect of accruals quality on cost of capital and security market pricing of all the 61 companies quoted at the Nairobi Securities Exchange as at December 2013. The normal approach to this type of study from existing literature is to identify the number of firm years for evaluation. A firm year is taken as a period of 12 consecutive months that incorporate a financial year for each of the accounting entities under evaluation. If all the 61 firms under study are evaluated for all their relevant financial periods, it translates to the total number of financial years under investigation. Accordingly, this study was done on a population of 1,281 firm year observations for all public firms quoted at the Nairobi Securities Exchange over the period January 1993 through December 2013.

For the purposes of collecting primary data on the qualitative aspects of accruals quality, the population was the head statutory auditors for each of the external audit teams of all the 61 companies listed at the Nairobi Securities Exchange as of December 2013. These are the analysts used in ascertaining the truthfulness and fairness of the general accounting quality of financial statements of reporting firms.

3.4 Sample and Sampling Techniques

The data requirements necessitated exclusion of some firm-year observations. Some conditions for inclusion into the study especially for calculation of accruals quality had to be met. Some firm years were excluded on this criterion which essentially reduced the population to a smaller size sample firm years. Purposive sampling of 39 firms is therefore used for this purpose to meet the data requirements for hypotheses tests in the study. A further 10 firms are used in pilot testing.

The criteria for exclusion are discussed in detail under subsection 3.7. For the primary data that was collected using the questionnaire in appendix 3, a census of the respondents incorporated the heads of external audit and research of the firms that provide statutory audit services for each of the 61 companies quoted at the NSE as at December 2013. Out of these, ten were stratified-randomly selected for the purposes of pilot-testing the study. Stratification was done on the NSE segmental basis. This was necessary to ensure that each of the NSE segments is represented in the pilot test sample. The pilot test firms are restricted to the firms that did not meet the data time requirements for financial statement accruals quality but otherwise met all the criteria of computing accruals quality. These included Safaricom, Equity Bank, Co-operative Bank, Uchumi Supermarkets, KenGen, Eveready Batteries, BOC Gases, Carbacid Investments Ltd, Eegaads and TPS Serena Ltd. Subsequently, during the actual data collection, 39 questionnaires were presented to each of the head of external audit and research of the statutory auditors of all the firms in the study.

3.5   Pilot Study

Objective (iv) and (vi) of the study requires the use of primary data which is collected by the use of a questionnaire as presented in Appendix 3. A pre-test of the questionnaire was conducted on 10 purposively selected statutory auditors from the list of the heads of audit and research of the external auditors of each of the companies quoted at the NSE. The list concentrates on firms in each of the 10 segments of the NSE that meet accruals quality criteria but fail to meet the 21 year study time timing requirements. This is necessary to ensure that the operational aspect of the questionnaire is comprehensively addressed and that the final actual study sample perfectly corresponds to the quantitative accruals quality qualifying companies after excluding the pilot test sample. The pilot sample size is informed by Simon (2011) who suggests that a sample size of between 10% and 20% of the actual study sample size is adequate for a pilot study.

Given a population of 61 statutory auditors and analysts coupled with the existing ten segments of the NSE, 10 of these are not only representative of the ten segments, but also meet the Simon (2011) criterion of an adequate pilot test sample size. The format of the questionnaire, the clarity of the questions and respondents' consistency in interpreting questions, as well as the data analysis procedures and the complete research design, are tested in this piloting process. A combination of cognitive interviewing approach and self-administered questionnaire is adopted to provide qualitative data on the ability of the questionnaire to produce data that can be used to achieve the research objectives of this study. For clarifications and need to meet the study's unique for a 100% response rate, the questionnaires are personally administered to each of the respondents by the researcher.

The pilot test is conducted on the ten purposively selected respondents. These are the heads of the statutory audit teams of each of the pilot test companies quoted at the NSE who have been actively involved in the external independent audit process of the respective companies over the study period. The test respondents are asked to provide feedback on the clarity of the questions included in the questionnaire. To test the internal reliability of the measurement scales, the study uses Cronbach's alpha. Based on the responses, minor adjustments where necessary are made to some questions to improve their clarity as indicated in Chapter four.

To ensure that the collected secondary data conforms to the requirements of the computation of accruals quality, some data cleaning procedures are necessary. For completeness, the study involves deletion of firm year observations that had insufficient data to compute accruals information. Such companies are excluded from the study although ten of them are included in the pilot study for primary data purposes since the pilot study does not require an evaluation of all the 21 years needed for the main study. All firm years must have data relating to cash flows from operations, revenues and total assets. In addition, following Bandyopadhyay *et al.* (2011) who indicate that observations with negative assets and negative sales values do not make accounting

logic and are intuitively unfathomable, these are excluded from analysis. In addition, Chen, Dhaliwal and Trombley (2008) observe that negative earnings figure would provide a negative cost of capital which is a conceptually invalid figure. In this regard, the data cleaning procedure also involves deletion of firm-year observations with negative sales and assets values.

Besides seeking the input of audit analysts, the pilot test respondents were requested to provide feedback on the clarity of the accruals quality index and other questions provided in the questionnaire.

3.6   Data Collection Procedure

The study involved collection of both primary and secondary data from the Kenyan equity markets and from the financial statements of companies filed with the registrar of companies. This was possible after seeking authority to conduct research from the National Council for Science and Technology (NCST) in the ministry of Education. The NCST provided form A as shown in Appendix 5. This was used for obtaining this permission. The specific data that was collected is identified in the ensuing subsections.

3.6.1 Primary Data

Primary data relating to qualitative characteristics of accruals quality information was collected using the questionnaire in Appendix 3. The data relates to the qualitative aspects of accruals quality information that include relevance, reliability, understandability and comparability of that information as presented in annual financial statements. The data was collected from heads of statutory audit teams involved with external auditing and evaluation of financial statements of the companies quoted at the NSE.

Although there are several ways in which the questionnaire can be administered, this study used the personal administration approach to collecting the data. The personal

approach was critical to ensure that the data collector clarified on aspects of the questionnaire to the respondents and afforded the opportunity to adapt to various segmental requirements given that the quoted companies at the NSE operate in various specified trading segments. In addition, this approach ensured that there was a 100% response rate which was critical in this study given that the panel data requirements of testing the effect of cost of capital on accruals quality as specified in the earnings to price ratio regression model demanded all qualitative data to accurately correspond with the financial statement and market data that was readily available in the corporate annual financial reports and in the capital markets reports

The objective of the questionnaire is to obtain empirical information of the accruals quality aspects encountered by security analysts of companies quoted at the NSE. These aspects are identified in the conceptual framework of financial reporting. The judgment of external audit and research analysts is critical in evaluating accruals information since they are concerned with the continuous evaluation of the companies under study as a statutory requirement to ensure that they reflect a true and fair picture about the financial affairs of these entities. This information was critical in supplementing the secondary data obtained from the financial statements.

The questionnaire is structured into 9 parts that capture pertinent information necessary in constructing and accruals quality index. Part A identifies the company details for respective questionnaires; part B and C provide information about the identity and experience of the audit analyst in evaluating the specified company in the; part D, E, F and G are critical for gathering accruals quality information with respect to the relevance, understandability, comparability and the reliability the accruals quality information in financial statements. Part H of the questionnaire is used to provide trend information and to corroborate and check the consistency of the responses from the parts D to G of the questionnaire. The last part I is the open ended section to capture any other relevant accruals quality index information from the respondents.

The multi-item scale adopted in the questionnaire provides a more sensitive assessment of the accruals quality index. The questionnaire is laid out systematically to avoid confounding the respondents as has persuasively been argued by Whitley (2000). The deliberate sequence adopted in the questionnaire to incorporate the context effect. Whitley (2000) argues that related questions need to be sequenced since the responses on some questions influence the scores given to others in the same category. This allowed for response consistency for the audit analysts to provide answers in the context of the financial statement and accruals information audit analysis environment. The length of the questionnaire was adequate enough to capture all the accruals quality index variables while avoiding unnecessary questions that could have led to respondent fatigue while not serving any useful purpose for the study.

3.6.2   Secondary Data

The study also involved the use of secondary data from sample company financial statements as well as the financial markets. Firstly was the monthly NSE-20 share index data for the period January 1993 to December 2013.

These data is instrumental in computing the NSE market returns which in turn was used in deriving accruals' portfolio excess returns as well as accruals based excess returns of various accruals quality portfolio deciles. The data was obtained from the NSE data base. The NSE-20 share index was deemed appropriate because the alternative NASI index has been available for only six years since January 2008 which is too inadequate for this study.

The second category of secondary data that was collected is the monthly company stock prices. This is restricted to the companies that trade at the NSE. This is because the trading data is easily available and that since they are public companies their corresponding financial statement data that is needed for this study is also available

because of legal disclosure regulations. Because the decile portfolios were to be reformatted very month, monthly equity security prices were obtained.

Table 3.1: Study Variables

Variable	Measure	Data	Source
Accruals quality	5 year rolling Standard deviations of residuals of the regression of change in working capital on asset-augmented 1 year lagging OCF, instantaneous OCF, 1 year leading OCF, change in revenues and plant PPEt	• Annual operating cash flows • Total assets at each year end • Annual sales • Current assets • Current liabilities • Book values of plant property and equipment	• Annual Corporate statement of financial position • Annual Corporate statement of comprehensive income • Annual Corporate statement of cash flows
Discretionary AQ	Error term of the regression of AQ on firm size, standard deviation OCF, standard deviation of revenues, the operations cycle of the firm and the incidences of losses over the past five periods to the accruals year.	• Natural logarithm of total assets • 5-year standard deviation of OCF • Natural logarithm of the length of the operating cycle • Number of incidences of losses over past 5 years	• Annual Corporate statement of financial position • Annual Corporate statement of comprehensive income • Annual Corporate statement of cash flows
Innate AQ	Difference between AQ and IAQ	• AQ data • IAQ data	• Annual Corporate statement of financial position • Annual Corporate statement of comprehensive income • Annual Corporate statement of cash flows.

Size factor	the natural logarithm of book asset values at the end of every financial period	• Book asset values of total assets	• The Annual statement of financial position
Value effect	Weighted monthly portfolio ratio of the book value of equity to the market value of equity	• Annual book value of equity • Company capitalization	• Annual Corporate statement of financial position • NSE-trading data
Market effect	Monthly market return premium over risk free rate of return	• Monthly NSE-20 share index • Monthly 91-day TB rates	• NSE-20 Trading data • CBK TB data
Cost of capital	the earnings to price ratio	• Annual EPS data • Market price data	• Corporate annual reports • NSE trading data
AQ return premium	The excess of the difference between the long and short returns for the lowest and highest accrual portfolio deciles respectively and the market, size and value coefficients	• Monthly low and high decile portfolio returns • NSE market monthly return • Monthly small and large capitalization portfolio return premiums • Monthly portfolio ratio of the book value of equity to the market value of equity	• NSE-20 share index • Monthly 91-day treasury bill rates • Monthly company share prices • Monthly company capitalization
Accruals effect	The excess returns of the accruals portfolio return premium over the market return premium	• Accruals from financial statements for portfolio formation • NSE market monthly return • Monthly low accruals portfolio return premium	• NSE-20 share index • Monthly 91-day treasury bill rates • Monthly company share prices • Monthly company

			capitalization
		• Monthly high accruals return premium • Book value of equity to the market value of equity ratio	• Company financial reports
Qualitative accruals quality	Combined influence of relevance, reliability, understandability and comparability variables	• Relevance variables • Reliability variables • Comparability variables • Understandability variables	• Questionnaire data from the heads of statutory audit teams of the qualifying companies

These data is available from the NSE for the entire study period. The data is used for computing monthly company security market returns which in turn is used in computing the various accruals quality decile portfolio returns.

Thirdly, the 91 day Treasury Bill data available from the Central bank of Kenya was collected. This data is instrumental in proxying for the risk free rates of return in the market. This is helpful because asset pricing procedures relate actual returns to the excess returns over the risk free rate and other conditional risk factors. The use of the Fama and French (1993) three factor model required the determination of the risk free rate of return.

The last category of secondary data was collected from corporate historical financial statements specifically the income statement, the statement of financial position and the statement of cash flows. The data about depreciation; plant property and equipment; cash; working capital; total assets; short term liabilities; cash flows from operating activities; revenues and taxes is obtained from these financial statements. Their manipulation to meet the requirements for accruals quality modeling is further described in section 3.6.

3.7   Data Processing and Analysis

Data processing first involved the cleaning of the raw data to ensure that it is consistent with the requirements for estimation and evaluation of accrual quality. The resultant data was then subjected to hypothesis testing based on models identified in this section and the variables defined in Table 3.1. The first step entailed the estimation of both the innate and the discretionary accruals quality metrics among public companies in Kenya. This was critical in order to determine the nature of accruals quality by testing the null hypothesis that discretionary financial reporting accruals quality is not significantly different from the innate financial reporting accruals quality among public firms in Kenya.

To start with accruals quality was taken as one measure that incorporates the effects of both discretionary accruals quality as well as innate accruals quality. It in effect is taken as the five year measure of volatility (standard deviation) of firm specific residuals that emanate from the multiple linear regressions of accruals on five accrual determinant variables. These variables are the one year lagged cash flows from operations (CFO_{t-1}), current period cash flows from operations (CFO_t), one year led cash flows from operations(CFO_{t+1}), the change in revenue between the current year and the past one period (ΔREV) as well as current year gross value of plant, property and equipment (PPE).

The regression equation indicates that the accuracy with which the five determinants of accruals map into the accruals reflects the accruals quality. Accordingly, the higher the precision of mapping of the accrual determinant variables into the current accruals, the greater would be the accruals quality and hence by definition the less would be the volatility of the residual term. This, as indicated above is estimated from the multiple linear regression equation identified in equation 3.1.

$$\Delta WC_{i,t} = \beta_0 A_{i,t}^{-1} + \beta_1 (\frac{CFO}{A})_{i,t-1} + \beta_2 (\frac{CFO}{A})_{i,t} + \beta_3 (\frac{CFO}{A})_{i,t+1} + \beta_4 (\frac{\Delta REV}{A})_{i,t} + \beta_5 \left(\frac{PPE}{A}\right)_{i,t} + \varepsilon_{i,t} \dots (3.1)$$

Here A^{-1} = 1/A which is the standardisation variable for size applied to each of the determinants of accruals, A being the value of assets; CFO is the cash flows from operating activities of a firm; ΔREV is the change in revenue between year t-1 and year t while PPE is the gross value of plant, property and equipment. The variables in overall accruals quality model are standardized by total assets (A) to account for the size effect among the parameters of the sample firms. Working capital is estimated straight away from the regular norms that indicate changes in current assets and current financial obligations of a financial reporting entity. Accordingly change in working capital is equivalent to change in current assets less change in current liabilities between years t-1 and t. The change in working capital is taken as the accruals of the year t. β_1, β_2, β_3, β_4, and β_5 are the coefficients to the 1 year lagging cash flows from operations, current year cash flows from operations, one year leading cash flows from operations, current year change in revenues and plant, property and equipment respectively. They reflect the relative significance and direction on the changes in the one-year working capital relative to the current statement of financial position. β_0 is the threshold determinant of changes working capital that reflects the buffer levels for the changes in working capital.

Once the total accruals quality is estimated from the overall accruals quality model (equation 3.1) it is split into its two components by a further multiple linear regression of the estimated accruals quality onto the five determinants of innate accruals quality. These five determinants have been established from literature to be the size of a firm in the accruals year, the volatility of cash flows from operations in the same year, the volatility of revenue in the accruals year, the operations cycle of the firm and the incidences of losses over the past five periods to the accruals year. These are usually respectively proxied by the natural logarithm of the total assets (LnTA) of the firm, the five year rolling standard deviation of cash flows from operations (δCFO), the rolling five year standard deviations of revenues (δREV), the natural logarithm of the length of

the operating cycle (LnLOOC) and the absolute number of loss incidences (NOLI) over the previous five financial periods to the accrual financial period. These interrelationships are modeled into the innate accruals quality model (equation 3.2) whose residual term is taken as the discretionary accruals quality while the difference in the estimated values from the model are the innate accruals quality.

$$AQ_i = b_0 + b_1 LnTA + b_2 Ln\delta CFO + b_3 Ln\delta REV + b_4 LnLOOC + b_5 LnNOLI + v_i..(3.2)$$

In this respect b_1, b_2, b_3, b_4 and b_5 are coefficients to the total assets (TA), standard deviation of cash flows from operations (δCFO), length of the operating cycle (LOOC), and the number of loss incidences (NOLI) respectively. These are the five determinants of overall accruals quality. They indicate the direction (negative, positive or zero effect) and significance of effect of these five variables on the overall accruals quality (AQ). b_0 indicates the threshold level of overall accruals quality.

To test for the effect of accruals quality on cost of capital as indicated in the first, second and third null hypotheses, the accruals quality rank (AQR), the innate accruals quality rank (IAQR) and the discretionary accruals quality rank (DAQR) are separately augmented in a linear regression of cost of capital on the factors that influence this cost as identified by Palepu (2000) and Francis *et al.* (2005). These factors are identified as the growth in equity (1+g), capital structure s indicated by the debt to assets ratio (DTA), market risk as indicated by the CAPM beta (CAPMβ) and firm size as indicated by total assets (TA). The four factors are consistent with CAPM and the Gordon's model used in determination of the cost of capital. The resultant model identified in equation (3.3) controls for these four factors such that the coefficient on the proxy for accruals quality indicates the effect of accruals quality on cost of equity. The statistical significance of b_5 (the coefficient on the proxy for accruals quality) is determined to evaluate the effect of accruals quality on cost of capital. IAQR is used for hypothesis 1.1 and DAQR for hypothesis 1.2. AQR is used to test the overall effect of total accruals quality on cost of capital for hypothesis 1.3.

$$LnK_{av} = b_0 + b_1 Ln(1+g)_{i,t} + b_2 LnDTA_{i,t} + b_3 LnCAPM\beta_{i,t} + b_4 LnTA_{i,t} + b_5 LnAQR_{i,t} + e \ldots (3.3)$$

Where: K_{av} is the cost of capital taken as the earnings to price ratio-EPR (computed as earnings per share divided by market price per share of the respective firms at the end of every of the 21 financial years in the study.

The variable g is the firm's growth in book value of equity over the proceeding five years.

DTA is the total debt to total assets ratio, a proxy for firm capital structure or leverage.

CAPMβ is the capital asset pricing model beta from five year rolling regressions which indicates market risk.

TA is the total assets, a proxy for firm size while IAQR is the innate accruals quality rank which is a proxy for innate accruals quality.

DAQR is the discretionary accruals quality rank which is a proxy for discretionary accruals quality.

b_1, b_2, b_3, b_4 and b_5 are the coefficients of the growth indicator, leverage indicator, market risk indicator, size and accruals quality indicator respectively. Their values show the direction (negative, zero or positive) and magnitude of effect of these five determinants of cost of capital on the cost of capital. In addition, b_o indicates the threshold or minimum cost of capital for a company in the identified industry or market segment of the Nairobi Securities Exchange.

The study uses natural logarithms in data log transformation because the coefficients on the natural-log scale are directly interpretable as approximate proportional differences. It provides a basis for showing the rate of change in the log-transformed variables equal to changes is the actual variables.

To test the fourth null hypothesis, cost of capital data obtained from the secondary data is related to the accruals quality information from expert audit and analysts' opinion as derived from the questionnaire in Appendix 3. It is taken here that accruals quality is a function of accruals' information relevance, reliability, understandability and comparability. This is evaluated on a likert-type scale of 1 (poorest quality) to 5 (highest quality). To test the internal reliability of the data collection instrument, Cronbach's alpha, is calculated. This reliability statistic is rooted in content analysis and is applicable to various circumstances, including the use of ordinal data and small sample sizes. The value for the Cronbach's needed to be at least 0.70 to make quality scores reliable. Otherwise the questionnaire is accordingly modified to ensure the internal consistency.

Since the component questions on reliability, relevance, understandability and comparability jointly exhaustively explain the quality of accruals information, the likert scale responses were analysed as an interval scale using both descriptive statistics and analysis of the variances for all the ten sectors of companies quoted at the Nairobi Securities Exchange.

The accruals quality index (Y_{AQ}) was then derived from these four qualitative factors as described in the model 3.4.

$$Y_{AQ} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 - - - - - - - - - - - - - - - - - - (3.4)$$

Where X_1 is accruals quality information relevance index; X_2 is accruals quality information understandability index; X_3 is accruals quality information comparability index while X_4 is accruals quality information reliability index. β_1, β_2, β_3, and β_4 are the coefficients to the qualitative relevance, understandability, comparability and reliability indices respectively. They show the magnitude and nature (zero, positive or negative) influence of these four indices on the overall accruals quality index. β_0 reflects the minimum qualitative accruals quality level in a specified industry or market segment.

As a basis for comparison, the accruals qualitative index factors are compared with the accruals quality. This involves regressing accruals quality against the estimated accruals qualitative factors to establish their statistical significant in estimating accruals quality. Once the accruals quality index is obtained, it is augmented in the innate accruals quality model in place of accruals quality rank to establish the effect of the qualitative accruals quality the cost of capital. The statistical significance of b_5 is used in testing null hypothesis 1.4.

The first term of the model 3.4 relates to the relevance of the accruals information. The relevance index of the overall accruals quality index is obtained from part D of the questionnaire. It recognizes that relevance is influenced by predictive value; disclosure of business risk information; the feedback value of information; accounting disclosures on accruals information; the reflection of the fair value of accounting transactions and the timeliness of the accruals information for economic decision making. The questions have an inbuilt check question coded D7 for checking the consistency of the responses from the respondents. The expectation is that the higher the relevance index value, the greater the relevance of the accruals quality information and thereby the higher the accruals quality.

The second component of the accruals quality index is the understandability of the accruals information in financial statements as evaluated by the security analysts in fundamental evaluation equity securities of companies quoted at the NSE. The components of understandability are modeled into part E of the questionnaire. These include the organisation structure of the accruals information in financial statements; the provision of explanatory notes about accruals information in the financial statements; the explanation of business jargon on accruals quality in the financial statements and the use of diagrams, charts and illustrations to explain accruals and other financial information for better understanding. Question E5 in the questionnaire in appendix 3 is a control question for checking the internal consistency of the respondents to information expected from questions E1 to E4. The expectation is that the higher the

91

understandability index value from the respondents, the greater the understandability of the accruals quality information and thereby the higher the accruals quality.

Reliability, the other determinant of accruals quality index, is reflected in the variable X_3. Just like the case of the foregoing two components of accruals quality index, understandability is dependent of six sub-qualities and index factors. These are modeled into question F1 to F6. These are the frequency of statement format changes; the supply of previous financial periods' information to be compared against current period information; the adherence to International Financial reporting standards in portraying accruals information; adherence to legal stipulations in preparing financial statements and hence portraying accruals information; the adherence to industrial norms in portraying accruals and other financial information and the disclosure of the effect of changes in accounting policies. Question F7 in the questionnaire is a control question to verify the consistency of respondents in proving information of the six components of comparability. The expectation is that the higher the reliability index value, the greater the reliability of the accruals quality information and thereby the higher the accruals quality.

The last component in constructing the accruals quality index is reflected in variable X_4 which is used to evaluate the effect of reliability of accruals quality information on the overall accruals' quality perception index by the financial analysts. The seven components modeled into questions G1 to G7 of the questionnaire are the ability of the financial statements to provide balanced information about the financial condition of the business; the external audit opinion and its corresponding trend; the restatement of financial reports and accruals information to reflect changes in reporting standards; completeness of accruals information; the extent of window dressing and accounts manipulation; the ease of adopting new accounting standards in financial reporting and the extent of disclosure of corporate governance information. For consistency purposes, question G8 is added as a check on the responses to the foregoing seven questions of the reliability index. Just like for the case of the other three qualitative factors, the

expectation is that high understandability index value reflect a higher understandability of accruals information and thereby contribute to enhancing the overall qualitative accruals quality.

The trend information on the four components is derived from questions H in the questionnaire. The questions are also used to check the consistency of the information provided Questions D to G. The questionnaire was so deliberately designed as to leave room for other aspects not captured in the foregoing aspects of accruals quality index. These are expected to be captured in the open-ended part of the questionnaire identified by question I.

The fifth null hypothesis with respect to the effect accruals quality on market based cost of capital as represented by market returns is also tested. As a preliminary step, annual accruals quality for each of the sample companies is computed as indicated in model 3.1. To test these hypotheses, the effect of overall, innate, discretionary and qualitative accruals quality is evaluated. Accordingly, all the four categories of accruals quality are separately ranked to form ten buy and hold monthly decile portfolios representing a hedge strategy long in low accrual companies and short in high accrual companies with a holding period of one year after the year end. This implies a portfolio rebalancing based on one year accruals quality but involving monthly decile value weighted portfolio returns. It is found necessary to adjust the accruals with total assets (TA) in order to standardize the accruals and eliminate the size effect since sample companies comprise different sizes. To control for the already established pricing effects, the modified model based on Fama and French (1993) approach is used. It tests for the market, size and value effects as per equation (3.5). The statistical significance of β_0 using the t-statistic at 95% confidence interval is established to test if the low accruals quality has statistically significant return premium (β_0) over the low accruals quality portfolio.

$$R_{L,t} - R_{H,t} = \beta_0 + \beta_1(R_{m,t} - R_{f,t}) + \beta_2 SF + \beta_3 BTMF + \varepsilon_i --------- (3.5)$$

Where:

$R_{L,t}$ represents the monthly security market returns on the lowest accrual decile portfolio

$R_{H,t}$ represents the monthly security market returns on the highest accrual decile portfolio

SF: is the proxy for the size effect determined from the natural logarithm of total assets (LnTA)

BTMF: is the proxy for the value effect taken as the ratio of the book value of equity to the market valuation of equity represented by company market capitalization.

R_{mt} represents the monthly market return generated from the monthly NSE-20 share index. This is taken as the difference in the natural logarithm of NSE-20 index at time t and that at time t-1 (LnNSE-20$_t$ – LnNSE-20$_{t-1}$)

R_{ft} represents the risk free rate of return generated from the monthly 91-day Treasury bill rates.

$(R_{mt}-R_{ft})\beta_1$ represents the market effect on the returns.

β_i are the coefficients to the various return pricing factors i.e. basic return, market risk premium, size factor and value factor for β_0, β_1, β_2, and β_3 respectively.

Decile portfolio returns are the value weighted market returns based monthly prices of the companies quoted at the NSE computed as the difference between the natural logarithms of prices at month t+1 less the natural logarithms of the same prices at month t (LnP$_{t+1}$ – LnP$_t$). Accordingly, the dependent variable is the difference between the long and short returns for the lowest and highest accruals quality portfolio deciles respectively. The same applies for market returns computed from the monthly NSE-20 share index. The size factor is estimated from the asset values and is taken from the natural logarithm of the asset valuations (LnTA). Book to market factor (BTMF) is

taken as the value weighted monthly portfolio ratio of the book value of equity –the shareholders' funds- to the market value of equity.

Finally, to find out the effect of segmental accruals quality on cost of capital for the various segments of the security market of listed companies in Kenya, the classical regression of excess returns of the accruals quality-based portfolio size segments are regressed against the market excess returns. Accordingly, the tests of the effect of overall, innate, discretionary and qualitative accruals' qualities on cost of capital are tested on each of the segments of companies listed at the NSE using the same approach applied to the entire market. The portfolio returns are computed on the log transformed normal market model. The excess return of each size portfolio over the risk free returns are regressed against the market excess returns. It is on the basis of the regression results that the significance of the alpha (of the accruals quality based segment excess returns over market) is tested holding that the market excess returns are a function of the market risk level represented by market beta.

Various statistical tests and procedures are used in the study. To allow for the use of multiple linear regression models 3.1, 3.2, 3.3, 3.4 and 3.5 respectively, preliminary checks to ensure the data presents the best linear unbiased estimators is used. Accordingly, the assumptions of normality, linearity, homoscedasticity, non-multicollinearity and non-serial correlation are checked using the relevant statistics. With respect to normality the Shapiro-Wilk test statistic is used as supplemented with the Kolmogorov-Smirnov test as well as the skewness and kurtosis verifying tests. The Shapiro-Wilk test will identify a normal distribution if the significance value is greater that the level of significance at the chosen confidence interval. Since the 95% level is adopted for the study, this implies that normality is assumed if the significance value is greater than 0.05. The same value applies to the Kolmogorov-Smirnov test of normality. If the skewness and Kurtosis tests are used, normal distribution is attained when the skewness and kurtosis values are less than twice the value of their respective standard errors.

As far as collinearity is concerned, two tests the Tolerance and the Variance Inflation Factor (VIF) tests are used. To carry out the validation test, the Tolerance and VIF values are compared to 1. When the values are close to 1, the data is assumed not to contain statistically significant levels of multicollinearity particularly if it falls between the values of 1 and 5.

The Breusch-Pagan and the Koenker tests are used to test and control for heteroscedasticity. This involves using the Lagrange Multipliers (LM) derived from the test and comparing their computed level of significance with the standard level of statistical significance at the chosen confidence interval. In this study, the t-tests are evaluated at 95% confidence interval. Accordingly, the tests involve comparing the LM values with 0.05, the standard level of significance. The data is assumed to have a homoscedastic random error term if the LM values are higher than the level of significance at the specified confidence interval, in this case 0.05.

The Durbin-Watson d-test is used to check for autocorrelation. When the d-value approximates 2, the conclusion is that there is no indication of a positive or negative first order autocorrelation. With respect to linearity, the scatter plots from the regression output are examined and extreme values eliminated accordingly.

To test the suitability of the models 3.1, 3.2, 3.3, 3.4 and 3.5 for the study data, the coefficient of determination is used. This test statistic indicates the extent the changes in the relevant dependent variables is influenced by the changes in the independent variables indicated in the regression models. Once the suitability is verified, descriptive statistics of the dependent ad independent variables in each of the five models are used to show the nature of the data in terms of central tendency and dispersion. In this case mean, median, range, standard deviation, kurtosis and skewness are used to describe the data on the variables. For comparative evaluation with similar empirical studies, a relative measure of data distribution, the coefficient of variation, is computed by relating the standard deviation of the respective variables data to the mean of that data.

For objective 1 to be realized by running the data on the overall accruals quality model, the statistical significance of the coefficients β_0, β_1, β_2, β_3, β_4 and β_5 respectively of the model variables was tested using the t-statistic at 95% confidence intervals and corresponding degrees of freedom. The conclusions are also supported with the p-value statistic which is compared with 0.05, a level of significance arising from the 95% confidence interval. The null hypotheses are rejected when the t-values are greater than the standard t-values at the specified degrees of freedom from the model. This is also the case when p-values are more than 0.05.

For the second objective of evaluating the effect of discretionary accruals quality on cost of capital, the same procedure used in testing the significance of the coefficients in the first objective wais used. The p-values and t statistic at 95% confidence interval and relevant degrees of freedom were checked against the critical values for the respective coefficients. The explanatory power of the independent variables in the models is verified using the coefficient of determination. The same procedure applies to the third objective where the fifth term is taken as the overall accruals quality rank.

In the case of the fourth objective of evaluating the effect of qualitative accruals quality on cost of capital, the same approach for objective 1, objective 2 and objective 3 was adopted only that the fifth term in the regression model is replaced with the accruals quality index derived from model 3.4. The descriptive statistics of mean, median, variance and coefficient of variation were used to describe the quality of the information from the each of the ten segments of the NSE. For inter-segmental comparison, the F-statistic is used to test for the accruals qualitative aspects quality information in each of the segments. The same t-statistics and p-values were used for all the coefficients in the model at 95% confidence interval. Similarly, the explanatory power of the independent variables is verified using the coefficient of determination.

With respect to the fifth objective, the multiple linear regression model 3.5 adopted followed the same verification approaches for model 3.1, 3.2 and 3.3. Accordingly, the

97

same descriptive statistics of mean, standard deviation, median, skewness, kurtosis, range and coefficient of variation are adopted in determination of the nature of accruals quality return premium, market return premium, the size factor and the book to market factor as the variables in the model. Inferential statistics of t-statistic and p-value were used in evaluating the statistical significance of the independent variables particularly β_0 which shows the significance of the accruals return premium if any. The nature of pricing effect (whether positive or negative) was checked from the sign of the constant term coefficient β_0.

Objective vi which aims at appraising the effect of accruals quality on segmental cost of capital was tested by replicating the tests for objectives 1, 2 and 3 in each of the qualifying segments of the Nairobi securities exchange. Inter-segmental differences in the dependent and independent variables were evaluated on the basis of the F-test by appraising the differences in means and variances best on the analysis of variances (ANOVA) tests.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1   Introduction

In this chapter are presented the findings and discussion thereof of the study based on the objectives and research hypotheses presented in chapter 1. The findings involve both descriptive and inferential statistics of the research models presented in chapter 3. The chapter is organized into eight sections. This first section 4.1 introduces the chapter while section 4.2 explores the procedures involved in the pilot test for the primary data. Section 4.3 and 4.4 reveal the descriptive statistics of accruals quality and cost of capital as study variables respectively. Thereafter, sections 4.5 to 4.9 provide the presentation and discussion of the inferential and supporting descriptive statistics for each of the objectives (i) to (vi) as provided in chapter 1.

4.2   Pilot Test

This sub-section provides information obtained from the and the adjustments made from the pilot study on the qualitative primary data regarding the internal consistency of the measures of reliability, relevance, comparability and understandability of accruals information data from financial statements of public companies in Kenya. These were done for fine-tuning the questionnaire that was used in collecting the primary data used in the study.

As an initial step, a pilot test of the research questionnaire was conducted to ascertain the operational aspect of the questionnaire and ensure questionnaire adequacy and the external and internal consistency of the questions. 10 questionnaires were used in the pilot test. The aspects of concern in the pilot phase of the study were the format of the questionnaire, the clarity of the questions and respondents' consistency in interpreting questions and the open ended aspect of the instrument. To ensure that all aspects of

concern are addressed, the pilot testing phase involved personally administered questionnaires. All the four aspects of accruals quality index were tested in the questionnaire. These are relevance, understandability, comparability and reliability. The pilot test results are indicated in the ensuing paragraphs.

To deal with convenience aspect to the respondents, the piloting phase involved checking the average time taken to fill the questionnaire. It is observed that they took an average time of 14.7 minutes to complete the four-page questionnaire with a standard deviation of 3.59 minutes. This was deemed adequate enough time for the final study and therefore the format of the questionnaire was retained. This short time could be attributed to the clarity of the questions as well as their comprehensiveness since most of the correspondents did not complete the open-ended part of the questionnaire. They noted that the accruals quality perception parameters had all been addressed in the closed ended section of the questionnaire. There was a wide marking range on the 5-point scale adopted in the questionnaire and it was therefore retained in the final study.

As regards the relevance, understandability, comparability and reliability aspects of the accruals quality index, all the ten questionnaires were valid upon testing. Absence of errors could be attributed to the fact that the data collection process involved the personal administration of the questionnaire. This approach was also replicated in the final study. Table 4.1 indicates the initial internal consistency of the questions with respect to four aspects of accruals quality index as measured by the Cronbach's alpha

Table 4.1: Cronbach's Alpha Reliability Statistics on Accruals Quality Factors

	Cronbach's Alpha	Cronbach's Alpha on Standardized Items	N of Items
Relevance	0.869	0.867	7
Understandability	0.746	0.765	5
Comparability	0.817	0.826	7
Reliability	0.594	0.61	9
Reliability**	0.843	0.832	8

** After deleting G9.

The initial findings indicate that the questions used in measuring accruals quality index are internally consistent with respect to relevance, understandability and comparability since all their Cronbach's alpha values are above 0.70, the standard acceptable value for consistency. The respective Cronbach's alpha values for reliability, understandability and comparability were 0.869; 0.746 and 0.817. The value for reliability however was 0.594, which fell below the acceptable limit. This called for some readjustment.

After re-evaluating the questionnaire, question G1 and G9 were identified to be measuring the same aspect of information neutrality. Accordingly this was merged into one question identified as G1 upon which G9 was deleted. Retesting the internal consistency after this procedure provided an acceptable Cronbach's alpha of 0.843 as indicated in Table 4.1. Subsequent to this adjustment, all the accruals quality index measurement questions were verified to be internally consistent and were applied to the overall study.

4.3   Accruals Quality Descriptive Statistics

The first preliminary procedure in the study involved determination of accruals quality for each of the firms listed on the Nairobi Securities Exchange. A firm qualified for analysis based on accruals quality qualifying criteria. Accordingly, firms included in the analysis are those that experienced continuous listing over the years under study. This is

because accruals quality is a five-year measure of volatility (standard deviation) of firm specific residuals that emanate from the multiple linear regressions of accruals on five accrual determinant variables as reflected in the overall accruals quality model. In conformity with this qualification, firms suspended from trading over the study period, the de-listed ones and those whose listing duration was incapable of computing accruals quality were excluded from the analysis. In the overall, 39 firms met this criterion and are used in the analysis. This represents 63.9 percent of the firms listed as at December 31, 2013. When the pilot firms are included, this represents 80.3% of the listed firms. The sample size is there considered representative for drawing generalizations particularly because all the segments of the NSE are represented in the sample. The computation of accruals quality also indicates that the values are only available from 1997 given that the initial five-year moving volatility of the random disturbance terms from overall accruals quality model relate to the first 5 years 1993 through 1997.

To start with, accruals quality is taken as one measure that incorporates the effects of both discretionary accruals quality as well as innate accruals quality. Accordingly, the study presents the descriptive statistics for overall accruals quality, the innate accruals quality and the related discretionary accruals quality. Before estimating the accruals quality the robustness of the model used to estimate accruals quality for individual firms, segments of the NSE and the entire NSE market was tested.

4.3.1 Overall Accruals Quality

Although there are 12 segments of the NSE namely Agricultural; Automobiles and Accessories; Banking; Commercial and Services; Construction and Allied; Energy and Petroleum; Insurance; Investment; Investment Services; Manufacturing and Allied; Telecommunications and Technology and Growth & Enterprise Market segment, only nine segments met the qualifying criteria such that the last three are relatively new segments for which it is impossible to estimate the accruals quality. Before using the overall accruals quality model for estimation of segmental and overall accruals quality,

102

its reliability was established by regressing annual changes in working capital on the variables whose changes map into the working capital changes. Table 4.2 indicates the regression output results.

The results indicate the model output as:

$$\Delta WC = 0.035 - 1.208CFO_{t-1} + 0.276CFO_t - 0.485CFO_{t+1} + 0.082\Delta REV_t - 2.21PPE_t$$

The coefficient estimates β_i, the R-square and the adjusted R-square values are based on the averages of 1993-2013 annual estimates of the proxies of one-year leading cash flows from operating activities (CFO_{t-1}); event year cash flows from operations (CFO_t), one-year lagging cash flows from operations (CFO_{t+1}); change in revenues over successive financial periods (ΔREV) and values of plant, property and equipment (PPE). The values have been scaled using the total values of assets for each of the respective companies.

In addition, the model was tested with respect to whether it represented the best linear unbiased estimation of accrual quality. In this respect model validation tests of normality, multicollinearity, heteroscedasticity and linearity were undertaken. The Kolmogorov-Smirnov statistic was used to verify the normality assumption. The results indicate a value of 0.106 with a corresponding significance value of 0.200. Since this value is greater than 0.05, the null hypothesis of non-normality for the model is rejected with the conclusion that the model residual values conform to the normality expectations. This conclusion is corroborated by the Shapiro-Wilk statistic of 0.969 with a significance probability value of greater than 0.05. This is further confirmed by the skewness and kurtosis statistics of the unstandardised residuals that show values of 0.088 and -0.436 values both of which are less than twice of the respective standard errors of 0.501 and 0.972 respectively.

CFO_{t-1}, CFO_t, CFO_{t+1}, ΔREV and PPE which are the predictor variables in the overall accruals quality model were tested with respect to collinearity. The resultant Tolerance

values are 0.819, 0.827, 0.941, 0.918 and 0.868 respectively. The observation that they are all close to 1 implies the absence of a statistically significant multicollinearity of the predictor variables with accruals quality. The evidence of absence of statistically significant collinearity is further indicated by the corresponding variance inflation factor (VIF) values of 1.272, 1.209, 1.066, 1.058 and 1.152 for the respective variables. Again all these values are close to 1 and far much less than 5. This diagnostic test confirms that the model is devoid of a statistically significant multicollinearity problem.

Table 4.2: Market Accruals' Quality Regression Output

Adjusted R Square	0.783854					
Standard Error	0.032518					
Durbin-Watson d	1.972					
Kolmogorov-Smirnov	0.106	*0.200				
Shapiro-Wilk	0.969	*0.719				
Koenker LM	5.552	*0.352				
Breusch-Pagan LM	2.766	*0.736				
Observations	21					

ANOVA						
	df	SS	MS	F	Significance F	
Regression	5	0.081983	0.016397	15.50598	1.83E-05	
Residual	15	0.015862	0.001057			
Total	20	0.097845				

					Collinearity Statistics	
	Coefficients	Standard Error	t Stat	P-value	Tolerance	VIF
Intercept	0.035028	0.013637	2.568682	0.02139		
CFO_{t-1}	-1.20831	0.158315	-7.63229	1.53E-06	0.819	1.221
CFO_t	0.276246	0.117731	2.346421	0.033108	0.827	1.209
CFO_{t+1}	-0.48482	0.062226	-7.79127	1.19E-06	0.941	1.066
ΔREV	0.082237	0.03798	2.165259	0.046897	0.918	1.089
PPE_t	-2.21049	0.279677	-7.90372	9.99E-07	0.868	1.152

*P values of more than 0.05 indicates normality

The model also expects the error term to be homoscedastic by having a constant variance for the error term. In this respect, linear heteroscedasticity was tested using the Breuch-Pagan test and the Koenker test. The respective lagrange multipliers (LM) of 2.766 and 5.552 indicate absence of heteroscedasticity given that the respective significance values of 0.736 and 0.352 are both higher than 0.05. The Durbin-Watson test was used to interrogate serial correlation in the data. The d value is approximately 2, an indication that there is neither positive nor negative first order autocorrelation.

The coefficients β_i, coefficient of determination and the adjusted R-square values are based on the averages of the 1993-2013 annual estimates of the overall accruals quality model parameters whose values are indicated in Appendix 6. The output indicates that all the change in working capital variables have a high joint explanatory power of the changes in working capital given the high value of the adjusted r-square value of 0.7839. This reflects the finding that 78.39% of the variation in working capital is explained by the variations in the five model variables (one-year lagged cash flows from operations, current year cash flows from operations, one-year leading cash flows from operations, change in revenues and the values of plant property and equipment). All the corresponding coefficients are statistically significant at 95% confidence interval given that all the P-values are less than 0.05 and that all the t values are above ± 2.131. The fact that F value of 15.51 is higher than the critical value of 0.000 implies that it is statistically significant and therefore confirms that the model fits the data well and it that it can therefore be relied upon in estimating accruals quality for companies quoted at the NSE.

The findings from Table 4.2 indicate that the current year cash flows from operations (CFO_t) and change in revenues over two successive financial periods (ΔREV) are positive predictors of working capital. This conclusion is arrived at from the coefficients of these variables from the overall accruals quality regression model. This is in addition to the model intercept which also provides a positive coefficient value. The remaining variables identified as one year lagging cash flows from operations (CFO_{t-1}), one year

leading cash flows from operations (CFO$_{t+1}$) and the value of plant, property and equipment are all negatively related with the working capital as signified by the negative values of their corresponding coefficients in Table 4.2.

The coefficients in the output model are influenced by the variable correlations as indicated by the correlation coefficients in table 4.3. The values indicate that the variables have relatively low levels of correlation among themselves

In a nutshell, changes in working capital have a low positive correlation with one-year leading cash flows, current-year cash flows and changes in revenues. The one-year lagging cash flows and the values of plant, property and equipment bear negative association with changes in cash flows as indicated by the negative coefficients of correlation.

Table 4.3: Correlation among Market Accruals Quality Factors

	ΔWC	CFO_{t-1}	CFO_t	CFO_{t+1}	ΔREV	PPE_t
ΔWC	1					
CFO_{t-1}	0.03082	1				
CFO_t	0.22026	-0.14754	1			
CFO_{t+1}	-0.1083	-0.090940	0.11812	1		
ΔREV	0.33659	-2E-06	0.35422	4.16E-07	1	
PPE_t	-0.21931	-0.23751	0.14186	-0.13659	4.57E-06	1

The overall accruals quality model was subsequently used to estimate accruals quality each the companies quoted at the NSE, the respective nine qualifying segments as well as for the overall market. As indicated in the research methodology, accruals quality is taken as the five-year rolling standard deviations of the error values from the overall accruals quality model. Table 4.4 is presented in two panels A and B.

Panel A indicates the summary data of accruals quality for the NSE over the study period while Panel B reflects the corresponding descriptive statistics. The estimated accruals quality values for the qualifying segments are shown in Appendix 7. Accordingly, the overall accruals quality model was run separately for each of the companies, each of the segments as well as on a general basis for the market.

Table 4.4: Market Accruals Quality Descriptive Statistics

Panel A: Accruals Quality Trend			
Year	**AQ**	**Year**	**AQ**
1997	0.24875	2006	0.20453
1998	0.28750	2007	0.20552
1999	0.30421	2008	0.18853
2000	0.23977	2009	0.23693
2001	0.20452	2010	0.27018
2002	0.20490	2011	0.24066
2003	0.18417	2012	0.23045
2004	0.13585	2013	0.22555
2005	0.15466		
Panel B: Accruals Quality Descriptive Statistics			
Mean			0.221568
Median			0.225545
Standard Deviation			0.043829
Kurtosis			0.031733
Skewness			-0.027789
Minimum			0.135848
Maximum			0.304213
Confidence Level (95.0%)			0.022535

The descriptive findings on the overall accruals quality of companies quoted at the NSE show a high value of 0.304213 and a low value of 0.135848 over the twenty one year study period. This provides a range 0.168365 which is less than the average accruals quality of 0.221568. This statistic points towards a low level of dispersion in accruals quality over the study period. This indicates that there is a tight financial reporting regulatory regime that provides less room for creative accounting that would otherwise inflate the overall accruals quality of financial reports. It further indicates that whereas

accruals quality is relatively poor, the level of volatility is low such that the discretionary aspects are not well defined for the companies quoted at the NSE and the innate aspects of accruals quality dominate. This aspect becomes well defined when the overall accruals quality is split further into the discretionary accruals quality and innate accruals quality.

This is partly corroborated by negatively skewed distribution of the accruals quality values around the mean. This indicates that on average, high accruals quality (with low AQ values) is more pervasive that low accruals quality (with high AQ values). This is more so the case given that the excess Kurtosis of 0.032 is not significantly different from zero, pointing towards a distribution not considerably different from Gaussian.

Comparing the mean and standard values of accruals quality from Panel B of Table 4.4, a coefficient of variation of 0.1978 is ascribed to the data. This provides a variability of approximately 0.2 for every unit change in accruals quality. This affirms the relative stable nature of accruals quality among the overall financial reporting of the companies quoted at the NSE. This is confirmed from the trend curve indicated in Figure 4.1.

Evaluating the foregoing characteristics of accruals quality can be compared with similar information from other regulatory regimes. Wong (2009) while studying the pricing effect of earnings quality in Australia over the period 1991 to 2007, with accruals quality as one of the variables, ascertains an accrual quality of 0.0269. This when compared with a standard devaiation of 0.0363 translates to a coefficient of variation (CV) of 1.349. In a different study over the period 1988 to 2007, Perotti and Wagenhofer (2014) while evaluating the relationship between earnings quality and excess returns in the USA establish a mean of 0.0371 and a standard deviation of 0.0917. This provides a relatively high CV of 2.472. A similar study by Wysocki (2008) provides a coeffieicnt of variation of 5.5.
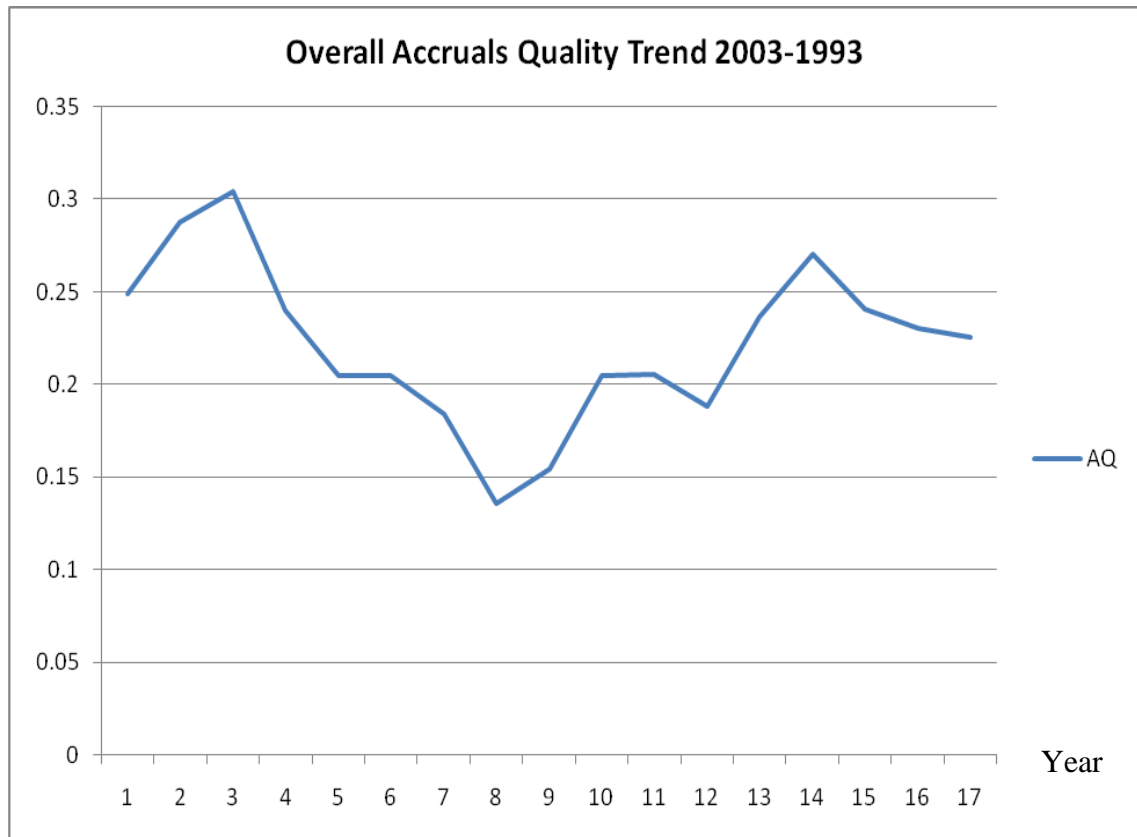
Figure 4.1: NSE Companies' Accruals Quality Trend

Demirkhan *et al.* (2012) find a mean and meadian of accruals quality of 0.0479 and 0.0404 respectively when they study diversification aspects of accruals quality of the Compustat database over the period 1984 to 2003 for single segment firms. Single segment firms are comparable to those quoted at the NSE which operate in the specified segments of the NSE only.

All these findings when compared to the NSE case over the 1993 to 2013 period provides evidence that NSE has a comparatively poor accruals quality than firms quoted in other financial markets. In addition, the comparative studies reveal that whereas the level of accruals quality among the companies quoted at the NSE is relatively poor compared to other financial markets, the volatility in the quality of accruals is

109

comparatively very small. A CV of 0.1978 is far lower than those of 1.349, 2.472 and 5.5 derived from the Wong (2009), Perotti and Wagenhofer (2014) and Wysocki (2008) respectively.

From a segmental perspective, accruals quality variables were aggregated for each of the companies listed in a segment upon which the regression was run and the statistical significance of each of the parameters in overall accruals quality model established. Accrual quality values were subsequently computed as indicated in Appendix 7. The regression outputs for each of the qualifying segments of the NSE are indicated in Table 4.5. The results indicate that just like for the overall NSE market, the accruals quality model is robust for all the qualifying segments of the NSE. This is confirmed by the high coefficient of determination values and the statistically significant F-values for all the nine segments.

From an individual perspective, the model best fits the Commercial and Services segment of the NSE. This is illustrated by the fact that 76.9% of the changes in working capital are explained by the model parameters as shown by the R-square value of 0.7689. In addition, the P-values of all the coefficients in the model are well below the statistical significance level of 0.05 just the same way all the t-values are above the statistical significance level of ±2.131. This could perhaps be best explained by the trading model of the companies in this sector which are characterized by heavy working capital and well as a combined cash and accrual oriented business model.

The model also fits well in the rest of the segments with a coefficient of determination of above 0.75 and well as high R^2 adjusted values. Four of the five working capital parameters have statistically significant P and t-values in 5 of the remaining segments. These are the Manufacturing; the Construction and Allied; the Automobile and Accessories; the Agricultural; the Insurance as well as the Energy and Petroleum segments. The segments also include companies that largely apply the accrual model of accounting because of the nature of their business.

Table 4.5: Segmental Accruals Quality Regression Output

	Comm	Manuf	Energy	Auto	Constr	Agric	Inves	Ins	Bank
R^2	0.7689	0.8673	0.8001	0.7697	0.8774	0.7684	0.8146	0.7712	0.7927
Adj. R^2	0.6919	0.8231	0.7335	0.5924	0.8365	0.6911	0.7528	0.6949	0.7236
SE	0.0800	0.0312	0.0444	0.0781	0.1516	0.2238	0.1304	0.0394	0.0126
F	9.9809	19.60867	12.0081	4.3594	21.4722	9.8510	13.1810	10.1118	11.473
Sig.F	0.0002	0.0000	0.0000	0.0119	0.0000	0.0002	0.0000	0.0002	0.0001
β_0	-3.8397*	4.0724*	2.6278*	-4.4697*	4.7369*	-1.0985	2.7061*	2.6058*	3.2463*
	(0.0016)	(0.0010)	(0.0190)	(0.0005)	(0.0003)	(0.2893)	(0.0163)	(0.0199)	(0.0054)
β_1	-3.1794*	-3.7844*	-3.9524*	-2.6919*	1.4593	1.0116	0.2133	-3.7844*	-0.6515
	(0.0062)	(0.0018)	(0.0013)	(0.0171)	(0.1651)	(0.3278)	(0.8340)	(0.0018)	(0.5246)
β_2	-3.3951*	-0.8505	-2.2772*	0.1973	-2.4316*	2.9555*	-2.9495*	-0.8505	-3.9443*
	(0.0039)	(0.4084)	(0.0379)	(0.8463)	(0.0280)	(0.0098)	(0.0099)	(0.4084)	(0.0013)
β_3	2.5460*	-3.8159*	-4.0143*	2.2737*	2.4559*	-2.9482*	1.1891	-3.8159*	1.4022
	(0.0022)	(0.0017)	(0.0011)	(0.0381)	(0.0262)	(0.0100)	(0.2529)	(0.0017)	(0.1812)
β_4	3.1075*	2.5467*	1.85204	2.0296	4.6869*	4.2090*	3.7358*	2.5467*	5.7946*
	(0.0072)	(0.0224)	(0.0838)	(0.0605)	(0.0003)	(0.0008)	(0.0020)	(0.0223)	(0.0000)
β_5	5.4083*	-4.5080	-4.6323*	4.1720*	-9.0370*	3.7056*	-2.5802*	-4.5080*	0.0819
	(0.0001)	(0.0004)	(0.0003)	(0.0008)	(0.0000)	(0.0021)	(0.0209)	(0.0004)	(0.9358)

*Indicates significance of the t-statistic at 95% confidence interval. The P-values are indicated in parentheses. β_0, β_1, β_2, β_3, β_4 and β_5, are the estimated coefficients of the model intercept, one-year lagging cash flows from operations (CFO_{t-1}), Current-year cash flows from operations (CFO_t), one-year leading cash flows from operations (CFO_{t+1}), Change in revenues ($\Delta REV.$) and Plant, Property and Equipment (PPE_t) respectively.

The model also fits well for the Investment and Banking segments although their business model varies widely from the other companies. This perhaps explains why two variables (one-year lagging cash flows and one year lagging cash flows) for the investment segment and three variables (plant, property and equipment; one-year lagging cash flows and one year lagging cash flows) are not statistically significant for these segments. However, their joint influence with the other variables is still significant owing from the large R-Square values. Excluding the both of the statistically insignificant variables for the investment segment lowers the R^2 value to 0.7955 although it leaves all the remaining variables statically significant at 95% confidence interval (t-values of 2.5782; -2.8809; -6.8381 and -2.3475 for β_0, β_2, β_4 and β_5

respectively). Conversely leaving out the proxy for the one year lagging cash flows only still has β_3 at a statistical insignificant value of 1.2577 just the same way excluding the proxy for the one-year leading cash flows from operations leaves out a statistically insignificant β_1 at -0.34086 for the t-value.

When the banking sector is subjected to the same treatment by excluding one-year leading cash flows, this reduces the R^2 to 0.7868 while still maintaining β_3 and β_5 with statistically insignificant values of t of 1.4979 and -0.1488 respectively. When one-year lagging cash flow variable is excluded from analysis, R^2 falls to 0.7655 while maintaining β_1 and β_5 at statistically insignificant respective t-values of -0.7655 and 0.3941 respectively. The same applies to excluding plant property and equipment from the regression because it still returns statistically insignificant because β_1 and β_3 t-values at -0.6842 and 1.5184 respectively. Leaving out all the three variables provides t-values of 3.4574, -4.1081 and 5.9979 β_0, β_2 and β_4 albeit at a reduced R^2 of 0.7566.

From the foregoing observations, the null hypothesis that one-year leading cash flows from operations, current cash flows from operations, one-year leading cash flows from operations, changes in revenues and investment in plant property and equipment do not explain working capital changes in therefore rejected. This means that the accruals quality model is applicable to the NSE segments. Accordingly, the descriptive statistical properties of the resultant accruals quality values for each of the years and each of the NSE segments over the study period are presented in Table 4.6.

The mean values indicate that the Investment segment has the poorest accruals quality with the highest accruals quality average values of 1.2284. The banking segment of the NSE has the lowest accruals quality values at only 0.0994. All of the remaining segments all have values of not higher than 0.5230 registered by the Insurance segment. With a coefficient of variation of 1.0723, the insurance segment portrays the highest level of volatility in the quality of reporting while the commercial and services and the Banking with coefficients of variations of 0.2852 and 0.1437 represent the most stable in

terms of the quality of the reported accruals in their financial statements. Since the rest of the segments register a coefficient of variation of between 0.4263 and 0.5522, the findings show a relative stability in accruals quality for companies listed at the Nairobi Securities Exchange.

Table 4.6: Segmental Accruals Quality Descriptive Statistics

	Const	Auto	Energy	Agric	Comm	Manuf	Bank	Insu	Inve
Mean	0.1326	0.4403	0.5136	0.1016	0.1104	0.1274	0.0994	0.5230	1.2284
Median	0.0888	0.3916	0.6402	0.1141	0.1107	0.1351	0.1054	0.2006	1.0815
S.D.	0.0732	0.2183	0.2254	0.0433	0.0315	0.0578	0.0143	0.5608	0.6527
CV	0.5522	0.4957	0.4388	0.4263	0.2852	0.4540	0.1437	1.0723	0.5314
Range	0.2037	0.7199	0.6045	0.1119	0.0985	0.1686	0.0471	1.3282	1.8511
Min.	0.0654	0.2365	0.1805	0.0463	0.0626	0.0444	0.0663	0.1311	0.4398
Max.	0.2690	0.9564	0.7850	0.1582	0.1610	0.2130	0.1134	1.4592	2.2909
95%Conf.	0.0377	0.1122	0.1159	0.0223	0.0162	0.0297	0.0073	0.2883	0.3356

ANOVA									
Source of Variation	SS	Df	MS	F	P-value	F crit			
Between Groups	18.92788	8	2.365985	25.02975	7.67E-24	2.003251			
Within Groups	13.61188	144	0.094527						
Total	32.53976	152							

The statistical independence of the accruals quality in each of the nine segments of the NSE is confirmed by an F-value of 25.02975 with a correspondingly very low P-value. The null hypothesis that the accruals quality in each of the segments is not significantly different is therefore rejected. It therefore implies that separate segmental analysis of innate and discretionary aspects of accruals quality can be undertaken. It also provides the basis of analyzing data to achieve the fifth objective of the study and indicated in chapter 1. The innate and discretionary aspects of the data are evaluated in the ensuing subsection.

On the basis of the coefficient of variation of accruals quality, which can be used to measure the relative aspects of accruals quality, the segments are ranked in their respective order from the highest to the poorest accruals quality as: Banking (0.1437);

Commercial & Services (0.2852); Manufacturing & Allied (0.4540); Agricultural (0.4263); Energy & Petroleum (0.4388); Automobiles & Accessories (0.4957); Investment (0.5314); Construction & Allied (0.5522) and Insurance (1.0723) segments.

Whereas the Uysal (2013) financial institutions accruals quality framework was adopted n this study, empirical evidence indicates that some researchers prefer to excludes the financial segments in analysis (Doyle, Ge, & Mcvay, 2007; Ashbaugh-Skaife *et al.*, 2008; Aldermen, 2011; Van de Poel and Vanstraelen, 2011; Demirkhan, Radhakrishnan, & Urcan, 2012; Lobo, Song, and Stanford, 2012; Ittonen, Peni & Vahamaa, 2013). When the exclusion approach is adopted by excluding the banking, investment and insurance segments, the Commercial & Services segment emerges as the best at portraying accruals quality while the construction segment of the NSE has the poorest record at portraying accruals quality.

The rank order could be attributed to the nature of companies listed in each of the segments of the NSE. The Banking segment is perhaps ranked top largely because of the stringent regulations imposed by the Central Bank of Kenya. Banks are in this respect expected to observe strict regulations in addition to quarterly financial reporting (CBK, 2015). The Insurance segment comes last possibly due to the long cash conversion cycles involved given that the insurance business is mostly long term in nature.

4.3.2 Innate Accruals Quality

Innate accruals quality was estimated by regressing accruals quality on the five variables that determine innate accruals quality. These five determinants are the size of a firm in the accruals year as indicated by total assets (TA), the volatility of cash flows from operations in the same year (δCFO), the volatility of revenue (δREV) in the accruals period, the length of the operations cycle of the firm (LOOC) and the number of loss incidences (NOLI) over the past five periods to the accruals year. Before using the innate accruals quality model for estimation of individual, segmental and overall innate accruals quality, its reliability was established by regressing annual accruals quality on

these five variables. The regression results are indicated in Table 4.7. It results in the output indicated as:

$$AQ = -1.308 + 6.71LnTA - 0.366Ln\delta CFO + 0.591Ln\delta REV + 3.35LnLOOC - 0.126LnNOLI$$

Just like for the case of the overall accruals quality model that was used to estimate accruals quality, the assumptions invoked in multiple linear regression to identify the best linear unbiased estimation of innate accruals quality were tested for the innate accruals quality model. Accordingly, the model validation tests of normality, multicollinearity, heteroscedasticity, linearity and serial correlation were undertaken on the model to ensure the validity of the model for innate accrual quality estimation. The tests apply to discretionary accruals quality as well since the innate accruals quality model is used in estimating both innate and discretionary accruals qualities.

The Kolmogorov-Smirnov, kurtosis, skewness and Shapiro-Wilk statistics were used to verify the normality assumption. The Kolmogorov-Smirnov statistic returned a value of 0.151 with a significance probability value of 0.200 which is greater than the critical value of 0.05. This is an indication that the model data and residual values are normally distributed around the mean. To support this evidence, the Shapiro-Wilk statistic of 0.953 has a significance value of 0.506 which is equally above the critical level of 0.05. The normality conformance conclusion is further corroborated by the skewness and kurtosis statistics of the unstandardised residuals that show values of 0.274 and 1.628 values of which are less than twice of the respective standard errors of 0.550 and 1.063 respectively. The four tests confirm that the innate accruals quality model conforms to the normality assumption of the multiple linear regression estimation model for innate accruals quality.

The collinearity among the predictor variables in the innate accruals quality model was also tested using Tolerance and VIF statistics. The tolerance values for LnTA, LnδCFO, LnδREV, LnLOOC and LnNOLI are 0.7, 0.865, 0.652, 0.713 and 0.505 respectively. All the values fall close to 1 an indication of absence of statistically significant

multicollinearity for the first four and a moderate acceptable level for the last variable. The corresponding VIF values of 1.43, 1.156, 1.533, 1.402 and 1.981 are all close to 1 and all fall between 1 and 5 which corroborates the conclusion derived from the Tolerance statistics. These diagnostic tests therefore provide the evidence that the innate accruals quality model conforms to acceptable level multicollinearity.

Table 4.7: Market Innate Accruals Quality Regression Output

Adjusted R Square	0.85485					
Standard Error	0.01670					
Durbin-Watson	2.314					
Kolmogorov-Smirnov	0.151	*0.200				
Shapiro-Wilk	0.953	*0.506				
Koenker	5.660	*0.341				
Breusch-Pagan	8.076	*0.152				
Observations	17					

ANOVA						
	Df	SS	MS	F	Signf. F	
Regression	5	0.02767	0.00553	19.84565	3.61E-05	
Residual	11	0.00308	0.00028			
Total	16	0.03074				

					Collinearity Statistics	
	Coeffs	Std Error	t Stat	P-value	Tolerance	VIF
Intercept	-1.30815	0.22075	-5.92592	9.9E-05		
LnTA	6.71142	0.99724	6.73002	3.2E-05	0.700	1.429
LnδCFO	-0.36558	0.07540	-4.84864	0.00051	0.865	1.156
LnδREV	0.59089	0.18995	3.11078	0.00991	0.652	1.533
LnLOOC	3.34984	0.67056	4.99560	0.00041	0.713	1.402
LnNOLI	-0.12570	0.05220	-2.40822	0.03472	0.805	1.242

To further verify the applicability of the innate accruals quality model in estimating innate accruals quality, linear heteroscedasticity was also checked through the Breuch-Pagan and the Koenker tests. The respective lagrange multipliers (LM) of 8.076 and

116

5.660 indicate absence of heteroscedasticity given that the respective significance values of 0.152 and 0.341 are both higher than 0.05. The Durbin-Watson test was used to interrogate serial correlation in the data. The d value is approximately 2, an indication that there is neither positive nor negative first order autocorrelation.

The coefficient estimates β_i, the R-square and the adjusted R-square values are based on the averages of 1997-2013 annual estimates of the natural logarithm of total assets (LnTA); natural logarithm of the five year moving standard deviations of cash flows from operations (LnδCFO); natural logarithm of the five-year moving standard deviations of revenues (LnδREV); natural logarithm of the length of the operating cycle (LnLOOC) and the natural logarithm of the number of loss incidences on a moving five-year basis (LnNOLI). The values have been scaled using the total values of assets for each of the respective companies.

The findings indicate that total assets, change in revenues and length of the operating cycles are positive indicators of innate accruals quality while volatility of cash flows from operations and the number of loss incidences are negative predictors of innate accruals quality for the companies quoted at the NSE over the study period. This is verified from the implied signs on the predicted coefficients of these indicators of accruals quality over the study period. This is in line with the findings of Francis *et al.* (2005) whose study indicated that a significant portion of accruals quality reflect economic fundamentals.

From the Australian environment, Gray, Koh and Tong (2009) find that all the factors apart from business size are positive predictors of accruals quality. In their study, size had a negative coefficient. In the USA, Demirkhan *et al.* (2012) show that save for the size indicator that had a negative coefficient, all the other four innate accruals quality variables had positive coefficients that were all statistically significant. The contrast in these findings with those in this study can however be seen from the fact that the market sizes are very different. The study by Gray, Koh and Tong (2009) for instance

incorporated 509 firms while this study is limited by the number of qualifying listed firms to only 39.

The coefficients β_i, coefficient of determination and the adjusted R-square values are based on the averages of the 1997-2013 annual estimates of the innate accruals quality model parameters whose values are indicated in Appendix 8. The output indicates that all the innate accruals quality variables have a high joint explanatory power of the changes in accruals quality given the high value of the adjusted coefficient of determination of 0.8548 which reflects the finding that 85.48% of the changes in accruals quality are indicated by the model variables. All the corresponding coefficients are statistically significant at 95% confidence interval given that all the P-values are less than 0.05 `and that all the t values are above ± 2.179. The fact that F value of 19.846 is greater than the critical F of 0.000 shows that it is statistically significant and therefore confirms that the model fits the data well and it can therefore be relied upon in estimating innate and discretionary accruals qualities for companies quoted at the NSE in the respective segments.

The coefficients in the output model are influenced by the variable correlations as indicated by the correlation coefficients in Table 4.8. The values indicate that there is a varying level of correlation among the accruals quality variables. Accruals quality seems to have the highest level of positive correlation with variations in revenues as shown by the Pearson's coefficient of correlation of 0.559. On the flipside, the highest level of negative correlation is between accruals quality and the reported number of loss incidences over the accruals quality period. This is intuitively plausible because the higher the number of losses, the greater the possibility of not accurately reflecting accruals in the reported earnings figures.

Having ascertained its reliability, the model was subsequently used to estimate innate accruals quality for each the companies quoted at the NSE, the respective nine qualifying segments as well as for the overall market. As indicated in the research

118

methodology, innate accruals quality is taken as the estimated values on the regression of accruals quality of the five accruals quality factors (natural logarithm of total assets, natural logarithm of the standard deviation of cash flows from operations, the natural logarithm of standard deviation of revenues, the natural logarithm of the length of the operating cycle and the natural logarithm of the number of loss incidences) on a five-year rolling basis. Accordingly, the innate accruals quality regression model was run separately for each of the companies, each of the segments as well as on a general basis for the market.

Table 4.8: Correlation among Market Innate Accruals Quality Factors

	AQ	LnTA	LnδCFO	LnδREV	LnLOOC	LnNOLI
AQ	1					
LnTA	0.263646	1				
LnδCFO	-0.29632	0.197436	1			
LnδREV	0.558917	-0.12117	-0.0974	1		
LnLOOC	0.37261	-0.42378	0.088318	0.108088	1	
LnNOLI	-0.4214	0.376386	-0.10821	-0.54428	-0.42795	1

The findings for the overall market are indicated in Table 4.9 which is presented in two panels A and B. Panel A indicates the summary data of the innate accruals quality for the NSE over the study period while Panel B reflects the corresponding descriptive statistics. The estimated innate accruals quality values for the qualifying segments are shown in Appendix 9.

The measures of central tendency, dispersion, kurtosis and skewness indicate that the innate accruals values are relatively high when compared with other reporting regimes. Just like the case of overall accruals quality however, the relatively low accruals quality is not very volatile. The mean of 0.221568 for innate accruals quality at 95% confidence interval can be compared with Westerholm (2011) who showed the mean for the US Market over 1970-2006 period as 0.058. This indicates that the quality of innate accruals

quality in the USA is far higher than that exhibited by the companies quoted at the NSE by almost four times.

Table 4.9: Market Innate Accruals Quality Descriptive Statistics

Panel A: Innate Accruals Quality Trend			
Year	*IAQ*	*Year*	*IAQ*
1997	*0.26152*	2006	*0.21307*
1998	*0.25564*	2007	*0.20961*
1999	*0.29410*	2008	*0.19555*
2000	*0.27042*	2009	*0.24246*
2001	*0.20600*	2010	*0.25092*
2002	*0.19174*	2011	*0.24913*
2003	*0.18771*	2012	*0.22928*
2004	*0.13361*	2013	*0.21942*
2005	*0.15649*		
Panel B: Innate Accruals Quality Descriptive Statistics			
Mean			*0.221568*
Median			*0.219421*
Standard Deviation			*0.041585*
Kurtosis			*-0.026534*
Skewness			*-0.382105*
Minimum			*0.133608*
Maximum			*0.294099*
Confidence Level (95.0%)			*0.021381*

The corresponding standard deviation in the US market from the Westerholm (2011) study of 0.06 however translates a coefficient of variation of 1.0345 that compares poorly with 0.1877 from the NSE companies. Further, using different compustat data, Johnston (2009) contrary to the findings in this study reveal an innate accruals quality of -0.076 with a corresponding standard deviation of 0.05. This translates to a relative measure of volatility (CV) of 0.6579. These when compared with the findings in this study indicate that whereas the innate accruals quality is poor in the Kenyan market, there is a great level of stability as indicated by the low CV. These stability levels when

compared with the other measures of distribution over the study period show a negative level of skewness. This is indicated in figure 4.2.

The findings show a narrow range of dispersion of 0.160490 still way above the levels of innate accruals quality from US and Compustat data (Westernholm, 2011 & Johnston, 2009). The conclusion that can be drawn from this finding is that the industry environment of financial reporting provide poor innate accruals quality although tight financial reporting regulatory regime in Kenya is relatively stable conditions given that the variations in innate accruals quality is not as enhanced as those reported in the foregoing studies. The findings could perhaps be attributed to the small size of the market given that over the study time only about five dozen companies are listed at the NSE compared to the other financial markets.
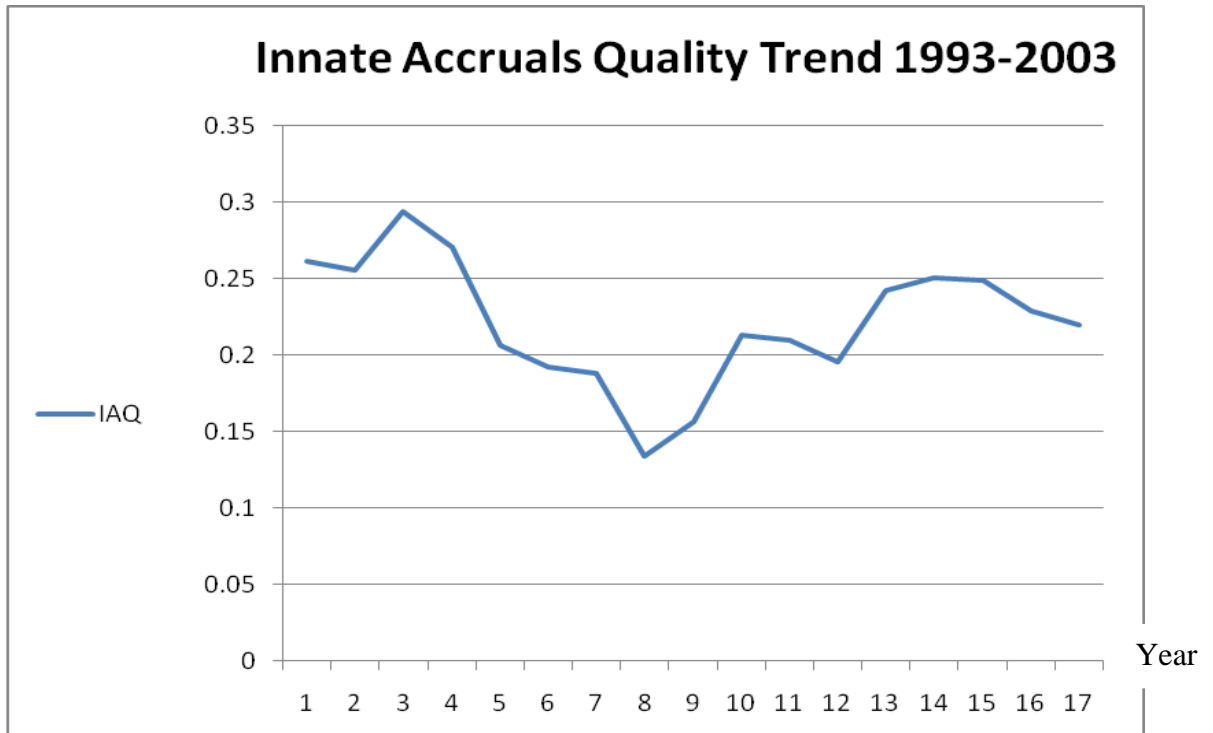
Figure 4.2: Overall Innate Accruals Quality Trend

From a segmental perspective, innate accruals quality variables were aggregated for each of the companies listed in a segment upon which the regression was run and the statistical significance of each of the parameters in the innate accruals quality model established. Innate accrual quality values subsequently computed are indicated in Appendix 9. The regression outputs for each of the qualifying segments of the NSE are indicated in Table 4.10.

Table 4.10: Segmental Innate Accruals Quality Regression Output

	Comm	Manuf	Energy	Auto	Constr	Agric	Inves	Ins	Bank
Adj.R^2	0.7287	0.7750	0.7492	0.8686	0.8875	0.9502	0.8592	0.7093	0.7993
F	9.5931	12.0243	10.5582	22.1485	26.2478	62.0782	20.5336	8.8079	13.7461
Sig.F	0.0010	0.0004	0.0007	0.0000	0.0000	0.0000	0.0000	0.0014	0.0002
β_0	6.2381*	2.0090	-0.0652	-4.134*	-5.625*	4.7660*	7.9856*	3.1807*	2.6638*
	(0.0001)	(0.0697)	(0.9492)	(0.0017)	(0.0002)	(0.0006)	(0.0000)	(0.0088)	(0.0220)
β_1	5.5225*	4.3228*	4.2519*	5.1376*	2.4016*	-9.564*	5.6827*	-3.236*	3.7338*
	(0.0002)	(0.0012)	(0.0014)	(0.0003)	(0.0351)	(0.0000)	(0.0001)	(0.0079)	(0.0033)
β_2	3.9432*	-6.9834*	2.2814*	2.3310*	-5.5395*	2.7286*	-3.4257*	-2.3362*	-1.0851
	(0.0023)	(0.0000)	(0.0434)	(0.0398)	(0.0002)	(0.0196)	(0.0057)	(0.0394)	(0.3011)
β_3	-3.4398*	3.2308*	4.7297*	2.7947*	4.2777*	2.4261*	-1.2492	2.3059*	-4.8618*
	(0.0055)	(0.0080)	(0.0006)	(0.0174)	(0.0013)	(0.0336)	(0.2375)	(0.0416)	(0.0005)
β_4	-4.2862*	-2.7158*	-2.2301*	-3.2267*	7.6331*	3.0819*	4.2374*	0.8833	-4.0350*
	(0.0013)	(0.0201)	(0.0406)	(0.0081)	(0.0000)	(0.0104)	(0.0014)	(0.3960)	(0.0020)
β_5	-2.2791*	2.3805*	-5.5550*	-2.8303*	-3.2122*	3.2231*	-2.2663*	-2.2640*	2.6219*
	(0.0462)	(0.0365)	(0.0002)	(0.0164)	(0.0083)	(0.0081)	(0.0446)	(0.448)	(0.0237)

*Indicates significance of the t-statistic at 95% confidence interval. The P-values are indicated in parentheses. β_0, β_1, β_2, β_3, β_4 and β_5, are the estimated coefficients of the model intercept; total assets (LnTA); standard deviation of cash flows from operations (δCFO); standard deviation of revenues (δREV); Length of the operating cycle (LnLOOC) and number of loss incidences (LnNOLI) respectively.

The results indicate that just like for the overall NSE market, the innate accruals quality model is robust for all the qualifying segments of the NSE. This is confirmed by the high coefficient of determination values which indicate that 72.9%, 77.5%, 74.9%, 86.9%, 88.8%, 95%, 85.9%, 70.9% and 79.9% of the changes in accruals quality are explained by the innate accruals quality variables in the Commercial, Manufacturing, Energy, Automobiles, Construction, Agricultural, Investment, Insurance and Banking segments

respectively. This is corroborated by the statistically significant F-values for all the nine segments.

From an individual perspective, the model provides statistically significant coefficients of the all the independent variables for six of the nine segments. These are the Construction; Automobiles; Agricultural; Commercial and Services; Manufacturing and Energy segments. This is at 95% confidence interval using the t-statistic whose critical value at 5 degrees of freedom is ±2.179 for a two tailed test. For each of the remaining three segments, four of the five best independent variables have statistically significant coefficients at 95% confidence interval.

For all the nine segments, the R-square values are above 0.7093. This is an indication that business size (total assets), volatility of operating cash flows, volatility of business revenues, the length of the operating cycle and the number of reported loss incidences jointly have a great explanatory power for changes in accruals quality. This suitability of the model for segmental innate accruals quality analysis is confirmed by the F-ratio values in Table 4.10 all of which are greater than their respective critical F-values hence are statistically significant.

In further treatment of the statistically insignificant variables for the relevant segments, the variables were still found to be necessary in the analysis. In the Banking segment for instance, excluding the standard deviation of the cash flows from operations reduces the coefficient of determination to 0.8473 leaving the remaining four variables statistically significant at 95% confidence interval. For the Investment segment, whereas excluding the volatility of revenues not only reduces the coefficient of determination, it also makes the length of the operating cycle to become statistically insignificant at a value of 0.8895. Finally, leaving out the length of the operating cycle for the insurance segment reduces the coefficient of determination from 0.8001 to 0.7860. In a nutshell, all the five variables are subsequently used in estimating innate accruals quality and discretionary accruals quality in all the nine segments of the NSE.

The resultant values were subjected to statistical tests of descriptive measures of variation, central tendency and dispersion to show how different innate accruals quality is different from each other in each of the relevant segments. The results are summarized in Table 4.11. The mean values confirm the findings of overall accruals quality and the discussion thereof from Table 4.6 that most of accruals quality for companies quoted at the NSE is explained by the innate factors in the respective segments. This explains why the mean values in Table 4.6 and Table 4.11 are almost identical. The other descriptive measures are however different for the two respective tables.

Table 4.11: Segmental Innate Accruals Quality Descriptive Statistics

	Insu	Manuf	Agric	Inve	Ener	Auto	Bank	Constr	Comm
Mean	0.5230	0.1274	0.1016	1.2284	0.5136	0.4403	0.0994	0.1326	0.1104
Median	0.3179	0.1284	0.0999	1.1271	0.5529	0.3790	0.1022	0.1099	0.1073
Δ	0.5016	0.0532	0.0426	0.6203	0.2050	0.2082	0.0133	0.0704	0.0284
CV	0.9592	0.4174	0.4189	0.5050	0.3992	0.4727	0.1334	0.5304	0.2572
Range	1.6759	0.1987	0.1207	1.9117	0.6902	0.6861	0.0431	0.2273	0.0921
Min.	-0.0708	0.0347	0.0495	0.3501	0.1072	0.2053	0.0715	0.0539	0.0677
Max.	1.6051	0.2334	0.1702	2.2619	0.7974	0.8914	0.1147	0.2812	0.1598
95% Confid.	0.2579	0.0273	0.0219	0.3190	0.1054	0.1070	0.0068	0.0362	0.0146

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	18.92787	8	2.365984	29.07461	1.42E-26	2.003251
Within Groups	11.71819	144	0.081376			
Total	30.64606	152				

The mean values indicate that the Investment segment has the poorest innate accruals quality with the highest accruals quality average value of 1.2284. The banking segment of the NSE has highest innate accruals quality as reflected by the lowest innate accruals quality value at only 0.0994. All of the remaining segments all have values of not higher than 0.5230 registered by the Insurance segment. With a coefficient of variation of 0.9592, the Insurance segment portrays the highest level of volatility in the quality of reporting while the commercial and services and the Banking with coefficients of

variations of 0.1334 and 0.2572 represent the most stable in terms of the quality of the reported innate accruals in their financial statements. Since the rest of the segments register a coefficient of variation of between 0.3992 and 0.5304, the findings show a relative level of stability in innate accruals quality for companies listed at the Nairobi Securities Exchange.

Although there is a wide range in the innate accruals quality, most of the segments have their values not far off dispersed from the mean. In essence, from a relative perspective, the ranking order of innate accruals quality from the best to the worst is the Banking (1), Commercial and Services (2), Energy (3), Manufacturing (4), Agricultural (5), Automobile (6), Investment (7), Construction (8) and Insurance (9) segments respectively.

The statistical independence of the innate accruals quality in each of the nine segments of the NSE is confirmed by an F-value of 29.0746 with a correspondingly low P-value. The null hypothesis that the accruals quality in each segment is not significantly different from the rest of the other segments is therefore rejected with the conclusion that the levels of accruals qualities in the NSE segments are unique to each of the segments as per their idiosyncrasies. It therefore implies that separate segmental analysis of innate and discretionary aspects of accruals quality can be undertaken. It also provides the basis of analyzing data to achieve the fifth objective of the study and indicated in chapter 1. The discretionary aspects of the data are evaluated in the ensuing subsection.

4.3.3 Discretionary Accruals Quality

Whereas the predicted values from the innate accruals quality model reflect the innate accruals quality, the residuals from the same regression output reflect the discretionary accruals quality. Accordingly, the NSE discretionary accruals quality over the study period and the corresponding descriptive statistics are indicated in Table 4.12.

Assessing the mean values of discretionary and innate accruals quality for the firms quoted at the NSE indicate that most of the changes in accruals quality result from innate accruals quality. This is because of the mean accruals quality of 0.221568706, 0.881567882 (representing 99.999628%) relate to innate accruals quality. This leaves only 0.0004% to account for the discretionary accruals quality. This indicates that the innate aspects of the reporting environment dominate the discretionary aspects of the reporting of accruals among the Kenyan public companies.

Table 4.12: Market Discretionary Accruals Quality Descriptive Statistics

Panel A: Discretionary Accruals Quality Trend			
Year	*DAQ*	*Year*	*DAQ*
1997	*-0.012770*	2006	*-0.008540*
1998	*0.031860*	2007	*-0.004080*
1999	*0.010114*	2008	*-0.007020*
2000	*-0.030650*	2009	*-0.005530*
2001	*-0.001480*	2010	*0.019254*
2002	*0.013163*	2011	*-0.008470*
2003	*-0.003530*	2012	*0.001169*
2004	*0.002240*	2013	*0.006124*
2005	*-0.001840*		
Panel B: Discretionary AQ Descriptive Statistics			
Mean			*8.24E-07*
Median			*-0.001840*
Standard Deviation			*0.013845*
Kurtosis			*1.629910*
Skewness			*0.274518*
Range			*0.062510*
Minimum			*-0.030650*
Maximum			*0.031860*
95% Confidence Level			*0.007118*

This is perhaps not surprising because similar findings have been obtained in other regulatory regimes. In Australia for instance, Gray, Koh and Tong (2009) find that the mean value of accruals quality of 0.081 is identical to the innate mean accruals quality an indication that most of the accruals quality originate from the innate aspects of

financial reporting. It is in the same study that they obtain mean discretionary accruals quality value of 0.000.

This on an overall basis reflects very low values for all the measures of dispersion and central tendency. This is presented in Figure 4.3 which reflects greater volatility around the average than that portrayed by the overall and innate accruals qualities. This is indeed reflected in the extremely high levels of the coefficient of variation of 1680. This when viewed together with the relatively low coefficient of variation of the overall accruals quality corroborates the finding that innate accruals quality of financial reporting is dominant at the NSE. In effect, the firm specific discretionary reporting efforts do not overly influence the overall accruals quality.
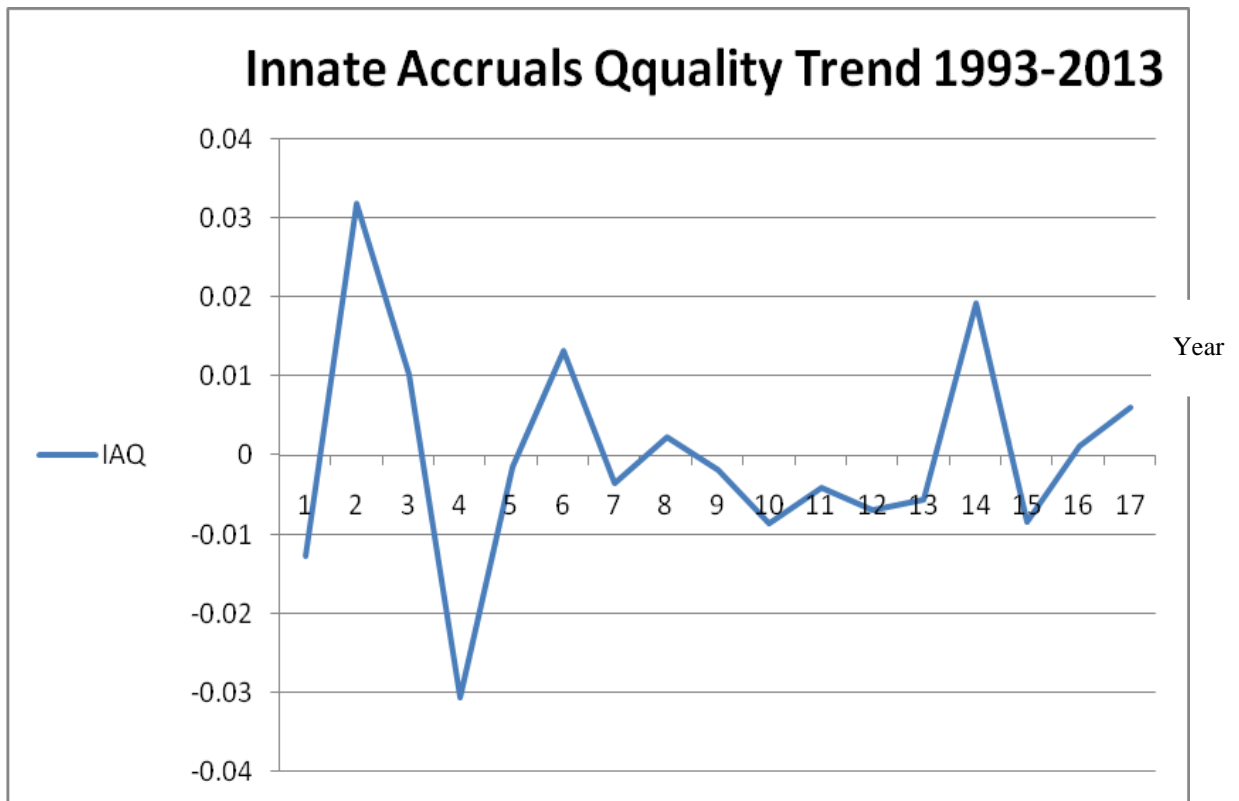
Figure 4.3: NSE Companies' Discretionary Accruals Quality Trend

In light of the findings, the industry level financial reporting dynamics have a profound effect on the quality of financial reporting in general and accruals quality in particular for the listed companies in Kenya. This can be attributed to the tight regulatory obligations imposed not only by the industry regulators, but also by statutory obligations as well as the growing influence of the Institute of the Certified Public Accountants of Kenya (ICPAK).

The implications of these findings can be checked on the basis of the level of correlation between innate and discretionary accruals qualities. This at an extremely low value of 0.0000478 indicated in Table 4.13 points towards independence between innate accruals quality and discretionary accruals quality fundamentals. This implies that discretionary accruals quality trends in Kenya can be evaluated independent of each other. In a nutshell, changes in accruals quality largely depend on the innate characteristics of the Kenyan reporting environment. The attributes of every industry are however described in Section 4.8.

Since both innate accruals quality and discretionary accruals quality are derived from the same model, the discussion on the robustness of the model in explaining accruals quality equally applies to this segment. The relevant descriptive statistics of discretionary accruals quality for each of the segments are accordingly presented in Table 4.14.

Table 4.13: Inter-relationship among Accruals Quality Components

	AQ	IAQ	DAQ
AQ	1		
IAQ	0.948792	1	
DAQ	0.315947	4.78E-05	1

The related innate accruals quality of the qualifying segments of the NSE are shown in Appendix 10**.** The table confirms the incredibly low values of discretionary accruals quality as is indicated by the low mean values for all the nine segments of the NSE.

It ideally means that the reporting quality of firms quoted at the Nairobi bourse is heavily influenced by industrial peculiarities of the segments the firms are listed in.

The descriptive statistics indicate that the Automobile and the Commercial and Services segments have negative mean discretionary accruals quality values. The rest of the segments have positive mean discretionary accruals quality values. Using the magnitude, as opposed to the value, of the discretionary accruals quality, the segments can be ranked from the best to the worst in terms of portrayal of discretionary accruals quality on a relative basis as Construction (1), Investment (2), Agricultural (3), Insurance (4), Energy (5), Commercial & Services (6), Manufacturing (7), Automobiles (8) and Banking (9) segments respectively.

Table 4.14: Segmental Discretionary Accruals Quality Descriptive Statistics

	Insu	*Manuf*	*Agric*	*Inve*	*Ener*	*Auto*	*Bank*	*Constr*	*Comm*
Mean	4.3E-16	3.3E-17	1.5E-17	5.1E-16	1.6E-16	-8.7E-17	1.6E-18	2.4E-16	-2.0E-17
Median	-4.4E-02	7.4E-04	4.0E-05	7.4E-03	9.7E-03	1.0E-02	-1.9E-03	6.2E-03	-6.8E-04
SD	2.5E-01	2.3E-02	8.0E-03	2.0E-01	9.4E-02	6.6E-02	5.3E-03	2.0E-02	1.4E-02
CV	5.8E+14	6.9E+14	5.3E+14	4.0E+14	6.0E+14	-7.6E+14	3.3E+15	8.5E+13	-6.7E+14
Range	9.1E-01	8.6E-02	2.7E-02	7.6E-01	3.6E-01	2.2E-01	1.9E-02	7.7E-02	5.2E-02
Min.	-4.8E-01	-3.5E-02	-1.3E-02	-4.1E-01	-2.0E-01	-1.4E-01	-8.2E-03	-5.3E-02	-2.4E-02
Max.	4.3E-01	5.1E-02	1.4E-02	3.5E-01	1.6E-01	8.0E-02	1.0E-02	2.4E-02	2.8E-02
95%Conf.	1.3E-01	1.2E-02	4.1E-03	1.0E-01	4.8E-02	3.4E-02	2.7E-03	1.0E-02	7.0E-03

ANOVA

Source of Variation	SS	Df	MS	F	P-value	F crit
Between Groups	-4.4409E-16	8	-5.551E-17	-4.221E-15	1	2.00325134
Within Groups	1.89369112	144	0.01315063			
Total	1.89369112	152				

Despite the minute levels of discretionary accruals quality for each of the segments, the differences among the segmental characteristics are discernable from the F ratio. Unlike accruals quality and innate accruals quality, the F-ratio resulting from the analysis is statically insignificant at 95% confidence interval as indicated by the extremely low

level of F. This implies that the analysis of the other descriptive attributes is provides less useful information for this study.

4.3.4   Qualitative Accruals Quality

The study also evaluated the qualitative aspects of accruals quality used in constructing the qualitative accruals quality index. This is considered critical in order to compare the accruals quality information obtained from financial statements with the perception of audit analysts about the quality of accruals quality of the financial statements they deal with. Theoretically, it is expected that high accruals quality values (low standard deviation measures) should correspond with high accruals quality perception indices (Mashruwala and Mashruwala, 2011). This is because whereas accruals quality is an absolute measure of the volatility of the random term in the overall accruals quality model and the innate accruals quality model, accruals quality perception index is directly proportional to the perceived level of accruals quality of the financial statements of the relevant reporting entities (Mashruwala and Mashruwala, 2011).

In this respect, results from the questionnaire on the various aspects of qualitative accruals quality are explained in the ensuing paragraphs. Firstly, the study used the personal interview method to ensure a complete agreement of the qualitative accruals quality data with the publicly available quantitative information from the financial statements and the financial markets. This approach ensured a 100% response rate from the head of audit teams involved with the qualifying companies at the NSE. This was critical to ensure the study obtained adequate comparative data against the accruals qualities obtained from the secondary data.

Secondly, the study obtained information with respect to the identity and experience of the external audit firms involved with the evaluating of the financial reporting quality of the firms listed at the NSE. The findings are presented in the Table 4.15. This is critical because similar studies evaluate accounting quality with respect to whether a firm is audited by the large audit firms (often called the big four) or whether it is audited by the

other non-big four audit firms. Francis and Wang (2010) for instance suggest that Big-4 auditors are likely to be keen on protecting their reputation and therefore have higher incentives of preventing misreporting and ensuring high accruals quality than other auditors of a lesser reputation. The expectation is that audit quality, which ultimately affects the quality of accounting data and accruals quality, is that the larger the audit firm, the better the audit quality and ultimately the better the subsequent accounting and accruals quality of financial statements (Francis and Wang, 2010).

From the Kenyan perspective, the big four audit firms are PriceWaterhouseCoopers (PWC), KPMG, Ernst & Young and Deloitte and Touche (Pricewaterhousecoopers, 2014). The research findings indicate that out of the 39 qualifying companies quoted at the NSE, 34 are audited by the big four audit firms in Kenya. This translates to 87.18% of the firms in the study. Although this is a high proportion of NSE firms it still falls below other markets. Pricewaterhousecoopers (2014) for instance, in its global survey of audit and assurance services, indicates that at the 99% of the FTSE-100 firms as well as 96% of the FTSE-250 firms at the London Stock Exchange are audited by the big four audit firms.

Table 4.15: Analyst Identity Statistics

	Frequency	%	Valid %	Cumulative %
Crowe Horworth EA	1	2.6	2.6	2.6
Deloitte & Touche	8	20.5	20.5	23.1
Ernst & Young	6	15.4	15.4	38.5
Jessie & Associates	1	2.6	2.6	41.0
KPMG	9	23.1	23.1	64.1
Livingstone Associates	1	2.6	2.6	66.7
PKF Kenya	2	5.1	5.1	71.8
PWC	11	28.2	28.2	100.0
Total	39	100.0	100.0	

This corroborates the accruals quality information obtained which indicates that that there is a relatively poor but less volatile level of accruals quality among companies quoted at the NSE than for similar reporting regimes. This is ideally because the large

audit firms have a great technical expertise which help is advising companies to improve on their accruals quality over time. The result is consistent with the information indicated in Table 4.15 which shows that both the accruals quality index and the accruals quality index factors of relevance, understandability, comparability and reliability score a general improvement over the study period. This is partly attributable to the input of the big-four audit firms in Kenya in enhancing financial reporting competence. The input of such firms has been vastly discussed in empirical literature from other regulatory regimes elsewhere in the world (Khurana & Raman, 2004; Choi *et al.*, 2008; Chen *et al.*, 2008; Francis & Wang, 2010)

In addition to the size of the audit firm, the audit experience was also considered. The findings are indicated in Table 4.16. 35.9% of the firms had audit analysts with 6-10 years of audit experience with them. 23.1% had an experience of upto 5 years. 8% of the audit analysts had experience of 11-15 while the remaining 8% had audit experience with the respective firms of over 15 years. The findings indicate that majority of the firms (76.9%) had maintained their audit teams for a period of more than 5 years. Only 23.1% of the audit analysts have had audit tenures of 5 years and less.

Table 4.16: Audit Analyst Tenure Experience

Experience		Frequency	Percent	Valid Percent	Cumulative %
Valid	0-5 Years	9	23.1	23.1	23.1
	6-10 Years	14	35.9	35.9	59.0
	11-15 Years	8	20.5	20.5	79.5
	16 Years and over	8	20.5	20.5	100.0
	Total	39	100.0	100.0	

These findings can be compared with empirical and theoretic expectations. Theoretically, it is plausible to anticipate an inverse relationship between accruals quality and audit tenure (Chen *et al.*, 2008). This is attributable to the possible

complacency associated with extended familiarity between the audit firms and their clients. From the Taiwanese regulatory regime, Chen *et al.* (2008) find no relationship between audit firm tenure and absolute discretionary accruals quality.

This view is supported by Firth, Rui and Wu (2012) from the Chinese environment. To test this aspect for this study from theoretic and empirical perspectives, this study tested the relationship between company mean accruals quality index scores with external audit tenure. After winsorizing extreme values, the average accruals quality for each of the four audit tenure categories (0-5 years; 6-10 years; 11-15 years and 16 and over), the single factor ANOVA test was carried out. The corresponding output is indicated in Table 4.17 panel A. Panel B reflects the results after the same procedure is applied to mean accruals quality of the qualifying companies. Panel C assesses the qualitative accruals quality improvement index with the length of the auditor tenure with the focus firm.

Table 4.17: Relationship between Audit Tenure and Accruals Quality

PANEL A: Mean Accruals Quality Index						
Source of Variation	*SS*	*Df*	*MS*	*F*	*P-value*	*F crit*
PANEL A: Mean Accruals Quality Index						
Between Groups	0.2134	3	0.0711	0.3749	0.7717	2.9467
Within Groups	5.3121	28	0.1897			
Total	5.5255	31				
PANEL B: Mean Accruals Quality						
Between Groups	0.3612	3	0.1204	1.3768	0.2703	2.9467
Within Groups	2.4488	28	0.0875			
Total	2.8100	31				
PANEL C: Improvement Trend						
Between Groups	0.5684	3	0.1895	0.7832	0.5134	2.9467
Within Groups	6.7734	28	0.2419			
Total	7.3418	31				

With respect to the relationship between qualitative accruals quality and the audit tenure, the result shows an F-value of 0.771723 which is statistically insignificant given that it is less than the critical F of 2.9467. The supposition of an effect of audit tenure on accruals quality is therefore rejected with the conclusion that audit tenures have no significant influence of accruals quality. This conclusion is corroborated by the results indicated in Panel B which shows that there is no significance difference between the accruals qualities of various companies when categorized according to their length of the audit team tenures. This is because the one way ANOVA test shows a F-value of 1.3768 which is less than the critical value of 2.9467. In a nutshell, the findings corroborate those of Chen *et al.* (2008).

The finding that audit tenure is not associated in any significant way with accruals quality is confirmed when the ANOVA test is applied on improvement index of the accruals quality index over the study time. The finding is consistent with the previous two in panels A and B of Table 4.17. Accordingly panel C indicates that the audit analyst tenure does not seem to vary with the length of audit tenure. As a result, the F-value for the difference in means of the accruals quality of the improvement index among the four tenure groups is 0.7832 which is less than the critical value of 2.9467.

Perhaps this finding is not surprising because there are studies elsewhere that show similar findings. Johnson, Khurana and Reynolds (2010) for instance evaluate the relationship between audit-firm tenure and quality of financial reports. Although their study associates lower quality financial reports with short audit tenures, they find no evidence of a decline in financial reporting quality as a result of lengthy audit tenures.

After assessing the external audit analyst identity and experience, the information on the accruals quality index and its components was evaluated for all the qualifying 39 companies. As already indicated, the personal administration of all the questionnaires ensured a 100% response rate on all the variables used in evaluating the qualitative accruals quality. A full response rate was critical in order to generate corresponding

accruals quality indices to be compared with the findings with the existing output from the secondary data from the overall accruals quality and the innate accruals quality models. The resultant summary for the study companies are indicated in Table 4.18. Using the 95% confidence interval, the t-values and the p-values of all the four variables are statistically significant.

Table 4.18: Qualitative Accruals Quality Index Descriptive Statistics

	N	Range	Min.	Max.	Mean	SD	T	Sig.	df
Y_{AQ}	39	2.35	2.05	4.40	3.6979	0.58526			
Relevance	39	3.29	1.14	4.43	3.6081	0.76491	29.457	0.000	38
Understandability	39	2.60	2.00	4.60	3.8359	0.64379	37.210	0.000	38
Comparability	39	2.71	1.86	4.57	3.6777	0.57491	39.949	0.000	38
Reliability	39	2.25	2.13	4.38	3.6699	0.59913	38.253	0.000	38
Valid N (listwise)	39								

The mean findings indicate an overall accruals quality index of 3.6979 indicating that companies at the NSE have a high qualitative accruals quality as an aspect of financial reporting. This when compared with the standard deviation of 0.58526 translates to a coefficient of variation of 0.158.

The components of accruals quality index show all return an average above 3.6 an indication that the relevance, understandability, comparability and reliability of accruals quality data for the listed companies at NSE are equally high as is portrayed in figure 4.4. All the variables are statistically significant given the high values of the t statistic and the low p-values. The postulation that relevance, understandability, comparability and reliability have no effect on accruals quality information of financial statements of public companies in Kenya is therefore rejected with the conclusion that qualitative accruals quality is dependent on all these of its four components in the Kenyan financial reporting environment.
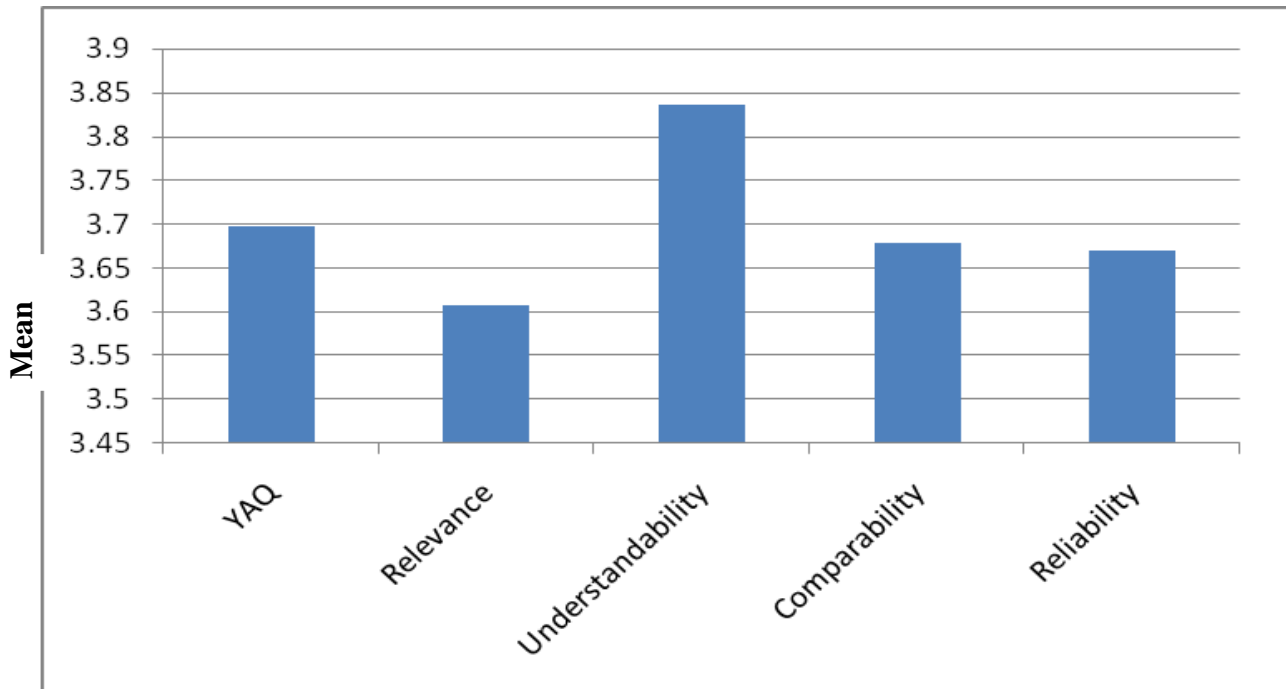
Figure 4.4: Relative Qualitative Indices of Accruals Information Attributes

Using the average indices, understandability is rated highest, followed by comparability, reliability and relevance respectively in their qualitative value in indicating qualitative accruals quality. From a relative point of view, the priority rank order is relevance, understandability, reliability and comparability respectively. It is however noteworthy that the range of these respective values is so small that it could be safe to assume they have a similar or comparable influence in the portrayal of qualitative accruals quality.

Despite the narrow range of values, the averages indicate some differences. The frequency distribution of the levels of the components of the accruals index factors indicate that whereas relevance and comparability that portray higher level of negative skewness in the distribution of accruals quality, understandability and reliability have positive skewness with respect to the reflection of high accruals quality perception levels for the companies quoted at the NSE. This presents a balanced case since each of these two contains aspects of content and presentation characteristics of accruals quality

information. This is corroborated by the high average levels of both of these aspects of accruals quality from the descriptive statistics indicated in Table 4.18.

Reliability and relevance relate to the content aspects while understandability and comparability relate to the presentation aspects of accruals quality information (IASB, 2014). These aspects are related to the accruals quality from the secondary data. Since high accruals quality corresponds with low volatility values, it is expected that the accruals index values from the qualitative accruals quality model would have an inverse relationship with the accruals quality values from the overall accruals quality model.

It was therefore interesting to test the relationship between accruals quality qualitative index factors and the financial statements accruals quality. This involved multiple linear-regressing the company mean accruals quality over the study period against the log-transformed accruals quality index qualitative factors of relevance (LnX_1), understandability (LnX_2), comparability (LnX_3) and reliability (LnX_4). The findings are indicated in Table 4.19 which provides the qualitative accruals quality model shown as:

$$Y_{AQ} = 2.763 - 0.416X_1 - 0.845X_2 - 0.163X_3 - 0.528X_4$$

As a procedural step, this diagnostic relationship regression model was tested with respect to its conformance to the multiple linear regression expectations of being the best linear unbiased estimation of accrual quality. In this respect model validation tests of normality, multicollinearity, heteroskedasticity, linearity and serial correlation were undertaken.

Just like in the previous sections, the Kolmogorov-Smirnov statistic was used to verify the normality assumption. According to the findings from the model the Kolmogorov-Smirnov statistic was 0.161 with a corresponding significance value of 0.13. Since this value is greater than 0.05, the null hypothesis of non-normality for the model is rejected with the conclusion that the model residual values conform to the normality expectations. This conclusion is corroborated by the Shapiro-Wilk statistic of 0.935 with

137

a significance probability value of greater than 0.05. This is further confirmed by the skewness and kurtosis statistics of the unstandardised residuals that show values of 0.628 and 0.176 values both of which are less than twice of the respective standard errors of 0.378 and 0.941 respectively.

Table 4.19: Market Qualitative Accruals Quality Index Regression Output

Adjusted R Square	0.5680					
Standard Error	0.22637					
Durbin-Watson d	1.708					
Kolmogorov-Smirnov	0.161	*0.130				
Shapiro-Wilk	0.935	*0.260				
Koenker LM	2.283	*0.684				
Breusch-Pagan LM	2.289	*0.683				
Observations	39					
ANOVA						
	df	SS	MS	F	Significance F	
Regression	4	2.764788	0.691197	13.48854	1.1E-06	
Residual	34	1.74227	0.051243			
Total	38	4.50706				
					Collinearity Statistics	
	Coefficients	Standard Error	t Stat	P-value	Tolerance	VIF
Constant	2.76338	0.50171	5.50799	0.00000		
LnX$_1$	-0.41565	0.12604	-3.29786	0.00229	0.807	1.239
LnX$_2$	-0.84535	0.28151	-3.00293	0.00499	0.926	1.080
LnX$_3$	-0.16276	0.19664	-0.82772	0.41356	0.778	1.285
LnX$_4$	-0.52843	0.15795	-3.34548	0.002013	0.742	1.348

*P values of more than 0.05 indicates normality

LnX$_1$, LnX$_2$, LnX$_3$ and LnX$_4$, which are the predictor variables in the regression of company mean accruals quality on accruals quality qualitative factors, were tested with respect to collinearity. The resultant Tolerance values are 0.807, 0.778, 0.926 and 0.742 respectively. The observation that they are all close to 1 implies that there is no significant correlation of the predictor variables with corporate mean accruals quality.

The evidence of absence of statistically significant collinearity is further indicated by the corresponding variance inflation factor (VIF) values of 1.239, 1.285, 1.080, 1.058 and 1.347 for the respective variables. Again all these values are close to 1 and far much less than 5. This diagnostic test confirms that the model is devoid of any statistically significant multicollinearity problem that could bias the estimation power of the multiple linear regression model.

With respect to linear heteroscedasticity, the Breuch-Pagan test and the Koenker test provided lagrange multiplier (LM) values of 2.289 and 2.283 respectively. The corresponding significance values were 0.683 and 0.684. The implication of this is that since the significance values are greater than 0.05, that heteroscedasticity is absent or statistically insignificant in this diagnostic model. The Durbin-Watson test was used to interrogate serial correlation in the data. The d value is approximately 2, an indication that there is neither positive nor negative first order autocorrelation.

The coefficients β_i, coefficient of determination and the adjusted R-square values are based on the averages of the 1997-2013 annual estimates of accruals qualities for each of the qualifying companies under study. The respective values are indicated in Appendix 11. The output indicates that accruals qualitative factors of relevance, understandability, comparability and reliability are negative predictors of accruals quality indicated from financial statements of the corresponding reporting companies. The qualitative index factors variables have a high joint explanatory power of the changes in accruals quality given the high value of the adjusted coefficient of determination of 0.5680. Apart from comparability, all the other accruals quality factors have corresponding coefficients that are statistically significant at 95% confidence interval given that their P-values are less than 0.05 and that all the t values are above ±2.009. The fact that F is statistically significant (p-value of 0.0000) confirms accruals quality qualitative indices can be relied upon for the estimation of qualitative accruals quality for companies quoted at the NSE.

Despite the above conclusion, comparability qualitative index is found to be statistically insignificant in estimating accruals quality. This is because it returns a t-value of -0.82772 which is less than the critical t value of 2.009. The expectation of a significance influence of this value on accruals quality is therefore rejected. This is hardly surprising because reliability and relevance are taken as content characteristics of financial information while understandability and comparability are taken as presentation characteristics of accounting information in general and accruals quality information in particular in the context of this study (Nobes and Stadler, 2014). Accordingly, the first two relate to the pertinent information contained in the financial statements while the latter two only portray how this information is presented in the financial statements. According to the theoretical framework of accounting (IASB, 2014), whenever content characteristics conflict with the presentation attributes, the content attributes take precedence. It is in this context that the statistical insignificance of comparability as an accruals quality qualitative attribute is consistent with theoretical expectations.

This is a significant contribution given that existing literature (Francis *et al.*, 2005; Choi, 2008; Chen *et al*., 2008; Aldermen & Duncan, 2011; Brousseau & Gu, 2011; Mashruwala and Mashruwala, 2011; Demirkhan *et al.*, 2012) has largely focused on the interrelationship between various accruals quality aspects from financial data without considering the secondary attributes of accruals quality information from financial analysts and external auditors. This study supplements the information from overall, innate and discretionary accruals qualities with the qualitative accruals quality tests.

Having appraised the qualitative aspects of accruals quality information from the questionnaire, the study evaluated the accruals quality trend of these components of accruals quality index. The study accordingly evaluated the trends of the accruals quality index factors over the study period. The results are indicated in Table 4.20.

This ranged from an index of 1 reflecting great deterioration in the accruals quality index factor to 5 representing a great improvement in that aspect of accruals quality. The

findings indicate that the qualitative aspects have on average shown an improvement in their trends given that all the improvement scores are above 3.5. In comparison with the average indices, the improvement aspects are almost similar for all the four measures of qualitative accruals quality.

Table 4.20: Accruals Quality Index Factor Trends Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	CV
Relevance Index	39	1.14	4.43	3.6081	0.76491	0.21200
Understandability Index	39	2.00	4.60	3.8359	0.64379	0.16783
Comparability Index	39	1.86	4.57	3.6777	0.57491	0.15632
Reliability Index	39	2.13	4.38	3.6699	0.59913	0.16326
YAQ	39	2.05	4.40	3.6979	0.58526	0.15827
Valid N (listwise)	39					

Using the coefficient of variation the variables, the relative levels of improvement can be rated (from best to worst) as comparability (1), reliability (2), understandability (3) and relevance with respective CV values of 0.156, 0.163, 0.168 and 0.212. The mean attributes of these trend averages are depicted in Figure 4.5.
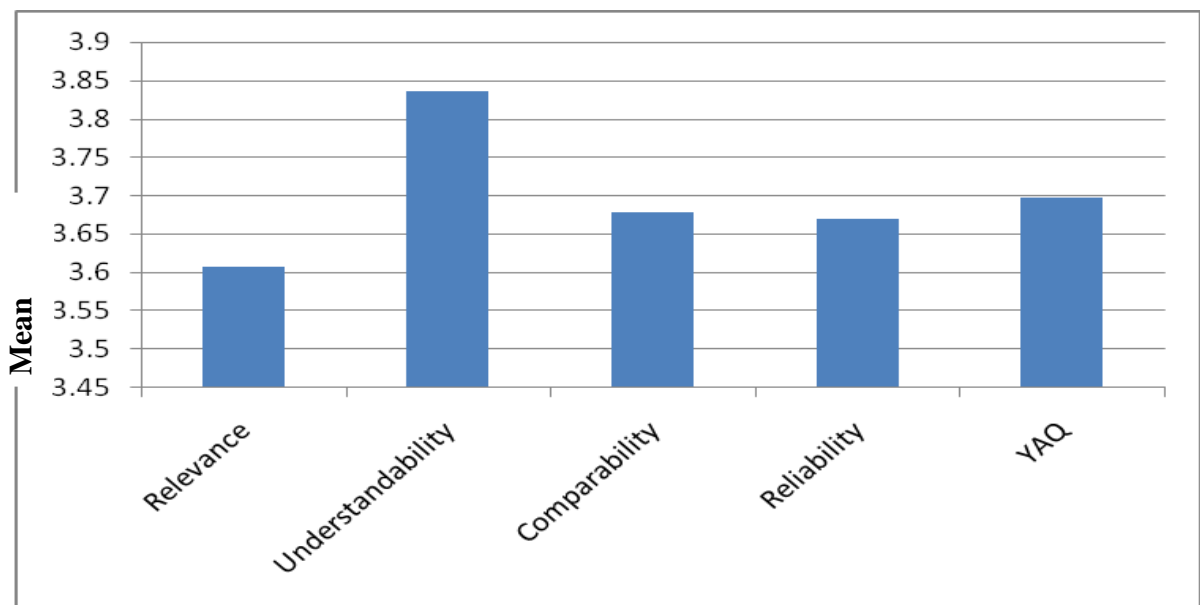
Figure 4.5: Qualitative Factor Improvement Levels

4.4   Cost of Capital Statistics

Cost of capital in this study is taken as the earnings to price ratio (EPR). This is computed as earnings per share divided by market price per share of the respective firms at the end of every of the 21 financial years in the study. The respective corporate earnings to price ratios are aggregated to segmental values as well as entire market values for evaluating industry and overall characteristics of cost of capital among the NSE companies. The findings are indicated in Table 4.21.

Table 4.21: Market Cost of Capital Trend

Panel A: Discretionary Accruals Quality Trend			
Year	*EPR*	*Year*	*EPR*
1997	*0.12238*	2006	*0.27659*
1998	*0.10174*	2007	*0.07147*
1999	*0.09598*	2008	*0.09635*
2000	*0.15284*	2009	*0.09553*
2001	*0.54006*	2010	*0.12263*
2002	*0.34050*	2011	*0.11762*
2003	*0.09691*	2012	*0.10765*
2004	*0.10425*	2013	*0.09688*
2005	*0.08682*		
Panel B: NSE-EPR and 91-Day TB			
Statistic		*NSE-EPR*	*91-Day TB*
Mean		*0.15448*	*0.09300*
Median		*0.10425*	*0.08340*
Standard Deviation		*0.12183*	*0.04915*
Kurtosis		*6.12936*	*0.77351*
Skewness		*2.47682*	*0.71929*
Minimum		*0.07147*	*0.01460*
Maximum		*0.54006*	*0.19970*
Confidence Level (95.0%)		*0.06264*	*0.02619*

The findings in Table 4.21 portray a highly volatile and dispersed EPR over the study period with a range of 46.86% as the difference between the minimum and the maximum cost of capital of 7.15% and 54.01% respectively. This represents a

significant market risk premium given that the over the same period, the 91-day TB rate reflects a range of only 18.51% coupled with 1.46% and 19.97% as the minimum and maximum values respectively. This firm industry level premium is further indicated by a standard deviation of 12.18% which is significantly higher than that shown by the TB rate of only 4.92%

Derivative coefficients of variation of 0.5285 and 0.7883 for the NSE market and the TB rates confirm that the NSE cost of capital is more volatile over the study period than the market risk free rate of return. This is precisely depicted in Figure 4.6.
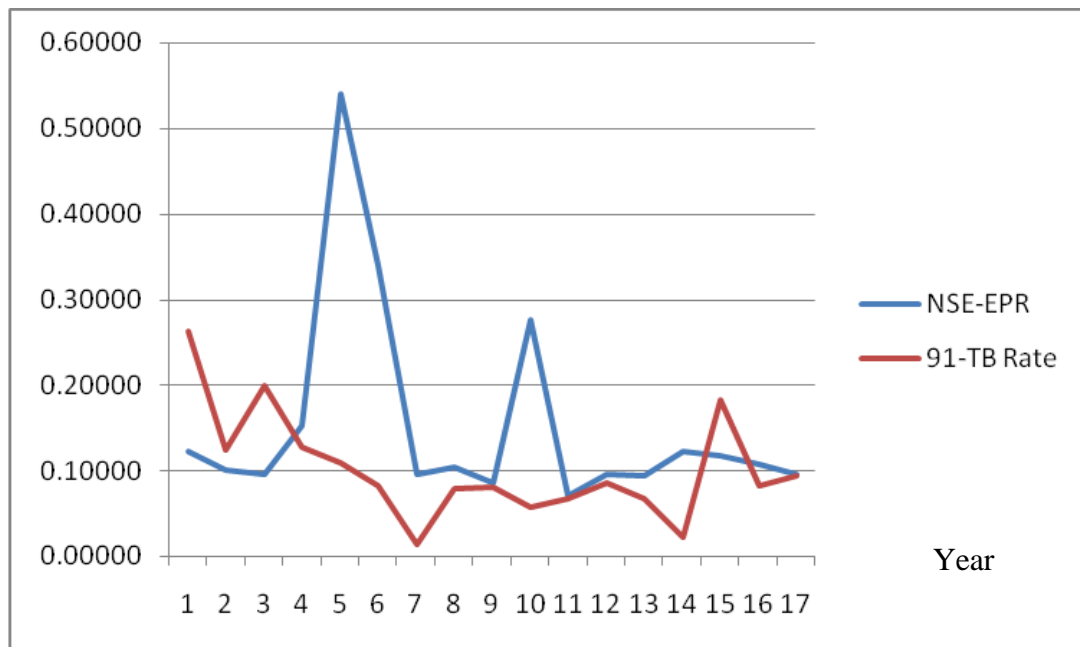
Figure 4.6: EPR and TB Rate Trends

Atyeh and Al-Rashid (2015) find that in Kuwait, over the period 2005-2011, weighted average cost of capital had a mean of 10.3%, a standard deviation of 2%, a maximum of 14.5% and a minimum of 7.4%. In this respect Kuwait Stock Exchange reflects a lower average cost of capital than NSE. The related coefficient of variation of 0.1942 is indicative of a market whose cost of capital is less volatile than that of the NSE. From

South Africa, Swartz (2008) reveals a mean of 9.46% and a related coefficient of variation of 0.4387 which is considerably less than the Kenyan case.

Table 4.22: EPR Segmental Descriptive Statistics

Const		Auto	Energy	Agric	Comm	Manuf	Bank	Insu	Inve
Mean	0.2162	0.1397	0.1496	0.1129	0.4569	0.0541	0.0908	0.1365	0.0798
Std Deviation	0.3625	0.0566	0.1265	0.0936	1.1647	0.0482	0.0534	0.0662	0.0646
CV	1.6767	0.4052	0.8456	0.8291	2.5491	0.8909	0.5881	0.4850	0.8095
Minimum	0.0265	0.0689	-0.1065	0.0127	-0.2703	-0.0620	0.0111	0.0435	-0.0569
Maximum	1.5747	0.2733	0.4517	0.2905	4.2752	0.1417	0.1859	0.2921	0.2371
95% Conf. Level	0.1864	0.0291	0.0650	0.0481	0.5988	0.0248	0.0274	0.0340	0.0332

The segmental cost of capital was also considered. The descriptive statistics of the segmental cost of capital as proxied by earnings to price ratio are indicated in Table 4.22 and illustrated in Figure 4.7.

The highest average cost of capital of 45.69% is reported in the Commercial and Allied segment of the NSE while the least average cost of capital of 5.41% is reported in the Manufacturing segment.
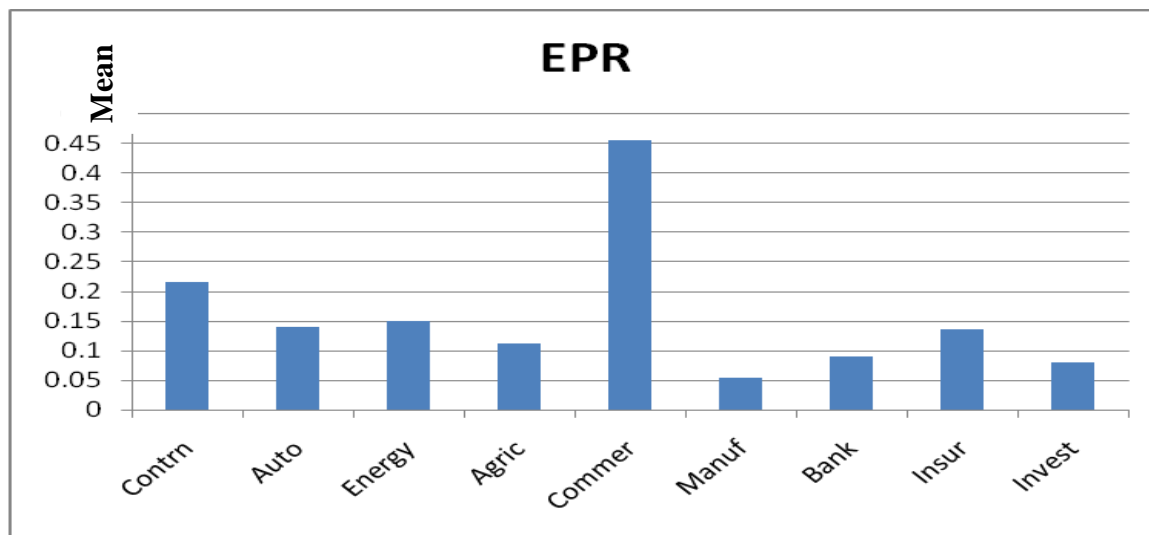
Figure 4.7: Segmental Mean EPR

The rest of the segments have an average cost of capital of less than 21.62% reported in the Construction segment of the NSE. These compare very well with the mean of 15.45% for the overall NSE market. Meaningful information is derived when the segmental mean averages are compared with the respective standard deviations. This converts these absolute measures to a relative measure, the coefficient of variation. From this standpoint, the Commercial and Allied segment yet again provides the highest volatility at a CV of 2.5491 followed closely by the Construction segment at 1.6767. The rest of the segments have CV values of less than 1 with the Automobile segment being the least volatile with a CV of 0.4052.

4.5   Effect of Innate Accruals Quality on Cost of Capital

The first null hypothesis of the study is that innate accruals quality has no effect on cost of capital. The objective in this case was to test the statistical significance of the accruals quality proxy in a cost of capital regression equation identified in the overall accruals quality model. To test for the effect of innate accruals quality on cost of capital, the accruals quality rank (AQR), which is used as the proxy for the quality of innate accruals, is augmented in the regression equation 3.3. Since the study covers a cross section of companies quoted at the NSE over the twenty one year period, the results are generated through a weighted least squares approach using panel regression analysis.

As a preliminary step, the descriptive statistics of the panel data variables is provided. These include cost of capital as indicated by EPR, the natural logarithms of growth in the book value of equity, the debt to assets ratio, market beta and the accruals quality rank. The findings are indicated in Table 4.23.

Since overall, innate and discretionary accruals quality ranks relate to the same number of companies, the relevant statistics are the same figures for all these attributes as indicated by the LnIAQR row in the Table 4.23. The findings indicate that the growth proxy is the most volatile variable with a coefficient of variation of 3.4752 while the

accruals perception index indicator is the least volatile with a coefficient of variation of 0.1447. When the variables are ranked in their order of volatility from the most to the least volatile, they appear as the growth indicator [Ln(1+g), the market risk indicator (LnCAPMβ), the size indicator (LnTA), the capital structure indicator (LnDTA), the accruals quality rank variable (LnIAQR) and the accruals qualitative aspect (LnYAQ).respectively

Table 4.23: Descriptive Statistics of Cost of Capital Variables

	Mean	Median	Min	Max	SD	CV
Ln (1+g)	0.1511	0.1017	-3.3527	7.8071	0.5252	3.4752
LnDTA	0.2376	0.1938	0.0000	3.3606	0.2425	1.0207
LnCAPMβ	0.5952	0.1303	-0.0905	9.7644	1.0630	1.7853
LnTA	0.5315	0.2422	0.0034	7.5783	0.6564	1.2350
LnIAQR	2.7285	2.9957	0.0000	3.6636	0.8605	0.3154
LnYAQ	1.2926	1.3596	0.7183	1.4816	0.1870	0.1447

In addition to the descriptive statistics, panel data diagnostic tests were done for the possible models for use in interrelating cost of capital with the various determinants. Using the weighted least squares panel regression, the findings are indicated in Table 4.24 whose output model is indicated as:

$$LnK_{av} = 2.932 + 0.107Ln(1+g) + 0.173LnDTA - 0.087LnCAPM\beta + 0.097LnTA - 0.017LnIAQR$$

An adjusted R-square value of 0.5943 is obtained. This indicates a good fit for the model given that 59% of the changes in cost of capital are explained by the explanatory variables indicated in the earnings to price ratio regression model.

The suitability of the weighted least squares panel regression model is further confirmed by appropriate values of the F-ratio, the P-value and the Akaike Information Criterion (AIC). The F value of 15.55 well is above the critical F value of 4.3712. The P value of 0.0000 is less than the critical P of 0.05. It is therefore concluded that growth, leverage, market risk, size and accruals quality variables fit well as independent variables in panel

regression of cost of capital variable as the dependent variable. The AIC value for the used model represents the least among all the alternative models to the weighted least squares panel data approach to analysis.

Table 4.24: Innate Accruals Quality Rank WLS Panel Regression Output

	Coefficient	Std. Error	t-ratio	p-value	
Constant	2.93247	0.05713	51.3320	<0.00001	***
Ln(1+g)	0.10700	0.07448	1.4366	0.15132	
LnDTA	0.17266	0.12379	1.3947	0.16357	
LnCAPMβ	-0.08727	0.03638	-2.3988	0.01673	**
LnTA	0.09673	0.03674	2.6332	0.00866	***
LnIAQR	-0.01673	0.00241	-6.9339	<0.00001	***

Statistics based on the weighted data:			
Sum squared resid	589.3624	S.E. of regression	0.0950024
R-squared	0.606427	Adjusted R-squared	0.594345
F(5, 653)	15.55475	P-value(F)	1.78e-14
Log-likelihood	-898.2812	Akaike criterion	1808.562
Schwarz criterion	1835.507	Hannan-Quinn	1819.007

The findings indicate that besides the model constant, three dependent variables are statistically significant in estimating cost of capital in the earnings to price ratio regression model. These are market beta, total assets and overall accruals quality. The respective t-values of their coefficients estimated from this study are -2.3988, 2.6332 and -6.9339. All these are beyond the critical values of the t a fact confirmed by the corresponding p-values of 0.01673, 0.00866 and 0.00001 all of which are below 0.05 pointing towards statistical significance.

The natural logarithm of growth as well as DTA, the proxy for capital structure and leverage, are both statistically insignificant in the model given that their respective p-values of 0.15132 and 0.16357 are above 0.05 and that their respective t-ratios of 1.4366 and 1.3947 are also above the below the critical t-value levels. The variables are still critical to the model given that leaving them out provides a cost of capital regression output whose R-square value declines to 0.41269.

The findings therefore indicate that innate accruals quality of companies listed at the NSE as indicated by the innate accruals quality rank affects cost of capital. Accordingly, the null hypothesis that innate accruals quality rank has a statistically insignificant coefficient in the cost of capital equation is rejected and innate accruals quality rank is found to have a statistically significant negative coefficient.

The implication of this finding is that innate accruals quality negatively affects cost of capital of public companies in Kenya. This is a significant finding since it contradicts the theoretical expectation of an inverse relationship between accruals quality and cost of capital. It is however not an isolated finding to this study alone since it is in line with the findings of Easley and O'Hara (2004), Brousseau and Gu, (2011) for large firms and Mao and Wei (2012) who find that cost of capital increases with increase in accruals quality. This could however be attributed to the small size of the market and the unique regulatory position of the market in line with the suggestions of Gray *et al.* (2009) and Van de Poel and Vanstraelen (2011).

4.6   Effect of Discretionary Accruals Quality on Cost of Capital

The second hull hypothesis of this study contends that discretionary accruals quality has no effect on cost of capital of the companies quoted at the Nairobi Securities Exchange. The preliminary findings on accruals quality had indicated that the levels of discretionary accruals quality among the companies quoted at the NSE is extremely low. The time variations in panel data analysis implied that the effect of these could still be evaluated to test their effect as indicated in the second null hypothesis.
Using the weighted least squares model of panel regression, the findings from the study are indicated in Table 4.25 as indicated in the model output:

$$LnK_{av} = 2.931 + 0.142Ln(1 + g) + 0.175LnDTA - 0.109LnCAPM\beta + 0.082LnTA - 0.014LnDAQR$$

The model fits the data given that the R-square value of 0.82626 is obtained from the results. This implies that 83% of the variations in cost of capital as indicated in the

148

earnings to price ratio regression model are explained by the changes in the independent variables shown in the model. The goodness of fit of the weighted least squares panel regression model is further confirmed by appropriate values of the F-ratio, the P-value and the Akaike Information Criterion (CIC). The F value of 11.76 well is above the critical F value of 4.3712. The P value of 0.0000 is less than the critical P of 0.05. It is therefore concluded that growth, leverage, market risk, size and accruals quality variables fit well as independent variables in panel regression of cost of capital variable as the dependent variable. The AIC value for the used model represents the least among all the alternative models to the weighted least squares panel data approach to analysis.

Just as was the case for innate accruals quality, the findings indicate that discretionary accruals quality has a negative but statistically significant coefficient of -0.01421. This is shown by the t and p values that are both outside the null hypothesis rejection area. The t-value is shown as -5.3932 while the corresponding p-value is 0.0000. Accordingly, the null hypothesis 1.2 is rejected. The conclusion made is that discretionary accruals quality negatively affects cost of capital for companies quoted at the NSE.

Table 4.25: Discretionary Accruals Quality Rank WLS Panel Regression Output

	Coefficient	Std. Error	t-ratio	p-value	
Const	2.93117	0.0677889	43.2397	<0.00001	***
Ln(1+g)	0.141972	0.0750148	1.8926	0.05885	*
LnDTA	0.174771	0.132384	1.3202	0.18724	
CAPMB	-0.109254	0.0366386	-2.9819	0.00297	***
LnTA	0.0817585	0.0377346	2.1667	0.03062	**
LnDAQR	-0.0142098	0.00263477	-5.3932	<0.00001	***

Statistics based on the weighted data:

Sum squared resid	574.8855	S.E. of regression	0.0938284
R-squared	0.82626	Adjusted R-squared	0.75601
F(5, 653)	11.76284	P-value(F)	6.59e-11
Log-likelihood	-890.0864	Akaike criterion	1792.173
Schwarz criterion	1819.117	Hannan-Quinn	1802.617

Although accruals quality rank is statistically significant in the panel regression output of the earnings to price ratio regression model for the discretionary accruals quality, LnDTA provides a statistically insignificant coefficient of 0.174771 with t-value of 1.3202 and a corresponding p-value of 0.1872. Ln(1+g), the indicator of growth also provides a statistically insignificant coefficient, albeit with a marginal values of 1.8926 and 0.05885 for the t-statistic and the p-value respectively. The variables are however jointly important given that eliminating them from analysis reduces the R-square value from 0.82626 to 0.71524.

This leaves size and market risk as indicated by LnTA and LnCAPM beta respectively as the other statistically significant indicators of cost of capital. This is consistent with the output from the innate accruals quality which also indicated that these variables alongside accruals quality are statistically significant predictors of cost of capital of firms quoted at the NSE.

4.7 Effect of Overall Accruals Quality on Cost of Capital

To corroborate the findings from objectives (i) and (ii) as reflected in null hypotheses 1.1 and 1.2, this study also involved the testing of the effect of the overall accruals quality on cost of capital in hypothesis 1.3. In this respect the same the earnings to price ratio regression model was tested by substituting innate accruals quality rank with the overall accruals quality rank (AQR). The objective is to test the hypothesis that the overall accruals quality has no effect on cost of capital of the firms listed at the NSE. Panel data diagnostic tests were done for the possible use of the models in interrelating cost of capital with the various determinants including the AQR. Using the weighted least squares panel regression, the findings are indicated in Table 4.26 indicating the output model as:

$$LnK_{av} = 2.937 + 0.143Ln(1+g) + 0.206LnDTA - 0.117LnCAPM\beta + 0.082LnTA - 0.097LnAQR$$

An adjusted R-square value of 0.5223 is obtained. This indicates a good fit for the model given that 52% of the changes in cost of capital are explained by the explanatory variables indicated in the earnings to price ratio regression model.

The suitability of the weighted least squares panel regression model is further confirmed by appropriate values of the F-ratio, the P-value and the Akaike Information Criterion (AIC). The F value of 8.25 is above the critical F value of 4.3712. The P value of 0.0000 is less than the critical F of 0.05. All these statistical values imply that the notion of an ill fitting model of cost of capital on growth, leverage, market risk, size and accruals quality variables is rejected with the conclusion that the model is relevant is evaluating effect of accruals quality on cost capital for the NSE companies..

Table 4.26: Accruals Quality Rank WLS Panel Regression Output

Panel A	Coefficient	Std. Error	t-ratio	p-value	
Const	2.93694	0.09575	30.6738	<0.00001	***
Ln(1+g)	0.14271	0.07560	1.8878	0.05950	*
LnDTA	0.20584	0.13682	1.5044	0.13295	
LnCAPMβ	-0.11730	0.03780	-3.1035	0.00199	***
LnTA	0.09724	0.03933	2.4721	0.01369	**
LnAQR	-0.10124	0.03070	-3.2981	0.00103	***

Statistics based on the weighted data

Sum squared resid	569.9371	S.E. of regression	0.093424
R-squared	0.59428	Adjusted R-squared	0.52226
F(5, 653)	8.251668	P-value(F)	1.43e-07
Log-likelihood	-887.2379	Akaike criterion	1786.476
Schwarz criterion	1813.420	Hannan-Quinn	1796.920

The findings indicate that besides the model constant, three dependent variables are statistically significant in estimating cost of capital in the overall accruals quality model. These are market beta, total assets and overall accruals quality. The respective t-values of their coefficients estimated from this study are -3.1035, 2.4721 and -3.2981. All these are beyond the critical values of the t, a fact confirmed by the corresponding p-values of

0.00199, 0.01369 and 0.00103 all of which are below 0.05 pointing towards statistical significance.

The natural logarithm of growth as well as DTA, the proxy for capital structure and leverage, are both statistically insignificant in the model given that their respective p-values of 0.0595 and 0.13295 are above 0.05 and that their respective t-ratios of 1.8878 and 1.5044 are also below the critical t levels. The variables are still critical to the model given that leaving them out provides a cost of capital regression output whose R-square value declines to 0.47957.

Apart from market risk and accruals quality indicator, all the other coefficients provide positive values indicating that they have a positive effect on cost of capital. Accordingly, cost of capital is expected to increase in tandem with increases in growth, leverage and firm size. On the other hand, poor accruals quality and the high market risk are expected to correspond with low cost of capital. This is consistent with the findings about the effect of both discretionary and innate accruals' qualities on cost of capital.

The findings therefore indicate that overall accruals quality of companies listed at the NSE as indicated by the accruals quality rank affects cost of capital and that it is a negative predictor of cost of capital. Accordingly, the null hypothesis that accruals quality has a statistically insignificant coefficient in the cost of capital equation is rejected.

These findings are in line with those of Easley and O'Hara (2004), Brousseau Mao and Wei, 2012), Francis *et al.* (2005); Gray *et al.* (2011) who all find that accruals quality has an effect on cost of capital. The findings are however contradictory to the theoretical expectation that if accruals quality represents an information risk, then high accruals quality companies, which have reduced financial information uncertainty, should have a lower cost of capital than their low accruals quality counterparts. Gray *et al.* (2009) for instance find that accruals quality ranks have positive coefficients in the Australian financial market. Similar findings to those of Gray *et al.* (2009) have been registered by

Qi.*et al.* (2010), Brousseau and Gu (2011) and Demirkhan *et al.* (2012). The findings from Brousseau and Gu (2011) were however restricted to small size firms, alluding to the expectation that the effect of accruals quality on cost of capital is related to the size effect. This can however be discounted for the Kenyan market given that Thuku (2009) and Ndung'u (2014) find no significant size effect at the NSE.

The findings are however consistent with those of Easley and O'Hara (2004), Brousseau & Gu, (2011) for large firms and Mao and Wei (2012) who find that cost of capital increases with increase in accruals quality. These findings should be taken in the context that Kenya is a unique operational and regulatory environment such that the effect of accruals quality could be distinctly dissimilar from other environments. This argument is consistent with the arguments of Gray *et al.* (2009) who indicate that the idiosyncrasies in the operating environment influence how accruals quality affect market pricing and cost of capital.

4.8   Effect Qualitative Accruals Quality on Cost of Capital

In the third objective of the study, accruals quality qualitative index (YAQ) is null hypothesized to not have any significant effect on cost of capital of companies listed at the NSE. To carry out the test, LnAQR is replaced with LnYAQ in the earnings to price ratio regression model to test the statistical significance of the LnYAQ coefficient. As a preliminary measure, the suitability of the model in relating cost of capital to the cost of capital factors is tested. The weighted least squares model is found to suit the parameters best since its Akaike and Hannan-Quinn criteria values are the lowest among the alternative fixed effects and variable effects panel regression models. The findings from the regression analysis are presented in Table 4.27 and is indicated in the output model:

$$LnK_{av} = 3.193 + 0.171Ln(1 + g) + 0.277LnDTA - 0.122LnCAPM\beta + 0.127LnTA - 0.446LnYAQ$$

The adjusted R-square value from the regression is established at 0.5583. This implies that the model independent variables can be used to explain the majority of the

variations (56%) in the dependent variable which represents the cost of capital. The suitability of the model is further indicated by the F-value of 8.78163 which is higher than the critical F-ratio of 4.3712 which rejects the proposition that the model is ill suited for the representation of the variables. This is further confirmed by the extremely low p-value of 0.0000. These confirmations allowed the interpretation of the findings in Table 4.27.

Table 4.27: Qualitative Accruals Quality Index WLS Panel Regression Output

	Coefficient	Std. Error	t-ratio	p-value	
Const	3.19276	0.151763	21.0378	<0.00001	***
Ln(1+g)	0.17076	0.0777152	2.1973	0.02835	**
LnDTA	0.277346	0.140723	1.9709	0.04916	**
LnCAPMβ	-0.122151	0.0380396	-3.2112	0.00139	***
LnTA	0.127183	0.0428725	2.9665	0.00312	***
LnYAQ	-0.445638	0.122475	-3.6386	0.00030	***

Statistics based on the weighted data:			
Sum squared resid	577.4346	S.E. of regression	0.0940361
R-squared	0.63004	Adjusted R-squared	0.55830
F(5, 653)	8.781638	P-value(F)	4.47e-08
Log-likelihood	-891.5442	Akaike criterion	1795.088
Schwarz criterion	1822.033	Hannan-Quinn	1805.533

All the model variables have statistically significant coefficients as indicated by their t-values that fall beyond the critical t and the p-values that fall beyond 0.05 at the 95% confidence interval used in the study. The findings further indicate that three variables [Ln(1+g); LnDTA and LnTA] have a positive effect on cost of capital as indicated by the predicted signs of the coefficients. The remaining two variables (LnCAPMβ and LnLnYAQ) have an inverse relationship with cost of capital.

The findings seem to suggest that using the qualitative aspects of accruals quality information to describe cost of capital is a better approach than the use of the innate,

discretionary or overall cost of capital. This is not only because of the impressive R-square of 0.63 and the adjusted R-square of 0.558 but also because the model returns all the independent variables as statistically significant.

The finding of an inverse relationship between cost of capital and accruals quality qualitative index is not surprising since the other indicators of accruals quality (IAQR; DAQR and AQR) in the foregoing subsections have all returned negative coefficients. As discussed earlier under innate and discretionary accruals quality, this could largely be attributed to the small size of the market that lacks in financial deepening. It could also be attributed to the fact that even the quoted companies are largely small in size when compared to the listed companies in other financial markets. Such unique aspects of the NSE could have led to the surprising conclusions from this study.

The limitation of accruals quality rank in depicting accruals quality is that it is difficult to split the accruals quality into the innate and discretionary components. This is because the model depends on the perception of the financial analysts and audit experts, an approach that makes it difficult to distinguish between the two forms of accruals quality. It is also difficult to use it over an elongated period of time since the passage of time may cloud the perception of the experts on the level of accruals quality. This is particularly so because company fundamentals change with time. Additionally, the analysts may find it difficult to distinguish between accruals quality and the overall quality of financial statements and the information they contain.

4.9   Effect Accruals Quality on Security Market Returns

In the fourth objective of this study, the effect of accruals quality on equity market returns at the NSE is evaluated. The expectation is that since accruals quality is an information risk factor, it should involve a return premium over and above the established return factors of Fama and French (1993). It is logical then to test the statistical significance of the excess returns over the market risk premium, the size factor and the value effect as proxied by book to market factor. By taking the difference in

monthly return of the low accrual quality decile portfolio and comparing it with the high accrual quality decile portfolio, the difference would signify the accruals quality effect on returns. This inter-relationship is indicated in the accruals quality pricing model. Before running the accruals quality pricing model for the overall accruals quality, the respective descriptive mean statistics of the accruals quality premium factors were established as indicated in Table 4.28 and Figure 4.8.
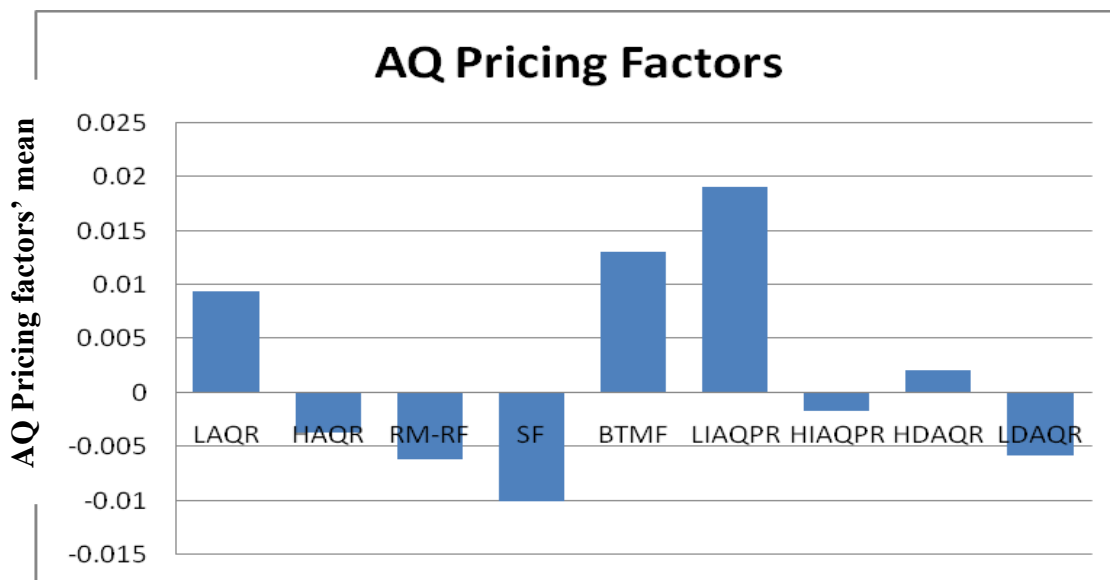
Figure 4.8: Mean Attributes of Accruals Pricing Aspects

Consistent with theoretical expectations of Francis *et al.* (2005) that accruals quality represents an information risk factor, the lowest accruals quality decile portfolio return (LAQR) has a mean average greater than that of highest accruals quality decile portfolio return (HAQR). The validity of this observation is tested by running regression model 3.5. Interestingly however, the high accruals quality portfolio seems to be more volatile in the negative territory than the low accruals quality portfolio as can be observed from their coefficients of variation of -23.34 and 10.17 respectively.

Given that none of the segments quoted at the NSE has more than ten companies, it was not possible to establish the segmental accruals quality return premium. This is because it would not be possible to establish accruals quality decile portfolios. In fact some segments are so small as to contain only one or two companies. The insurance segment had two qualifying companies while the investment segment had only three qualifying companies. The alternative would be to compare individual companies which would in essence imply the testing of individual company fundamentals.

The descriptive values can be compared and contrasted with those from Kim and Qi (2010) from the NYSE, AMEX and NASDAQ dataset over the period January 1970 to December 2006. From this study carried out to evaluate accruals quality, stock returns and macroeconomic conditions, the mean accruals quality of the highest and lowest quality deciles were determined as 0.009 and 0.145 respectively.

Table 4.28: Descriptive Statistics of Accruals Quality Premium Factors

	LAQR	*HAQR*	R_M-R_F	*SF*	*BTMF*
Mean	0.009409	-0.00373	-0.00612	-0.01009	0.01314
Median	0.008585	-0.00551	-0.00489	-0.01595	0.00906
Standard Deviation	0.095677	0.08716	0.06088	0.11213	0.09795
Coefficient of Variation	10.16818	-23.34236	-9.95232	-11.11207	7.45215
Range	1.016583	0.95454	0.41545	1.22587	0.9367
Confidence Level(95.0%)	0.013208	0.01203	0.00840	0.01548	0.01352

With respective mean respective values of 0.00119 (0.119%) and 0.00135(0.135%), accruals quality is shown as a risk factor that requires a security return premium just as is the case for NSE. However, unlike the results from this study, that of Kim and Qi (2010) portrays comparable volatility as implied by the coefficient of variations of 36.72 and 37.85 for highest and lowest accruals quality portfolios. Using Compustat database over the 1975-2009 period, Du (2011) reports accruals quality values of 0.279 and 0.009 for the lowest and highest accruals quality decile portfolios respectively.

Before using the accruals quality pricing model for testing the statistical significance of excess returns of accruals quality return premium over market premium, size factor and book to market factor, its robustness was tested through multiple linear regression diagnostic tests. In this respect it was tested as to whether it represented the best linear unbiased estimation of accrual quality. Accordingly model validation tests of normality, multicollinearity, heteroscedasticity, linearity and serial correlation were undertaken. The results are indicated in Table 4.29 and are represented in the output model shown as: β_0

$$R_{L,t} - R_{H,t} = 0.01380 + 0.19419(R_m - R_f) - 0.04381SF + 0.00694BTMF$$

Table 4.29: Accruals Quality Return Premium Regression Output

Adjusted R Square	0.75422					
Standard Error	0.00811					
Durbin-Watson	1.832					
Kolmogorov-Smirnov	0.126	0.104*				
Shapiro-Wilk	0.942	0.096*				
Koenker	2.990	0.393*				
Breusch-Pagan	4.090	0.252*				
Observations	204					

ANOVA						
	Df	SS	MS	F	SigF F	
Regression	3	0.04114	0.01371	208.6413	2.532E-61	
Residual	200	0.01315	6.57E-05			
Total	203	0.05429				

					Collinearity Statistics	
	Coefficients	Std Error	t Stat	P-value	Tolerance	VIF
Constant	0.01380	0.00058	23.75605	3.889E-60		
R_M-R_F	0.19419	0.00988	19.64494	1.443E-48	0.894	1.118
SF	-0.04381	0.00534	-8.20787	2.729E-14	0.904	1.106
BTMF	0.00694	0.00587	1.18259	2.384E-01	0.979	1.022

*P values of more than 0.05 indicates normality

The Kolmogorov-Smirnov statistic was used to verify the normality assumption. The results indicate a value of 0.126 with a corresponding significance value of 0.104. Since this value is greater than 0.05, the null hypothesis of non-normality for the model is rejected with the conclusion that the model residual values conform to the normality expectations. This conclusion is corroborated by the Shapiro-Wilk statistic of 0.942 with a significance probability value of 0.096 that is greater than 0.05. This is further confirmed by the skewness and kurtosis statistics of the unstandardised residuals that show values of -0.012 and 0.685 values both of which are less than twice of the respective standard errors of 0.170 and 0.339 respectively.

R_M-R_F, SF and BTMF which are the predictor variables in the accruals quality pricing model were tested with respect to collinearity. The resultant Tolerance values are 0.894, 0.904 and 0.979 respectively. The observation that they are all close to 1 implies that multicollinearity, if any, among the predictor variables with accruals return premium is statistically insignificant. The evidence of absence of statistically significant collinearity is further indicated by the corresponding variance inflation factor (VIF) values of 1.118, 1.106 and 1.022 for the respective variables. Again all these values are close to 1 and far much less than 5. This diagnostic test confirms that the model is devoid of any statistically significant multicollinearity problem.

The model also expects the error term to be homoscedastic by having a constant variance for the error term. In this respect, linear heteroscedasticity was tested using the Breuch-Pagan test and the Koenker test. The respective lagrange multipliers (LM) of 4.090 and 2.990 indicate absence of heteroscedasticity given that the respective significance values of 0.252 and 0.3936 are both higher than 0.05. The Durbin-Watson test was used to interrogate serial correlation in the data. The d value is approximately 2, an indication that there is neither positive nor negative first order autocorrelation. The coefficient of determination of 0.7579 is indicative of a robust model for testing the statistical significance of the alpha value in the output. The fact that F value of 208.64 is greater than the significant level of 0.000 indicates statistical significance which

confirms that the model fits the data well and it can therefore be relied upon to test the statistical significance of accruals based excess returns of decile portfolios for companies quoted at the NSE.

The regression output of the return premium of low accruals quality over high accruals quality of the market return factors is shown in Table 4.29. The findings indicate that size factor and market risk factor are statically significant in explaining security return premium. This is confirmed by the t-values of -8.2079 and 19.6449 respectively at 95% confidence interval which automatically imply that the suggestion of an insignificant relationship between accruals quality return premium and these two variables is rejected. The corresponding p-values of 0.0000 also support this. The value effect is however statistically insignificant at a t-value of 1.18259 and a P-value of 0.2384. This implies that a firm's relationship of book and market values of equity has no bearing on the pricing of the accruals quality return premium.

On the overall, the coefficient of the excess returns β_0, has a statistically significant t-value of 23.7561. Accordingly, the null hypothesis H_{05} stated in equation 1.5 that there is no accruals' quality based return premium such that high accruals quality companies have the same market return as the low accruals quality companies in the Kenyan security markets is rejected. It is concluded that the level of accruals quality affects the security pricing and therefore has an effect on the cost of capital of companies quoted at the NSE. Accruals quality is therefore a diversifiable information risk factor priced by the NSE and trading strategies based on accruals quality can yield above normal returns at least in the short-run.

The findings from this study are consistent with those of Kim and Qi (2010) who also report that the accruals quality risk factor is significantly priced, after controlling for low-priced stocks. Their results, just like those from this study, suggest that accrual quality contributes to the cost of equity capital and has a significant market pricing effect. The annual rebalancing of the accruals quality portfolios in this study implies that

the results are contrary to the expectations of Core, Guay and Verdi (2008) who find that annual rebalancing of portfolios eliminated the significance of the return premium in their sample data. This indicates that the pricing effect of accruals quality at the NSE is spectacularly overbearing and therefore its effect on cost of capital is significant. This is because even with the less frequent portfolio rebalancing, the coefficient of the accruals quality portfolio return premium is still statistically significant.

The small size of the NSE however implies that the postulation by Brousseau and Gu (2011) that the accruals quality premium is a result of a small number of small-size companies cannot be verified at the NSE. Similarly, the assertion by Armstrong *et al.* (2011) that the degree of market competition drives the accruals quality premium is difficult to verify at the NSE given its relatively small size with only 39 qualifying companies for this study on accruals quality.

The study also involved testing the significance of the innate accruals quality security market premium. Just like for the case of overall accruals quality, the companies were ranked into decile portfolios from the highest innate accruals quality portfolio to the lowest innate accruals portfolio. The expectation again is that low accruals quality portfolio should attract an information risk return premium over and above standard risk factors envisaged in the Fama and French (1993) three factor model. The descriptive statistics of the innate accruals quality-based portfolios are reflected in Table 4.30.

The findings in conformity with the theoretical expectation of an information risk premium indicate that the low innate accruals quality portfolio decile has a higher mean average of returns (1.91%) compared to the high innate accruals quality portfolio (-0.167%). This is consistent with the findings in the study for the overall accruals quality as indicated in Table 4.28. The corresponding median returns confirm this trend because the low accruals quality median return is a positive of 2.187% while that of the high innate accruals quality portfolio is a negative of 0.111%. This implies that the low innate

161

accruals quality portfolio has in most cases higher returns than the high innate accruals quality portfolio.

Table 4.30: Descriptive Statistics of Innate Accruals Quality Premium Factors

	LIAQPR	HIAQPR	RL-RH	Rm-Rf	SF	BTMF
Mean	0.01910	-0.00167	0.02077	-0.00612	-0.01009	0.43892
Median	0.02187	-0.00111	0.02242	-0.00489	-0.01595	0.43356
Standard Deviation	0.13658	0.12298	0.02584	0.06088	0.11213	0.25610
Coefficient of Variation	7.15152	-73.71357	1.24424	-9.95232	-11.11207	0.58348
Range	1.44586	1.40639	0.17183	0.41545	1.22587	1.21356
Confidence Level (95.0%)	0.01885	0.01698	0.00357	0.00840	0.01548	0.03535

Interestingly, the mean of the market risk premium is a negative of 0.00612, an indication that the return on the risk free investments is often higher than the mean returns on the NSE stocks. This could be attributed to the narrow range of investing alternatives at the NSE and the inability of several investors to diversify into the Government securities. Apart from the book to market factor, the rest of the variables portray a high coefficient of variation which points towards volatile innate accruals quality risk premium factors.

After establishing the descriptive aspects of the innate accruals quality premium, the accruals quality pricing regression model was run on innate accruals quality decile portfolios. The results are reflected in Table 4.31.

The statistical significance of innate accruals quality based portfolio excess returns was tested. The same approach to the one used in testing the overall accrual based portfolio excess returns was adopted. The suitability of the model in the testing was confirmed through tests of normality, collinearity, homoscedasticity and linearity. The adjusted results are indicated in Table 4.31.

The test for heteroscedasticity was done based on the Breuch-Pagan test and the Koenker test. The respective lagrange multipliers (LM) of 6.568 and 10.946 indicate absence of heteroscedasticity given that the respective significance values of 0.214 and

0.102 are both higher than 0.05. The Durbin-Watson test was used to interrogate serial correlation in the data. The d value is approximately 2, an indication that there is neither positive nor negative first order autocorrelation. The resultant model is established as:

$$R_{L,t} - R_{H,t} = 0.02497 + 0.26272(R_m - R_f) - 0.05869SF - 0.00726BTMF$$

The coefficient of determination of 0.54102 is indicative of a robust model for testing the statistical significance of the alpha value in the output since this indicates that 54% of the variations in the innate accruals quality premium. The fact that F value of 80.763 is greater than the critical F of 0.000 indicates statistical significance which confirms that the model fits the data well and it can therefore be relied upon to test the statistical significance of innate accruals based excess returns of decile portfolios for companies quoted at the NSE.

Table 4.31: Innate Accruals Return Premium Regression Output

Regression Statistics						
Adjusted R Square	0.54102					
Standard Error	0.01751					
Durbin-Watson	1.865					
Kolmogorov-Smirnov	0.099	0.065*				
Shapiro-Wilk	0.872	0.107*				
Koenker	10.946	0.102*				
Breusch-Pagan	6.5680	0.214*				
Observations	204					

ANOVA						
	Df	*SS*	*MS*	*F*	*Significance F*	
Regression	3	0.074244	0.02475	80.7627	2.87E-34	
Residual	200	0.061286	0.00031			
Total	203	0.13553				
		Standard			Collinearity Statistics	
	Coefficients	Error	t Stat	P-value	Tolerance	VIF
Intercept	0.02497	0.00247	10.12346	1.03E-19		
Rm-Rf	0.26272	0.02124	12.36691	1.83E-26	0.918	1.108
SF	-0.05869	0.01154	-5.08455	8.45E-07	0.904	1.106
BTMF	-0.00726	0.00482	-1.50752	0.133256	0.979	1.022

*P values of more than 0.05 indicates normality

The null hypothesis that innate accruals quality has no influence on market pricing and hence on cost of capital is rejected since the coefficient of the innate accruals quality premium is statistically significant with a t-value of 10.12346 at 0.05 level of significance. It is therefore concluded that innate accruals quality as a source of information risk has a return premium that is priced at the NSE. This is consistent with the findings about overall accruals quality as indicated in Table 4.29. This emanates from the fact that most of the accruals quality of the firms quoted at the NSE is explained by the innate component as opposed to the discretionary component of accruals quality.

Consistent with overall accruals quality premium, all the standard risk factors except the book to market factor are statistically significant at 95% confidence interval. The constant has t-value of 10.16 which is far beyond the critical t value. This implies that the innate accruals quality premium is a function of its pricing effect, the market risk factors and the size factor holding the book to market factor constant. Accordingly, the null hypothesis is rejected with respect to innate accruals quality return premium. The β_0 value from the regression is positive hence lower innate accruals quality portfolio decile provides higher returns over and above the high innate accruals quality portfolio decile. Just like the overall accruals quality, innate accruals quality can be used as a predictor of market returns and that innate accruals quality is a priced market risk factor

Although discretionary accruals quality was found to be an insignificant component of accruals quality, the descriptive statistical aspects of its components are nonetheless established in Table 4.32.

These findings should however be viewed from the confirmed position that at the NSE, the innate aspects of accruals quality dominate the discretionary aspects and that most of the accruals return premium is explained by the innate component of accruals quality. With this position in mind, the Table 4.33 reflects the regression output of the accruals

quality pricing regression model on the basis of discretionary accruals quality portfolio deciles. The resultant model is indicated as;

$$R_{L,t} - R_{H,t} = -0.0034 - 0.7715(R_m - R_f) + 0.2749SF - 0.5407BTMF$$

Table 4.32: Descriptive Statistics of DAQ Premium Factors

	HDAQR	*LDAQR*	*RL-RH*	*Rm-Rf*	*SF*	*BTMP*
Mean	0.002059	-0.00581	0.000618	-0.00612	-0.01009	-0.00373
Standard Error	0.007696	0.006648	0.011002	0.004262	0.00785	0.005991
Median	0.000362	0.003059	-0.00943	-0.00489	-0.01595	-0.00349
Standard Deviation	0.109917	0.094959	0.157146	0.06088	0.112127	0.085571
Coefficient of Variation	303.8067	31.04188	-16.6688	-12.4411	-7.02887	-24.532
Range	1.104157	0.900447	1.251554	0.415452	1.225873	0.726872
Confidence Level (95.0%)	0.015174	0.013109	0.021694	0.008404	0.015479	0.011813

Having defined the descriptive statistics of discretionary accruals quality based portfolio decile variables, the excess returns were tested based on running the multiple linear accruals quality pricing regression model. The initial diagnostic procedures of testing for normality, collinearity, heteroscedasticity and linearity were conducted based on Kolmogorov-Smirnov statistic, Tolerance, Breuch-Pagan test and graphical plots respectively. The results are reflected in Table 4.33. It is only after these tests that the statistical significance of β_0 in the accruals quality pricing regression model was tested.

With respect to normality of the data, the Kolmogorov-Smirnov was established at 0.065 with a significance value of 0.137. Accordingly, just like the case of innate and overall accruals quality-based portfolios, the data is found to be normally distributed given that the computed coefficients of this statistic is above 0.05, the critical significance level at 95% confidence interval. This is confirmed by the Shapiro-Wilk statistic of 0.970 with a significance probability value of 0.109 that is also greater than 0.05.

The resultant Tolerance values are 0.994, 0.993 and 0.998 for the market risk premium, the size factor and book to market factor respectively are all close to 1 implies that

multicollinearity, if any, among the predictor variables with accruals return premium is statistically insignificant. The evidence of absence of statistically significant multicollinearity is further indicated by the corresponding variance inflation factor (VIF) values of 1.006, 1.007 and 1.002 for the respective variables. Again all these values are close to 1 and far much less than 5.

Table 4.33: Discretionary Accruals Return Premium Regression Output

Regression Statistics						
Adjusted R Square	0.67963					
Standard Error	0.05423					
Durbin-Watson	1.846					
Kolmogorov-Smirnov	0.065	0.137*				
Shapiro-Wilk	0.970	0.109*				
Koenker	10.27	0.132*				
Breusch-Pagan	6.755	0.146*				
Observations	204					
ANOVA						
	Df	SS	MS	F	Significance F	
Regression	3	1.825569	0.608523	38.18211	1.49E-19	
Residual	200	3.187477	0.015937			
Total	203	5.013047				
					Collinearity Statistics	
	Coefficients	Standard Error	t Stat	P-value	Tolerance	VIF
Intercept	-0.00335	0.00896	-0.37363	0.709076		
R_m-R_f	-0.77152	0.18214	-4.23592	3.47E-05	0.994	1.006
SF	0.274934	0.08307	3.309802	0.001107	0.993	1.007
BTMF	-0.54068	0.12458	-4.34005	2.26E-05	0.998	1.002

*P values of more than 0.05 indicates normality

To test if the data error term is homoscedastic the Breuch-Pagan and the Koenker tests were used. The respective lagrange multipliers (LM) of 6.76 and 10.27 indicate that the data is largely homoscedatic since the respective significance values of 0.146 and 0.132 are both higher than 0.05. The Durbin-Watson test was used to interrogate serial correlation in the data. The d value is approximately 2, an indication that there is neither

positive nor negative first order autocorrelation. The r-square value of 0.67963 translates to a coefficient of determination 68% which is indicative of a robust model for testing the statistical significance of the alpha value in the output. The fact that F value of 38.18 is statistically significant confirms that the model fits the data well and it can therefore be relied upon to test the statistical significance of discretionary accruals based excess returns of decile portfolios for companies quoted at the NSE.

Unlike the overall accruals quality return premium and the innate accruals quality return premium, the study fails to reject the null hypothesis that there is no discretionary accruals quality premium at the Nairobi Securities Exchange. This is because the low discretionary accruals portfolio decile premium has a statistically insignificant alpha with a t-value of -0.037363 at 95% confidence interval. The rest of the discretionary accruals quality premium factor coefficients are statistically significant at 95% confidence level. It is from this perspective that discretionary accruals quality cannot be used as a predictor of market return since it is not factored into market prices

The contradictory findings to those of overall and innate accruals quality could be attributed to the fact that discretionary accruals quality is an insignificant component of overall accruals quality such that most of the accruals quality is attributable to the innate accruals component of the accruals quality. The finding that discretionary accruals quality is not a market priced risk factor at the NSE is consistent with that of Core *et al.* (2011) that in competitive markets information asymmetry has no effect on pricing in excess of standard risk factors. It also supports the findings of Gray, Koh and Tong (2009) who find that in the Australian market, the cost of debt and equity and hence the corresponding market pricing of accruals quality are influenced more by the innate characteristics rather than the discretionary aspects of accruals quality.

This finding however contradicts that of Demirkhan *et al.* (2012) who while studying discretionary accruals quality in single-segment and multi-segment firms find accruals quality to be statistically significant at 95% confidence interval for the Compustat

Industrial Annual database over the period 1984 to 2003. Again, the idiosyncratic differences in the market dynamics of the NSE and the computed data markets are adequate to explain the differences in these findings

The regression output with respect to the qualitative accruals quality portfolios followed the same procedure as the innate, discretionary and overall accruals quality. The findings are reflected in the equation:

$$R_{L,t} - R_{H,t} = 0.04812 - 1.17637(R_m - R_f) + 0.24582SF - 0.04512BTMF$$

The corresponding t-values (p-values) of 2.11956 (0.03528), -7.45732 (0.0000), 2.86853 (0.0046) and -2.51705 (0.01262) for the portfolio return premium (β_0), market risk coefficient (β_1), size factor coefficient (β_2) and book to market coefficient (β_3) respectively are all statistically significant implying that the null hypothesis is rejected for the qualitative accruals quality. This provides the conclusion that qualitative accruals quality is a priced risk factor and that companies with low qualitative accruals quality have higher returns that those with high qualitative accruals quality. The resultant return premium is statistically significant for companies quoted at the NSE. This is a significant finding given that existing literature has hitherto based its conclusions on the overall, innate and discretionary accruals quality only. As a new addition, this study goes further and provides conclusions on the basis of qualitative accruals quality portfolio return premium. It also confirms that market risk is a pervasive indicator of market returns since it is statistically significant for all the accruals quality based portfolio pricing regression outputs.

4.10   Effect of Segmental Accruals Quality on Cost of Capital

The effect of accruals quality on the cost of capital in each of the qualifying eight segments of the Nairobi Securities exchange was tested. In this case the earnings to price ratio regression model was run on a panel basis for each of the segments of the NSE over the study period. The model was applied to overall accruals quality as reflected by

168

the natural logarithm of the accruals quality rank; the innate accruals quality as reflected by the natural logarithm of the innate accruals quality rank; the discretionary accruals quality as reflected by the natural logarithm of the discretionary accruals quality rank and the qualitative aspects of accruals quality as reflected by the natural logarithm of the accruals quality index. The findings are presented and discussed in the ensuing subsections.

4.10.1 Segmental Accruals Quality

The effect of overall accruals quality on the cost of capital in each of the qualifying nine segments of the Nairobi Securities Exchange (Commercial and Services; Manufacturing and Allied; Energy and Petroleum; Automobiles and Accessories; Construction and Allied; Agricultural; Investment; Insurance and Banking) was tested. The findings are indicated in Table 4.34.

Diagnostic tests were initially carried out to establish the suitability of using the panel regression model for each of the segments. The model fitted well for all the segments given that all had an R-square value of at least 0.500 for the Agricultural segment and at most 0.7063 for the Commercial and Services segment.

This finding of a robust panel regression model for the nine qualifying segments of the NSE is confirmed by the model F-test with all the nine F-ratios being statically significant. In addition, the P-values of the nine models are all below the critical value of 0.05 at the 95% confidence interval. The lowest F-value of the model of 3.6432 for the manufacturing segment and the highest value of 50.593 for the banking industry are all above the critical value. In a nutshell, the model is suitable for the data. The respective Akaike Information criteria (AIC) are the closest to zero for all the possible models which allowed weighted least squares panel regression to be used in regressing cost of capital on the cost of capital factors indicate that overall accruals quality has a significant influence on cost of capital in all the segments except the automobiles segment.

169

In the Commercial and Allied Segment, the null hypothesis that overall accruals quality does not affect cost of capital is rejected because it has a statistically significant coefficient of the constant of 0.0721 at 95 % confidence interval. The positive coefficient implies that the higher the accruals quality (the smaller the natural logarithm of the accruals quality rank), the smaller the cost of capital. Accordingly, companies listed in the Commercial segment of the NSE have their accruals quality being directly related with the cost of capital. The same relationship is exhibited by the manufacturing, energy, agricultural, insurance and banking segments. All these have a positive coefficient of the accruals quality factor.

Table 4.34: Effect of Segmental Accruals Quality on Cost of Capital

	Comm	Manuf	Energy	Auto	Constr	Agric	Inves	Ins	Bank
R^2	0.7163	0.6227	0.5845	0.6543	0.7083	0.5000	0.6806	0.6341	0.6605
Adj. R^2	0.6919	0.5648	0.5383	0.6264	0.6759	0.4734	0.6451	0.5688	0.6475
SE	0.0978	0.0969	1.0084	0.0998	0.1044	0.8072	1.0491	0.1102	0.0897
F	29.291	3.6432	12.6593	23.469	21.858	19.159	19.1755	9.7061	50.593
P-value	0.0000	0.0059	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
AIC	184.531	194.35	151.21	198.42	154.74	251.57	155.23	108.49	362.24
β_0	-0.2063*	2.6717*	-0.0716*	5.9010*	5.7042*	-0.0417*	1.4894*	1.7065*	-0.1934*
	(0.0000)	(0.0000)	(0.0004)	(0.0000)	(0.0000)	(0.0179)	(0.0000)	(0.0010)	(0.0000)
β_1	0.0160	0.08697	0.0033	0.4750*	0.5477*	-0.0067	-0.0008	0.0491	0.0128
	(0.5253)	(0.4286)	(0.1569)	(0.0068)	(0.0037)	(0.7917)	(0.9358)	(0.7382)	(0.4190)
β_2	-0.0478	1.0736*	0.1182*	-1.4113*	-1.7663*	-0.0387*	0.0078	0.7001	0.0539*
	(0.2186)	(0.0007)	(0.0000)	(0.0277)	(0.0249)	(0.0478)	(0.5954)	(0.0630)	(0.0104)
β_3	1.0255*	6.2120*	0.0032*	0.0972*	0.0531*	0.0095*	0.6723*	1.5577*	1.3444*
	(0.0007)	(0.0046)	(0.0325)	(0.0281)	(0.0141)	(0.0278)	(0.0013)	(0.0001)	(0.001)
β_4	-0.0182	0.1615	0.6207*	-2.7657*	-2.2987*	0.0348	0.0090*	0.0061	0.0006
	(0.2877)	(0.2494)	(0.0000)	(0.0008)	(0.0012)	(0.0833)	(0.0420)	(0.7304)	(0.9095)
β_5	0.07210*	0.2874*	0.0107*	-0.0474	-0.1300*	0.04832*	-0.0509*	0.0730*	0.05259*
	(0.0000)	(0.0048)	(0.0001)	(0.6407)	(0.0131)	(0.0000)	(0.0000)	(0.0034)	(0.0000)

*Indicates significance of the coefficient using t-statistic at 95% confidence interval. The P-values are indicated in parentheses. β_0, β_1, β_2, β_3, β_4 and β_5, are the estimated coefficients of the model intercept, natural logarithm of one plus the growth rate over five successive years [Ln(1+g)]; natural logarithm of total debt to total assets ratio (LnDTA); natural logarithm of market beta (LnCAPMβ); natural logarithm of total assets in millions of Shillings (LnTA) and natural logarithm of the accruals quality rank (LnAQR) respectively.

The Automobiles & Accessories; Construction & Allied and the Investment segments have a negative coefficient to the accruals quality factor. This implies that cost of capital is inversely related with accruals quality in these segments and those companies with highest accruals quality rank values (poorest accruals quality) are expected to have the least cost of capital and vice versa. The coefficient for the Automobile and Accessories segment is however not statistically significant because it has a p-value of 0.6407 which is higher than the critical level of 0.05 at 95% confidence interval.

This apparent contradictory finding could perhaps be attributed to the unique financial reporting circumstances in each of the segments. The Auto, construction and Investment segments for instance focus on business models that take a long time for working capital to be translated to the cash flow components.

Of the remaining factors in the earnings to price ratio regression model, market risk premium as indicated by beta plays a significant role in the determination of cost of capital. This is evidenced by the fact that all the coefficients to the CAPM beta (β_3) are statistically significant at the 95% confidence interval. In addition, these coefficients are positive; an indication that cost of capital has a direct relationship with market risk premium. In addition, the model constant is significant for all the segments of the NSE. Whereas the constant is positive in the Manufacturing, Automobiles, Construction, Investment and Insurance segments, it is negative in the Commercial, Energy, Agricultural and Banking segments of the NSE.

4.10.2 Segmental Innate Accruals Quality

To establish the effect of innate accruals quality on cost of capital, the cost of capital equation in the earnings to price ratio regression model was augmented with the natural logarithm of the innate accruals quality rank (LnIAQR). This was to test its statistical significance in estimation of cost of capital. High innate accruals quality firms are expected to have low LnIAQR values while poor quality innate accruals quality firms are expected to have a high LnIAQR values. Innate accruals quality reflects the

171

segmental (industrial) reporting characteristics and is more critical in this last objective of the study than the discretionary and the overall accruals quality. The findings are indicated in Table 4.35.

Diagnostic tests were initially carried out to establish the suitability of using the panel regression model on each of the segments. The model fitted well for all the segments given that they all had an R-square value of at least 0.5197 for the Insurance segment and at most 0.8682 for the Investment segment.

Accordingly, the model parameters provide a robust cost of capital representation model for all the nine qualifying segments of the Nairobi Securities Exchange. All the test statistics corroborate the conclusions arrived at from the R-square value. The model p-values are for instance all statistically significant all being at most 0.0006 for the insurance segment compared to the statically critical level of 0.05 at 95% confidence interval. The model F ratios range from 7.5958 for the Insurance segment to 132.221 for the Agricultural segment.

On the overall, the null postulation that the model ill fits the data is therefore rejected with the conclusion that panel data regression analysis is suitable for modeling cost of capital against growth, leverage, market risk, size and innate accruals quality parameters over all the segments of the NSE. Based on the above conclusion, alternative models were tested with output in Table 4.35 reflecting the most suitable models because they provided the lowest AIC values from among fixed effects, variable effects and weighted least squares approaches to panel data regression analyses. Using β_5 as the coefficient of the innate accruals quality rank in the cost of capital multiple linear regression model, the findings in Table 4.35 indicate that save for the Automobiles & Accessories segment, all the other segments have statically significant β_5 values.

The highest p-value for β_5 for the seven remaining segments is 0.0256 for Commercial & Allied segment. All the rest register a p-value of 0.0000 except for the Construction, Insurance and Manufacturing segments that register p-values of 0.0001, 0.0002 and

172

0.0048 respectively. These indicate that innate accruals quality has a significant effect on cost of capital for almost all the segments of the NSE. The finding of a statistically insignificant effect of innate accruals quality on cost of capital in the Automobiles segment is consistent with the findings of the effect of overall accruals quality on cost of capital as indicated in Table 4.34.

Table 4.35: Effect of Segmental Innate Accruals Quality on Cost of Capital

	Comm	Manuf	Energy	Auto	Constr	Agric	Inves	Ins	Bank
R^2	0.6784	0.6280	0.6294	0.6554	0.7090	0.8732	0.8682	0.5197	0.6360
Adj. R^2	0.6070	0.5453	0.6060	0.6276	0.6905	0.8666	0.8535	0.4339	0.5551
SE	0.9784	0.1185	1.0227	0.9979	0.9698	0.9626	0.9758	1.0715	0.1229
F	9.4933	7.5958	26.835	23.579	38.487	132.221	59.282	6.0587	7.8622
P-value	0.0000	0.0001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0006	0.0001
AIC	184.531	194.35	250.81	198.41	241.78	287.51	147.85	106.59	362.24
β_0	-0.1691*	1.4989*	3.2285*	5.8678*	0.2695	-1.6627*	-0.0418*	2.6218*	-1.4989*
	(0.0024)	(0.0038)	(0.0000)	(0.0000)	(0.4533)	(0.0000)	(0.0000)	(0.0000)	(0.0038)
β_1	0.0160	0.08697	0.15090	0.4749*	0.5654*	-1.0057	0.0011	0.1115	0.0128
	(0.5253)	(0.4286)	(0.6492)	(0.0068)	(0.0000)	(0.5142)	(0.3236)	(0.2819)	(0.4190)
β_2	-0.0478	0.8092*	-0.6264	-1.4025*	0.7378*	-0.5591	0.0839*	1.1563*	0.0539*
	(0.2186)	(0.0396)	(0.2557)	(0.0289)	(0.0371)	(0.7050)	(0.0000)	(0.0002)	(0.0104)
β_3	0.0467*	-17.53*	0.1268*	0.0974*	0.0467	-0.5961*	-0.0009	-9.1587*	1.3444*
	(0.0294)	(0.0011)	(0.0234)	(0.0270)	(0.1226)	(0.0458)	(0.2119)	(0.0002)	(0.001)
β_4	-2.7307	0.1615	-0.4870	-0.3733*	5.4552	2.8006	0.1821*	0.0552	0.0006
	(0.0009)	(0.2494)	(0.9380)	(0.0008)	(0.0953)	(0.1110)	(0.0346)	(0.1388)	(0.9095)
β_5	1.0826*	0.2874*	0.6318*	-0.0535	-0.2961*	1.2549*	-0.0232*	0.5107*	0.05259*
	(0.0256)	(0.0048)	(0.0000)	(0.6040)	(0.0001)	(0.0000)	(0.0000)	(0.0002)	(0.0000)

*Indicates significance of the coefficient using t-statistic at 95% confidence interval. The P-values are indicated in parentheses. β_0, β_1, β_2, β_3, β_4 and β_5, are the estimated coefficients of the model intercept, natural logarithm of one plus the growth rate over five successive years [Ln(1+g)]; natural logarithm of total debt to total assets ratio (LnDTA); natural logarithm of market beta (LnCAPMβ); natural logarithm of total assets in millions of Shillings (LnTA) and natural logarithm of the innate accruals quality rank (LnIAQR) respectively.

The findings of a negative effect of innate accruals quality on cost of capital in the Construction and Investment segments and a positive effect in all the other remaining segments corroborates the relationship established between overall accruals quality and cost of capital in the segments listed at the NSE as shown in Table 4.34. The coefficient values for innate accruals quality are comparable to those of overall accruals quality because the findings from section 4.3.2 indicate that most of the accruals quality for the

NSE listed companies comprises the innate component of accruals quality and that discretionary accruals quality is of a far low significance in the overall accruals quality. These apparent mixed findings of a varied effect of innate accruals quality on cost of capital could perhaps be attributed to the small size of the Nairobi Securities Exchange and the idiosyncrasies of working capital and the relevant accounting attributes for the various segments of the NSE.

Of the remaining factors in the earnings to price ratio regression model, market risk premium as indicated by beta plays a significant role in the determination of cost of capital. This is evidenced by the fact that all the coefficients to the CAPM beta (β_3) are statistically significant at the 95% confidence interval. This is because market risk factor is common to all the companies listed at the NSE since they face similar market conditions.

In addition, these coefficients are positive; an indication that cost of capital has a direct relationship with market risk premium. Further, the model constant is significant for all the segments of the NSE. This implies that the classical capital asset pricing model (CAPM) could be adequate to model cost of capital and returns for the companies listed at the NSE. Whereas the constant is positive in the Manufacturing, Energy, Construction, Automobiles and Insurance segments, it is negative in the Commercial, Agricultural and Banking segments of the NSE.

The coefficient β_1 for business growth is significant in the Automobile and Construction segments and relatively statistically insignificant in the rest of the segments. Leverage has an effect on cost of capital for all the segments except Commercial and Allied Services, Energy and Agricultural segments as indicated by the statistical significance β_2 at 95% confidence interval.

4.10.3 Segmental Discretionary Accruals Quality

Despite the relatively low levels relative to discretionary accruals quality, the study nevertheless tested the effect of discretionary accruals quality on cost of capital among the companies listed in the various NSE segments as shown by the findings in Table 4.36.

In this respect, the cost of capital model indicated as the earnings to price ratio regression model was augmented with the natural logarithm of the discretionary accruals quality rank (LnDAQR). This was to establish its statistical significance in estimation of cost of capital. High discretionary accruals quality firms are expected to have low LnDAQR values while poor quality discretionary accruals quality firms are expected to have lower ranks translating to high LnDAQR values. Discretionary accruals quality reflects the firm idiosyncratic (individual) reporting characteristics.

Just like for the cases of overall accruals quality and innate accruals quality, diagnostic tests were initially carried out to establish the suitability of using the panel regression model for each of the segments.

The robustness of the model in this respect is evidenced by the regression output results. The model is robust for all the nine qualifying segments given that they all had an R-square value of at least 0.5483 for the Banking segment and at most 0.7110 for the Commercial and Services segment. This implies that most of the changes in cost of capital are reflected by changes in the earnings to price ratio regression model variables for all the segments of the NSE as evidenced by a coefficient of determination ranging from 55% to 71% as the explanatory power of the independent variables of the cost of capital.

In a nutshell, the panel data regression model parameters provide a robust cost of capital representation model for all the nine qualifying segments of the Nairobi Securities Exchange. Other test statistics provided in the output support the conclusions arrived at

from the R-square value. The model p-values are for instance all statistically significant all being at most 0.0024 for the Manufacturing segment compared to the statically critical level of 0.05 at 95% confidence interval. The model F ratios range from 4.2023 for the manufacturing segment to 29.351 for the Construction segment.

Table 4.36: Effect of Segmental Discretionary Accruals Quality on Cost of Capital

	Comm	Manuf	Energy	Auto	Constr	Agric	Inves	Ins	Bank
Adj. R^2	0.7110	0.5929	0.6281	0.6712	0.6279	0.6398	0.5901	0.5812	0.5483
SE	0.9612	0.8916	1.0051	1.0107	0.9946	1.0208	0.9511	1.0974	0.9154
F	14.529	4.2023	13.5733	28.353	29.351	4.2817	8.9183	10.1577	9.9200
P-value	0.0000	0.0024	0.0000	0.0000	0.0000	0.0015	0.0000	0.0000	0.0000
AIC	184.531	183.10	247.85	200.14	246.07	299.48	145.24	108.21	367.78
β_0	-0.5084*	-0.1371*	4.7282*	6.2109*	0.5817	0.1596*	1.3946*	1.2933*	-0.2069*
	(0.0198)	(0.0111)	(0.0000)	(0.0000)	(0.1397)	(0.0190)	(0.0000)	(0.0079)	(0.0001)
β_1	0.0205	0.0042	0.1358	0.5025*	0.5318*	0.2677*	-0.0179	0.3586*	0.0232
	(0.1050)	(0.6659)	(0.7098)	(0.0050)	(0.0000)	(0.0017)	(0.2803)	(0.0126)	(0.3671)
β_2	0.0929*	-0.1059*	-1.7443*	-1.2802*	0.4493	-0.1757*	1.1860*	0.9232*	0.0092
	(0.0109)	(0.0409)	(0.0010)	(0.0403)	(0.2031)	(0.0516)	(0.0159)	(0.0096)	(0.7559)
β_3	2.0252*	0.5328*	0.1244*	0.0719*	0.0736*	0.02793*	3.1027*	-10.241*	2.2493*
	(0.0000)	(0.0441)	(0.0451)	(0.0325)	(0.0268)	(0.0097)	(0.0355)	(0.0050)	(0.0000)
β_4	0.0100	0.0205	-15.482*	-28.03*	1.3312	0.1267	0.0014	0.0072	0.0020
	(0.6143)	(0.2577)	(0.0026)	(0.0000)	(0.6576)	(0.0647)	(0.7786)	(0.6852)	(0.7473)
β_5	0.0016	0.0574*	-0.3368*	-0.1405	-0.2003*	0.0297*	-0.0121*	-0.0703*	0.0279*
	(0.8072)	(0.0019)	(0.0025)	(0.0147)	(0.0015)	(0.0236)	(0.0405)	(0.0038)	(0.0000)

*Indicates significance of the coefficient using t-statistic at 95% confidence interval. The P-values are indicated in parentheses. β_0, β_1, β_2, β_3, β_4 and β_5, are the estimated coefficients of the model intercept, natural logarithm of one plus the growth rate over five successive years [Ln(1+g)]; natural logarithm of total debt to total assets ratio (LnDTA); natural logarithm of market beta (LnCAPMβ); natural logarithm of total assets in millions of Shillings (LnTA) and natural logarithm of the discretionary accruals quality rank (LnDAQR) respectively.

The null hypothesis that the model cannot be used to relate cost of capital with the proxies of growth, leverage, market risk, size and discretionary accruals quality is therefore rejected with the conclusion that panel data regression analysis is suitable for modeling this relationship for companies listed in all the segments of the NSE. Based on the above conclusion, alternative models were tested with output in Table 4.36 reflecting the most suitable models because they provided the lowest AIC values from among fixed effects, variable effects and weighted least squares approaches to panel data regression analyses

The main inference from the output in respect of this section of the objective is to test the statistical significance of β_5, the coefficient of the discretionary accruals quality rank. The findings in Table 4.36 indicate that save for the Commercial & Services segment, all the other segments have statistically significant β_5 values. The corresponding p-values of the coefficient for the remaining seven segments are 0.0019, 0.0025, 0.0147, 0.0015, 0.0256, 0.0405, 0.0038 and 0.0000 for the manufacturing, Energy, Automobiles, Construction, Agricultural, Investment, Insurance and Banking segments respectively. These values indicate that discretionary accruals quality has a significant effect on cost of capital for almost all the segments of the NSE. The finding of a statistically insignificant effect of discretionary accruals quality on cost of capital in the Commercial & Services segment could be attributed to the extremely low levels of discretionary accruals quality given the dominant effect of the innate accruals quality as indicated in section 4.3.2 of this study.

Unlike the case of innate accruals quality, discretionary accruals quality has a negative effect on cost of capital in a majority of the segments. These are the Energy, Automobiles, Construction, Investment and Insurance segments. This seems to suggest that poor accruals quality companies in these segments are likely to have a low cost of capital and vice versa. The effect is opposite for the remaining three segments for which discretionary accruals quality has a statistically significant coefficient i.e. the Manufacturing, Agricultural and Banking segments. These apparent mixed findings of a

varied effect of discretionary accruals quality on cost of capital could perhaps be attributed to relatively small size of the market where the scope for differences in accruals quality is limited.

The findings at 95% confidence interval further show that market risk as indicated by CAPM beta has a statistically significant coefficients β_3 for all the segments of the NSE. This confirms the findings in the output for overall accruals quality and innate accruals quality as indicated in tables 4.34 and 4.35 respectively. This is in line with the argument that market risk factor is common to all the companies listed at the NSE since they face similar equity market conditions. Just like for the case of overall accruals quality and innate accruals quality augmented cost of capital models, the discretionary augmented model provides positive coefficients of β_3; an indication that cost of capital has a direct relationship with market risk premium. In addition, the model constant is significant for all the segments of the NSE. β_0, the constant is positive for all the segments of the NSE except the Commercial & Services, the Manufacturing and the Banking segments.

4.10.4 Segmental Accruals Quality Qualitative Index

In the last objective, the last term of in the earnings to price ratio regression model was replaced with QAQR, the measure of the qualitative aspects of accruals quality for listed companies at the NSE. The findings are indicated in table 4.37. The accruals quality qualitative factors are derived from the relevance, reliability, comparability and understandability of accruals quality information as portrayed in the financial statements of companies listed at the NSE. The information is derived from expert analysis of audit analysts of these companies. Accordingly, the study also tested the effect of accruals quality index (a reflection of the qualitative aspects of accruals quality data) on cost of capital among the companies listed in the various NSE segments. High qualitative accruals quality rank (QAQR) companies are reflective of high accruals quality while those with low QAQR values are indicative of poor accruals quality companies.

178

As a preliminary step, diagnostic tests were initially carried out to establish the suitability of using the panel regression model for each of the segments. The variations in the dependent variable is mainly dependent on the model variables given that for all the nine qualifying segments, the R-square value is between 0.5654 exhibited by the Investment segment and 0.8857 shown by the Energy segment. The implication is that most of the changes in cost of capital are reflected by changes in the earnings to price ratio regression model variables for all the segments of the NSE.

Accordingly, the panel data regression model parameters provide a robust cost of capital representation model for all the nine qualifying segments of the Nairobi Securities Exchange. The other test statistics provided in the output support this conclusion from the R-square test statistic. Using the p-values from the model output, all the p-values are statistically significant with the highest being 0.0025 for the Manufacturing segment and 0.0006 for the Agricultural segment. All the rest are less than 0.0000 at 95% confidence interval. The model F ratios range from 4.1737 for the manufacturing segment to 78.4732 for the Energy segment, values which are all above the critical value at the 0.05 level of significance.

The null supposition that the model cannot be used to relate cost of capital with the proxies of growth, leverage, market risk, size and qualitative accruals quality rank is therefore rejected with the conclusion that panel data regression analysis is suitable for modeling this relationship for companies listed in all the segments of the NSE. Based on the above conclusion, alternative models were tested with output in Table 4.37 reflecting the most suitable models because they provided the lowest AIC values from among fixed effects, variable effects and weighted least squares approaches to panel data regression analyses.

The main inference from the output in respect of this section of the objective is to test the statistical significance of β_5, the coefficient of the accruals quality index factor (LnYAQ). The findings in Table 4.37 indicate that all the segments have statistically

179

significant β_5 values. The corresponding p-values of the coefficient for the eight segments are 0.0000, 0.0003, 0.0000, 0.0350, 0.0106, 0.0065, 0.0000, 0.0000 and 0.0000 for the Commercial, Manufacturing, Energy, Automobiles, Construction, Agricultural, Investment, Insurance and Banking segments respectively. These values indicate that accruals quality qualitative index has a significant effect on cost of capital for all the segments of the NSE

Table 4.37: Effect of Qualitative Accruals Quality on Cost of Capital

	Comm	Manuf	Energy	Auto	Constr	Agric	Inves	Ins	Bank
Adj. R^2	0.5654	0.5915	0.8857	0.6434	0.6297	0.6578	0.5395	0.7137	0.5970
SE	0.9671	1.0222	0.7558	1.0160	1.0035	0.8848	0.9218	1.08060	0.9080
F	17.0705	4.1737	78.4732	25.178	29.5663	4.7845	12.7152	17.9493	7.6223
P-value	0.0000	0.0025	0.0000	0.0000	0.0000	0.0006	0.0000	0.0000	0.0000
AIC	183.05	201.68	121.79	200.85	247.59	270.31	142.04	110.17	365.54
β_0	0.3576*	-9.6266*	18.7831*	3.2768	-2.7440*	2.3780*	8.4676*	1.4420*	-0.3455*
	(0.0000)	(0.0011)	(0.0000)	(0.3023)	(0.0020)	(0.0096)	(0.0000)	(0.0000)	(0.0185)
β_1	0.0032	-0.6759	-0.0213	0.5175*	0.5315*	-0.0072	-0.1425	-0.0065	0.0202
	(0.6555)	(0.4839)	(0.2661)	(0.0055)	(0.0000)	(0.8672)	(0.1020)	(0.6922)	(0.3493)
β_2	0.0394	-27.291*	-0.0943	-1.8413*	-4.4065	0.1987	0.1528	0.0791	-0.0046
	(0.0669)	(0.0002)	(0.1224)	(0.0117)	(0.0251)	(0.0886)	(0.0077)	(0.4673)	(0.8561)
β_3	0.04670*	73.7319*	0.0075	0.0829*	0.0804*	-0.0323*	0.6622*	-0.145*	3.1161*
	(0.0294)	(0.0235)	(0.2552)	(0.0344)	(0.0160)	(0.0166)	(0.0064)	(0.0443)	(0.0000)
β_4	0.0245*	0.0829	-4.0453*	-28.560*	-0.9775	2.7262*	0.0008	-0.0614	0.6448
	(0.0003)	(0.9533)	(0.0007)	(0.0000)	(0.7410)	(0.0444)	(0.9586)	(0.0445)	(0.0000)
β_5	-0.2377*	81.7285*	-13.110*	1.9517*	20.6535*	-1.7875*	-6.163*	-0.807*	-1.6130*
	(0.0000)	(0.0003)	(0.0000)	(0.03499)	(0.0016)	(0.0065)	(0.0000)	(0.0000)	(0.0000)

*Indicates significance of the coefficient using t-statistic at 95% confidence interval. The P-values are indicated in parentheses. β_0, β_1, β_2, β_3, β_4 and β_5, are the estimated coefficients of the model intercept, natural logarithm of one plus the growth rate over five successive years [Ln(1+g)]; natural logarithm of total debt to total assets ratio (LnDTA); natural logarithm of market beta (LnCAPMβ); natural logarithm of total assets in millions of Shillings (LnTA) and qualitative accruals quality rank (LnQAQR) respectively.

Just like the case of discretionary accruals quality, accruals quality qualitative factor index rank has a negative effect on cost of capital in a majority of the segments. These are the Commercial, Energy, Agricultural, Investment, Insurance and Banking segments. This seems to suggest that poor accruals quality companies in these segments are likely

to have a low cost of capital and vice versa. The effect is opposite for the remaining three segments i.e. the Manufacturing, Automobiles and Construction segments. These apparent mixed findings of a varied effect of discretionary accruals quality on cost of capital could perhaps be attributed to the small size of the Nairobi Securities Exchange, a situation that provides little room for diversification.

This model confirms the findings indicated for the effects of overall, innate and discretionary accruals qualities on cost of capital that market risk is the other significant determinant of cost of capital. Just like for the previous cases, β_3 coefficient values are all statistically significant at 95% confidence interval. This corroborates the findings in the output for overall accruals quality, the innate accruals quality and the discretionary accruals quality as indicated in Tables 4.34, 4.35 and 4.36 respectively. In addition, the model constant is significant for all the segments of the NSE. In this respect, β_0, the constant is positive for all the segments of the NSE except the Manufacturing, Construction and the Banking segments.

In a summary, the effect s of the various forms of accruals quality on segmental cost of capital as represented in hypotheses 6 are presented in table 4.38.

Table 4.38: Effect of Accruals Quality on Segmental Cost of Capital

	Overall AQ		Innate AQ		Discretionary AQ		Qualitative AQ	
	Effect	**Signf**	**Effect**	**Signf**	**Effect**	**Signf.**	**Effect**	**Signif.**
Commercial	Positive	Yes	Positive	Yes	Positive	No	Negative	Yes
Manufacturing	Positive	Yes	Positive	Yes	Positive	Yes	Positive	Yes
Energy	Positive	Yes	Positive	Yes	Negative	Yes	Negative	Yes
Automobiles	Negative	No	Negative	No	Negative	No	Positive	Yes
Construction	Negative	Yes	Negative	Yes	Negative	Yes	Positive	Yes
Agricultural	Positive	Yes	Positive	Yes	Positive	Yes	Negative	Yes
Investment	Negative	Yes	Negative	Yes	Negative	Yes	Negative	Yes
Insurance	Positive	Yes	Positive	Yes	Negative	Yes	Negative	Yes
Banking	Positive	Yes	Positive	Yes	Positive	Yes	Negative	Yes

*Sigf: Identifies if the effect is significant.

The findings in the Table 4.38 show that the effect of accruals quality in the various segments of the NSE is wide and varied. For overall accruals quality, the effect is

positive in the Commercial, Manufacturing, Energy, Agricultural, Insurance and Banking segments and negative in the rest f the segments except the Automobile segment where the effect is zero. Innate accruals quality follows the same pattern as overall accruals quality for all the segments. With respect to discretionary accruals quality, it has no effect on cost of capital in the Commercial and services segment and a negative effect in all the segments apart from the Manufacturing, Agricultural and Banking segments where the effect is positive. Lastly, for the qualitative accruals quality, the effect is negative in all the segments except the manufacturing and construction segments.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1   Introduction

In line with the purpose of this study which was to find out the effect of accruals quality of cost of capital among public companies in Kenya, this chapter provides a summary of the findings of this study arrived at after testing the hypotheses presented in chapter 1 from both primary and secondary data.. It is on the basis of these findings that conclusions are arrived at for each of the research objectives. Ultimately, based on both the findings and the limitations encountered in the study, policy recommendations as well as suggestion for further research are made at the end of the chapter.

5.2   Summary

The study was hinged on the hitherto lack of clarity as to whether and how accruals quality affect cost of capital and how they are priced in the Kenyan security markets. In essence the overall objective of the study to evaluate the effect of accruals quality on cost of capital of public companies in Kenya was hinged on a four-prong problem statement. There lacked knowledge on the nature and levels of accruals quality in Kenya. In addition, the unique financial reporting regulatory regime distinct from other environments reported in empirical studies on accruals quality provided a dilemma as to whether and how accruals quality is priced in the Kenyan capital markets.

Further, there existed a dilemma regarding how overall, innate and discretionary accruals quality affect cost of capital. In a methodology that introduced a new approach to evaluating effect of accruals quality on cost of capital, the qualitative aspects of accruals quality were also evaluated in this study, something that was hitherto completely lacking in existing literature. Lastly, there lacked information on the accruals quality effect on the various segments of the Nairobi Securities Exchange given that the

various segments have varying attributes that are likely to have differential effect on the cost of capital.

Given the research problem, five objectives were established to shed light on the foregoing dilemmas. These were to be evaluated over a twenty one year period between January 1993 and December 2013. The study targeted all the companies quoted at the NSE for evaluation. However, the stringent nature pre-requisite for estimating accruals quality lead to some exclusions such that out of a population of 61 companies, only 39 met the pre-conditions and were subsequently purposively sampled to be used in the study.

The quantitative research design fashioned for the study used both primary data collected through a questionnaire and secondary data on stock prices, market NSE-20 index, 91-day Treasury bill rates, company market capitalizations and financial statement data to achieve the research objectives. Primary data was collected from audit analysts familiar with the qualitative aspects of accruals quality of companies listed at the NSE. These relate to accruals information relevance, reliability, comparability and understandability. This information about accruals quality was to supplement and complement information on accruals quality estimated from financial statements of the same listed companies. Both descriptive and inferential statistics were used in evaluating the various aspects of the research objective.

From the inferential statistics, multiple linear regression was used in estimating accruals quality from the financial statements for each of the companies in the study. The same approach was used to estimate innate accruals quality and discretionary accruals quality for each of the companies. The companies were further categorized into their respective segments of the NSE namely Agricultural, Automobiles & Accessories, Banking, Commercial & Services, Construction & Allied, Energy, Insurance, Investment, Manufacturing, and Telecommunications. The heavy data requirements for computation of accruals quality, with each element requiring five years on a rolling basis, coupled

with the need for continuous trading meant that only nine segments qualified for analysis. Accordingly, the Telecommunications segment did not qualify for evaluation since the only company listed in the segment by 2013 had not been listed for a long enough period to present adequate data for analyzing its accruals quality. In addition, some of the companies within the qualified segments did not meet the analysis criteria, leaving out only 39 companies in the analysis.

The panel data linear regression model was used in testing the effect of accruals quality aspects (innate accruals quality, discretionary accruals quality, overall accruals quality and qualitative accruals quality). A summary of the various aspects of the research objectives and the findings on the various tests of the hypotheses of the study are indicated in the ensuing subsections.

5.2.1 Nature of Overall Accruals Quality of Public Companies

The accruals quality model for which working capital is mapped to cash flows, change in revenues and values of plant property and equipment fitted very well on the financial statement data of listed companies at the NSE. It equally applied well to the various segments of the NSE. Accordingly, it was concluded in the study that the accruals quality model is applicable to the companies quoted at the NSE. On average, the findings from this model indicate that the current year cash flows from operations (CFOt) and change in revenues over two successive financial periods (ΔREV) are positive predictors of working capital while .one year lagging cash flows from operations (CFOt-1), one year leading cash flows from operations (CFOt+1) and the value of plant, property and equipment are all negatively related with the working capital.

In a nutshell, taken as the five-year rolling standard deviations of the error values from the regression model of working capital on one-year lagging cash flows from operations; current period cash flows from operations; one-year leading cash flows from operations; changes in revenues and values of plant, property and equipment, overall accruals

quality was found to be relatively poor, albeit stable, for the companies listed at the NSE.

The working capital mapping model used in the study meant that whereas cash flows from operations (one-year lagging; current period and one-year leading), changes in revenues and values of plant, property and equipment are good predictors of working capital, the residual value used for estimating accruals quality for the companies quoted at the Nairobi Securities Exchange was very volatile relative to the levels of accruals quality in other financial markets as reported in the empirical studies cited in chapter 3.

Although the mean was established as 0.2216, the trend in accruals quality over the period shows a relative stability with a minimum of 0.1358 and a maximum of 0.3042. Accordingly there has been no significant improvement in accruals quality over the 1993 to 2013 period. This could largely be attributed to the tight regulatory regime that provides less room for creative accounting. This is more so because the study found out that most of the accruals quality is composed of the innate component and that the discretionary component of accruals quality is relatively small as to have any profound effect.

When split into the various components, the study finds that accruals quality among Kenyan companies listed at the NSE is mostly composed of the innate component of accruals quality. Accordingly, discretionary accruals quality is of a far less significant influence on overall accruals quality than innate accruals quality. This signifies that in the Kenyan financial reporting environment, the regulatory reporting effect on the quality of accruals dominates that managerial opportunism and idiosyncratic firm financial reporting attributes with respect to the quality of accounting reports in general and the portrayal of accruals in particular.

From a segmental perspective, nine segments of the NSE qualified for the analysis of the effect of accruals quality on cost of capital. These were the Agricultural segment; Commercial & Services segment; Manufacturing & Allied segment; Energy and

Petroleum segment; Automobiles and Accessories segment; Construction & Allied segment; Agricultural segment; Investment segment; Insurance segment and the Banking segment. The varying characteristics of the segments implied that the relationship between working capital elements with working capital vary with respect to each segment..

The findings indicate that only change in revenues has a positive effect of changes in working capital for companies listed in each of the nine segments of the NSE. Leading cash flows from operations, lagging cash flows from operations, current cash flows from operations and the value of plant property and equipment have varying effects on working capital and hence accruals quality in each of the nine segments. The effects of the variables are similar for commercial and banking segments where lagging and current cash flows are negative predictors of changes in working capital while all the rest are positive predictors. In the Manufacturing, Energy and Insurance segments, only change in revenues is a positive predictor of working capital while all the other variables are negative indicators of the change in working capital. The attributes are also similar within the Construction and Investment segment where current cash flows from operations and the value of plant property and equipment are negative indicators of changes in working capital while all the rest are positive predictors of working capital changes. Finally, in the Automobile and Agricultural segments, all the variables are positive predictors of changes in working capital except the lagging cash flows for the Automobile segment and the leading cash flows for the Agricultural segment.

The banking segment (1) was found to be the best at portraying accruals quality among the segments in which companies are listed at the NSE. The Insurance (9) and Investment (8) segments were found to have the poorest accruals quality portrayal record. Based on established practice of excluding financial companies from analysis as indicated in the empirical studies provided in chapter 3 the Commercial and Services segment (2) has the best accruals quality reporting standards while the Construction segment (7) incorporates companies whose accruals quality reporting record is poor. Of

the remainder, Manufacturing (3), Agricultural (4), Energy (5), Automobiles (6) segments follow each other in the order of the portrayal of accruals quality from best to poorest respectively.

5.2.2 Nature of Innate Accruals Quality

All the innate accruals quality factors (total assets; the volatility of cash flows from operations in the same year; the volatility of revenue in the accruals period; the length of the operations cycle of the firm and the number of loss incidences are all statistically significant is determining innate accruals quality from overall accruals quality of the companies quoted at the NSE. From the innate accruals quality model, the findings from the study indicate that total assets, change in revenues and length of the operating cycles are positive indicators of innate accruals quality while volatility of cash flows from operations and the number of loss incidences are negative predictors of innate accruals quality for the companies quoted at the NSE.

The varying characteristics among the individual segments implied that the relationship between accruals quality elements with change in working capital with respect to each segment have either a negative or positive association. The effect of the elements is similar the Energy and Automobile segments where length of the operating cycle and the number of loss incidences are negative indicators of working capital while all the other elements (total assets, volatility of cash flows from operations and volatility of revenues) are positive predictors of accruals quality. In addition, total assets have a positive effect on accruals quality in all the segments except the Agricultural and the Insurance segments.

The findings on innate accruals quality from comparable indicate that that the level of innate accruals quality for the companies quoted at the NSE is relatively poor. The volatility in the innate accruals quality is however relatively low compared to similar results from other studies, This is consistent with the findings from the overall accruals quality at the NSE given that the findings also show that most of the accruals quality

comprises the innate component and that the discretionary accruals quality is a peripheral component of accruals quality for public companies in Kenya.

Accruals quality variables also fit well into the segments of the NSE as evidenced by robust accruals quality regression on the innate accruals variables. Mean values indicate that the Investment segment has the poorest innate accruals quality among the segments listed at the NSE while the banking sector has the highest quality in the portrayal of innate accruals. Although there is a wide range in the innate accruals quality, most of the segments have their values not far off dispersed from the mean. In essence, from a relative perspective, the ranking order of innate accruals quality from the best to the worst is the Banking (1), Commercial and Services (2), Energy (3), Manufacturing (4), Agricultural (5), Automobile (6), Investment (7), Construction (8) and Insurance segments (9) segments respectively.

5.2.3 Nature of Discretionary Accruals Quality

The findings indicate that most of the accruals quality consists of the innate component. Accordingly, the discretionary accruals quality is a relatively insignificant component of accruals quality for the companies listed at the NSE. This implies that, the firm specific discretionary accrual reporting efforts do not overly influence the overall accruals quality. In addition, the volatility levels of discretionary accruals quality are very pronounced varying widely between positive values and negative values all through the study period.

The segments can be ranked from the best to the worst in terms of portrayal of discretionary accruals quality on a relative basis as Construction (1), Investment (2), Agricultural (3), Insurance (4), Energy (5), Commercial & Services (6), Manufacturing (7), Construction (8) and Banking (9) segments respectively.

5.2.4 Nature of Qualitative Accruals Quality

Accruals information as presented in financial statements has four qualitative characteristics that render it useful for financial analysis to both audit and other financial analysts. These are relevance, reliability, understandability and comparability. These aspects of accruals quality information were obtained from primary data collected from a questionnaire to external audit analysts involved with the companies quoted at the Nairobi Securities Exchange. Analysis indicated that they are adequate in presenting qualitative aspects of accruals information for the listed companies in Kenya. Majority of the firms listed at the NSE are audited by the big-four audit firms that include Ernst & Young, Deloitte & Touche, KPMG and PWC. This is an implication that the quality of the responses provided from these audit analysts is consistent with their lengthy experiences with the analysis firms. This is particularly true because the study rejected the supposition that the of audit tenures do influence quality of accruals.

Companies listed at the NSE are rated highly with respect to the qualitative characteristics of their accruals quality information. All attributes of relevance, understandability, comparability and reliability have index values of above 3.5, a figure that is above median of 2.5 on the 5-point likert-type scale used in the research. This could be compared with the low volatility levels recorded from the accruals quality measures of innate accruals quality, discretionary accruals quality and overall accruals quality from the previous subsections of this chapter. It in this respect fails to reflect the relative poor levels of these measures of accruals quality.

All the qualitative indices of relevance, understandability, comparability and reliability are negative predictors of accruals quality. This is theoretically plausible because accruals quality measures are inversely related to the quality of accruals in financial statements such that high values reflect poorest accruals quality while low values are indicative of high accruals quality. In a nutshell, save for comparability, all the other accruals quality factors are found to be significant in estimating accruals quality.

5.2.5   Relating Overall Accruals Quality with Cost of Capital

Cost of capital as represented by earnings to price ratio (EPR) is highly volatile among the companies listed at the NSE. It is because of this volatility that the market risk premium is significantly high given that the 91-day TB rates is not as volatile over the study period. When compared with similar values from South Africa, Kuwait and other markets, the cost of capital in the Kenyan capital markets is found to be very high.

This study rejects the null hypothesis that accruals quality has no effect of the cost of capital of companies quoted at the NSE and that accruals quality is a negative predictor of cost of capital. Companies with lower accruals quality are expected to have a low cost of capital holding all factors constant. This study resolves the twin dilemma of whether or how accruals quality affects cost of capital in the Kenyan financial markets. It thus finds that cost of capital is not only affected by accruals quality, but it is also has an inverse effect such that low accruals quality (as indicated by high accruals quality measurement values and low ranks) is associated with a low cost of capital.

5.2.6   Relating Innate Accruals Quality with Cost of Capital

The study rejects the null hypothesis that innate accruals quality has no effect on cost of capital and concludes that it is a negative predictor of cost of capital. This is in line with the conclusion arrived at in respect of the effect of overall accruals quality on cost of capital. It is therefore expected that on average, companies with high (low) innate accruals quality should have a high (low) cost of capital. The finding that most of the accruals quality reflects the innate aspects of representing quality of accruals and not the discretionary one implies that the conclusions arrived at with respect to the effect of innate accruals quality on cost of capital are reflected on the effect of overall accruals quality on cost of capital.

The negative relationship between innate accruals quality and cost of capital is largely due to the characteristics of the NSE. The market is very small compared to other equity

markets. There are only about five dozen companies quoted at the NSE compared to thousands listed on the more developed securities markets like the London Stock Exchange and the New York Stock Exchange. In addition, less stringent reporting requirements are placed on the companies listed at the NSE compared to others like in Netherlands where companies are expected to comply to strict internal control process or explain their failure to do so.

5.2.7 Relating Discretionary Accruals Quality with Cost of Capital

The study found out that the proportion of discretionary accruals quality in total accruals quality is very small relative to the innate accruals quality. The time variations in panel data analysis however allowed for its effect on cost of capital to be evaluated. The discretionary accruals quality augmented cost of capital model fitted well on the NSE data which allowed for the testing of the null hypothesis that discretionary accruals quality has no effect on cost of capital among the public companies in Kenya.

The study rejected the null hypothesis that discretionary accruals quality has no effect on cost of capital and concluded that discretionary accruals quality has a negative effect of cost of capital given that LnDAQR, the proxy for discretionary accruals quality, returned a negative coefficient in the regression model of cost of capital on cost of capital variables. This is consistent with the findings of the effect of innate accruals quality as well as the effect of the overall accruals quality on cost of capital. It is therefore expected that cost of capital of companies listed at the NSE will increase in tandem with improvement in discretionary accruals quality.

5.2.8 Relating Qualitative Accruals Quality with Cost of Capital

The study had an objective to test the null hypothesis that qualitative aspects of accruals quality information have no effect on cost of capital. This null hypothesis was rejected with the confirmation from the study that qualitative aspects of accruals quality information have a negative effect cost of capital. This finding corroborates the earlier tests that showed that innate, discretionary and overall accruals quality have a negative

effect on cost of capital of public companies in Kenya. The accruals quality rank index is found to be a better representation of accruals quality information for the companies listed at the NSE given that all the independent variables in the cost of capital model are statistically significant from the findings of the study.

5.2.9 Market Pricing Effect of Accruals Quality

The null hypothesis tested here is that accruals quality has no effect on market pricing of cost of capital. The study rejected this null hypothesis with the conclusion that accruals quality is a priced information risk factor. Accruals quality is the refore a non-diversifiable information risk factor priced by the NSE and trading strategies based on accruals quality can yield above normal returns at least in the short-run. Low accruals quality value present a higher information risk such that they present higher returns than those of the high accruals quality firms to compensate for this risk.

This is consistent with the other tests in this study that have indicated that overall, innate, discretionary and qualitative accruals quality all have an effect on cost of capital and hence the market pricing of the same. The fact that β_0 output in the market pricing model 3.5 is a positive value indicates that returns on low accruals quality portfolios is superior to the returns on the high accruals quality portfolios. Hence excess returns on accruals based portfolios are positively related to the accruals quality premium. This is in line with the expectation that high (low) costs of capital correspond with low (high) returns. The finding that high accruals quality was associated with high cost of capital is consistent with the result that accruals quality premium is a positive value.

The study also rejects the null hypothesis with respect to the innate accruals quality return premium since the β_0 value from the accruals portfolio regression equation output is a positive and statistically significant value. This implies that the lower innate accruals quality portfolio decile provides higher returns over and above the high innate accruals quality portfolio decile. Just like the case of the overall accruals quality, innate accruals quality can be used as a predictor of market returns and that innate accruals quality is a

priced market risk factor and the poorer the innate accruals quality, the greater the return premium.

The study fails to reject the null hypothesis that there is no discretionary accruals quality premium at the Nairobi Securities Exchange. This finding points towards the absence of statistically significant excess returns of discretionary accruals quality-based portfolio deciles over standard market risk factors. This seems to be contrary to the findings under the portfolio decile returns from the overall and innate accruals qualities. It however fits perfectly with the other findings in this study that discretionary accruals quality comprises only a tiny fraction of the overall accruals quality.

Lastly with respect to the pricing effect of accruals quality, the study rejects the null hypothesis that there is no qualitative accruals quality premium at the Nairobi Securities Exchange. This finding points towards the presence of statistically significant excess returns of qualitative accruals quality-based portfolio deciles over standard market risk factors. This is consistent with the findings under the portfolio decile returns from the overall and innate accruals qualities.

5.2.10 Relating Segmental Accruals Quality with Cost of Capital

The effect of accruals quality on the cost of capital within the various segments of the NSE is widely varied among the segments as indicated in Table 5.1. This is indicated for overall accruals quality, innate accruals quality, discretionary accruals quality and qualitative accruals quality. With respect to overall accruals quality, there is a significant effect on cost of capital for all the segments except the automobiles segment. In addition, the effect is positive for the Commercial, Manufacturing, Energy, Agricultural, Insurance and Banking Segments and negative for the Construction and Investment segments. This implies that the effect of accruals quality on cost of capital is dependent on the industry characteristics of the segment in which the company is quoted at the NSE. The negative effect in the construction and investment segments could be related

to the long operations and working capital conversion cycles that characterize these segments compared to the short cash conversion cycles of companies in the other segments of the securities market.

Innate accruals quality has a similar effect on cost of capital as the overall accruals quality. This implies that it has no effect on cost of capital in the Automobiles segment, a positive effect in the Commercial, Manufacturing, Energy, Agricultural, Insurance and Banking Segments and a negative effect in the Construction and Investment segments. The implication of this is that overall accruals quality and innate accruals quality mirror each other with respect to their segmental effect on cost of capital. This is largely because overall accruals quality is mostly comprised of the innate accruals quality among Kenyan public companies as indicated by the findings in this study.

Although discretionary accruals quality is a minor component of overall accruals quality, its segmental effect on cost of capital is distinctly different from what is recorded for the overall and the innate aspects of accruals quality. Accordingly, discretionary accruals quality has no effect on cost of capital in three segments namely the Commercial, Automobiles and Banking. This finding is consistent with the overall and innate accruals quality for the Automobiles segment. The addition of the Commercial and Banking segments into the category implies that the effect of innate accruals quality on cost of capital is largely exhaustive for these two segments of the NSE.

The findings further indicated that discretionary accruals quality has a significant positive effect on cost of capital in the manufacturing and the Agricultural segments. This is similar to the case of innate and overall accruals quality for these two segments. The effect of discretionary accruals quality on cost of capital in the Energy, Construction, Investment and Insurance segments is negative. This implies that there is a reversal from a positive effect for the overall accruals quality in the Energy and

Insurance segments. This confirms the overriding effect of innate accruals quality in these segments.

Qualitative accruals quality was determined to have a significant effect on cost of capital in all the segments of the NSE. The findings further indicated that the effect is positive in three segments (Manufacturing, Automobiles and Construction) and negative in all the other remaining segments (Commercial, Agricultural, Investment, Insurance and Banking). The implication of this is that qualitative accruals quality has varying effects on cost of capital depending on the segment into which a company at the NSE is quoted. The financial reporting idiosyncrasies in the segments heavily influence how qualitative aspects of accruals quality information are portrayed in the financial statements. Unlike the overall accruals quality, qualitative accruals quality can be used to predict cost of capital of companies in any of the segments of the stock market.

5.3   Conclusion

Several conclusions can be drawn from the descriptive and inferential test statistics conducted in this study. These are identified in the ensuing four subsections.

5.3.1 Attributes of Accruals Quality among Public Companies in Kenya

The attributes of accruals quality and its subcomponents are wide and varied. Firstly, on an overall basis, current year cash flows from operations and change in revenues over two successive financial periods are positive predictors of working capital while the one year lagging cash flows from operations, one year leading cash flows from operations and the value of plant, property and equipment are positive predictors working capital. In addition, the accruals quality model can be used to predict working capital of companies listed in each of the segments quoted at the NSE.

Secondly, companies listed at the NSE have a relatively poor accruals quality than firms quoted in other financial markets. In addition, the volatility in the quality of accruals is comparatively very small. This suggests that firms at the NSE have little discretion if

any in portrayal of earnings such that there is no significant swings in the accruals information over successive accrounting periods and cross-sectionally among various firms. The most important determinant of accruals quality in Kenya is the innate aspects of the regulatory environment. This points towards a tight regulatory regime among the listed firms in Kenya.

Thirdly, the attributes of the overall accruals quality are widely varied among the various segments of the NSE. Accordingly the rank order from highest quality to poorest accruals quality among the nine segments of the NSE on the basis of the coefficient of variation of accruals quality is Banking (1); Commercial & Services (2); Manufacturing & Allied (3); Agricultural (4); Energy & Petroleum (5); Automobiles & Accessories (6); Investment (7); Construction & Allied (8) and Insurance (9) segments respectively.

Fourthly, with respect to innate accruals quality for the overall market, total assets, change in revenues and length of the operating cycles are positive indicators of innate accruals quality while volatility of cash flows from operations and the number of loss incidences are negative predictors of innate accruals quality for the companies quoted at the NSE over the study period. This implies that each of the five variables of innate accruals quality has its own unique effect in the determination of innate accruals quality.

Fifthly, the quality of innate accruals quality is relatively poor but stable which is a reflection of the status of the overall accruals quality of the companies listed at the NSE. Just like the case of overall accruals quality, the portrayal of accruals among the various segments of the NSE is ranked from best to worst. Accordingly, from a relative perspective, the ranking order of innate accruals quality from the best to the worst is the Banking (1), Commercial and Services (2), Energy (3), Manufacturing (4), Agricultural (5), Automobile (6), Investment (7), Construction (8) and Insurance (9) segments respectively. The rankings are largely reflective of those identified for the overall accruals quality.

Sixthly, most of the changes in accruals quality result from innate accruals quality such that discretionary accruals quality represents only a nominal proportion of the overall accruals quality. This implies that firms have little, if any, room for discretionary manipulation of accruals quality in the Kenyan financial reporting regime. This may point to tight regulatory provisions particularly for the firms listed at the NSE. It may also be reflective of the small size of the NSE leading to a small scope for a wider range of results. In a nutshell, innate accruals quality of financial reporting is dominant at the NSE such that discretionary reporting efforts do not overly influence the overall accruals quality.

Seventhly, the relevance, understandability, comparability and reliability of accruals quality information are all record above average levels with respect to the extent they are reflected by the financial statements of the public companies in Kenya. When taken on an overall basis, the qualitative accruals quality of financial statements of these companies is relatively good.

Eighthly, whereas relevance, reliability and understandability are critical in estimating accruals quality, comparability as a qualitative accruals aspect is not statistically significant for the purposes of estimating overall accruals quality of public companies in Kenya. This means that content qualitative accruals qualities (relevance and reliability) are more significant in portraying accruals quality than the presentation accruals quality aspects for the public companies in Kenya. This is in line with the expectations that the content attributes carry more accruals informational weight than the presentation characteristics.

Ninthly, both the qualitative accruals quality index and the qualitative accruals quality aspects of financial reporting among Kenyan Public firms have on average exhibited improvement trends over the study period. This implies that companies listed at the NSE are making continuous efforts to improve on the qualitative aspects of accruals quality information as they reflect them in the annual financial statements.

5.3.2   Attributes of Cost of Capital of Public Companies in Kenya

Cost of capital is highly volatile among the public companies particularly over the period under study. There is therefore a significant market risk premium when it is considered that the corresponding risk free rates of return have not been as unpredictable over the same time period covered by the study.

From a segmental point of view, the cost of capital also varies widely among the companies in the different segments of the NSE. The cost of capital within the segments is relatively ranked from the cheapest to the most expensive as Automobiles (1), Insurance (2), Banking (3), Investment (4), Agricultural (5), Energy (6), Manufacturing (7), Construction (8) and Commercial & Services (9). This implies that a segmental investing strategy can heavily influence investors' required rates of return on equities of companies listed at the NSE.

5.3.3   Effect of Accruals Quality on Cost of Capital

The effect of accruals quality on cost of capital can be looked at from an overall basis as well as from the point of view of the various components of accruals quality. Firstly, overall, innate and discretionary accruals qualities of companies listed at the NSE all have a negative effect on cost of capital. In addition, total assets and market risk also affect cost of capital. The growth aspects of business and the capital leverage aspects are not found to have any statistically significant effect on cost of capital. The null hypothesis that accruals quality has no effect on cost of capital is therefore rejected at three levels: for the overall accruals quality, the innate accruals quality and the discretionary accruals quality.

Secondly, qualitative accruals quality has a negative effect on cost of capital. When the qualitative accruals quality index is used instead of quantitative accruals quality indicators in the cost of capital regression model, all the independent variables become statistically significant in predicting cost of capital. This implies that firm size, firm

growth, market risk, firm leverage and accruals quality index are all statistically significant in portraying cost of capital when accruals quality index is used to represent accruals quality of public firms in Kenya. This implies that using the qualitative aspects of accruals quality information to describe cost of capital is a better approach than the use of the innate, discretionary or overall cost of capital derived from the financial statements.

Thirdly, the effect of overall accruals quality on cost of capital varies widely among the various segments of the NSE. There is a significant positive effect on cost of capital for the Commercial, Manufacturing, Energy, Agricultural, Insurance and Banking Segments; a negative one for the Construction and Investment segments and no effect for the automobiles segment. These variations can be attributed to the unique reporting and regulatory expectations among the different segments of the securities' market.

Fourthly, the findings of the effect of innate accruals quality on segmental cost of capital mirror that of the overall accruals quality such that there is a significant positive effect on cost of capital for all the Commercial, Manufacturing, Energy, Agricultural, Insurance and Banking Segments; a negative one for the Construction and Investment segments and no effect for the automobiles segment. This perfectly mirrors the findings on the effect of overall accruals quality on the segmental cost of capital. It also indicates the dominant effect of innate accruals quality on the overall accruals quality among companies listed in the various segments of the NSE.

Fifthly, the effect of segmental discretionary accruals quality on cost of capital is distinctly different from what is recorded for the overall and the innate aspects of accruals quality. It has no effect on cost of capital of the companies listed in the Commercial, Automobiles and Banking segments; a positive effect for those in the manufacturing and the Agricultural segments and a negative effect for the companies in the Energy, Construction, Investment and Insurance segments. This implies a reversal from a positive effect for the overall accruals quality in the Energy and Insurance

segments. This confirms the overriding effect of innate accruals quality in these segments.

Finally, qualitative accruals quality is determined to have a significant positive effect on cost of capital of the firms quoted in the Manufacturing, Automobiles and Construction segments and a negative effect for all the companies quoted in all the other remaining segments (Commercial, Agricultural, Investment, Insurance and Banking).

5.3.4 Effect of Accruals Quality on Security Market Returns

Several conclusions are also made about the effect of accruals quality of security market returns. Firstly, the level of overall accruals quality affects the security pricing and therefore has a positive effect on the cost of capital of companies quoted at the NSE. Accruals quality is therefore a non-diversifiable information risk factor priced by the NSE and trading strategies based on accruals quality can yield above normal returns at least in the short-run. The robustness of the findings is however limited by the fact that the NSE is a relatively small market with very few listed companies such that tests with respect to the size anomaly as not possible.

Secondly, the study rejects the null hypothesis that innate accruals quality has no influence on market pricing and hence on cost of capital. It is therefore concluded that innate accruals quality as a source of information risk has a return premium. It is therefore a positively priced factor for companies listed at the NSE. In addition, all the standard risk factors except the book-to-market-factor are statistically significant is pricing the innate accruals quality at the NSE.

Finally, the study fails to reject the null hypothesis that there is no discretionary accruals quality premium for companies listed at the Nairobi Securities Exchange. This is because the low discretionary accruals portfolio decile premium has a statistically insignificant alpha in the accruals based asset multifactor asset pricing model derived from the Fama and French (1993) asset pricing regression model. However, all the other

standard pricing factors (market risk, size factor and book to market factor) are statistically significant in pricing the discretionary accruals based return premium.

5.4   Recommendations

Drawing from the findings and the conclusions arrived at, several recommendations are made. Firstly, there is a need to further tighten the regulations and oversight aspects on the financial reporting and estimation of accruals elements to be included in financial reports by Kenyan companies. This is because the level of accruals quality among these companies has been found to be poor relative to the accruals quality in other financial reporting regime like the USA and Australia. Tighter regulations and supervision by the governmental and professional financial reporting bodies would help increase the level of accruals quality. This is particularly so because most of the accruals quality has been determined to be attributable to the innate characteristics in Kenya of the Kenyan financial reporting environment as opposed to managerial opportunism and other discretionary accrual reporting aspects.

Secondly, measures to improve on accruals quality should be customised for each of the various types of companies as categorised by the segments of the NSE. This is because the working capital attributes, operating cycle aspects, size, revenue attributes, cash flow patterns, leverage chracteristics, market risk aspects, business growth trends and profit expectations are all different for the distinct segments yet they all affect the innate, discretionary, qualitative and overall accruals quality of the public companies. Regulatory efforts to improve accruals quality should therefore be tailor-made for each of the individual segments. This in effect would also help reduce cost of capital by reducing the accruals quality information risk.

Thirdly, the existing corporate governance and internal control procedures adopted by public companies should be maintained, if not enhanced. This is because the findings of the study indicate the discretionary accruals quality is not a big concern when compared to the innate accruals quality. The findings indicated that the accruals quality comprise

of majorly the innate component leaving the discretionary value to be only marginal. The implication is that existing control policies have largely been successful in maintaining financial reporting discipline such that managers do not have many opportunities to manage earnings which could otherwise have had a negative effect of discretionary accruals quality of financial statements.

Fourthly, there is need to improve on the comparability of accruals information reported in financial statements. This is because whereas the study finds accruals information to be largely relevant, understandable and reliable, its comparability aspects hardly influence accruals quality. This could be done by enforcing industrial segmental reporting norms as well as adopting the international financial reporting standards in reflecting accruals quality elements. Comparable statements with other industry companies and over time is possible through consistency in financial reporting and the need to enhance disclosure requirements whenever there changes in accounting policies are effected by a company.

Fifthly, measures should be taken to reduce the market risk premium particularly because the cost of capital in the Kenyan financial markets is found to be not only high, but also very volatile. Empirical literature indicate that cost of capital depends on market factors like inflation, interest levels, tax levels, investment policy, dividend policy, capital structure policy and security market conditions. In light if this, it is recommended that measures be taken by market regulators particularly the Central bank of Kenya to manage inflation and interest rate levels within low manageable levels. If these efforts are supplemented by managerial actions for use of low cost of capital strategies, then cost of capital could drastically be reduced to appropriate levels. This would more so be the case if accruals quality is improved from the levels identified in this study to higher levels of financial reporting and portrayal of accruals quality.

Finally, accruals quality models should be developed for predicting cost of capital as well as security pricing of the equities quoted at the NSE. This is because the study

reveals that accruals quality has a pricing effect. Security analysts could adopt this as an additional approach to evaluating the intrinsic value of securities in addition to the existing fundamental and technical valuation approaches. The accruals quality based pricing model would be more valuable if the qualitative aspects of accruals quality are inbuilt to supplement the overall, innate and discretionary accruals quality measures. The model should take cognizance of the fact that the pricing effect of accruals quality varies among the various segments of the NSE and that each segment should have a customized accruals quality based security pricing model.

5.5 Areas for Further Research

This study had various limitations the solution to which may call for further studies to address them. Firstly, it focused on the only overall, innate, discretionary and qualitative accruals quality measures to portray accruals quality. The first three approaches focus on the volatility inherent in accruals information while the last one deals with the qualitative aspects of accruals quality information. There are numerous other approaches that could be used in appraising accruals quality. These include historical accounting restatements, earnings persistence, the abnormal accruals, the signed accruals, the e-loadings and the working capital accruals as already discussed in the theoretical and empirical literature review. Accordingly, a study is suggested to test the effect of accruals quality on cost of capital using these alternative measures to evaluate if the findings would be the same to the ones in this study.

Secondly, whereas this study evaluated the effect accruals quality on segmental cost of capital, it made the assumption that firms quoted in the same segment have similar innate and discretionary characteristics. Accordingly the effect of firm idiosyncratic characteristics on accruals quality was not individually evaluated. Studies have shown that these could affect cost of capital. Such aspects as the nature of internal control system , corporate governance attributes, ownership and management , debt structure and related agreements, the size and value of the firm, levels of cash holding, corporate

reputation, the extent of firm segmentation, the nature of external auditors and the regulatory and macroeconomic conditions) have all been shown to affect accruals quality. Accordingly, a study is suggested to evaluate the effect of the various innate and discretionary firm characteristics on the accruals quality shown by the companies that operate in the Kenyan regulatory market.

Thirdly, the study focused only on the firms listed at the Nairobi securities Exchange. This provided a limited population of about five dozen companies. Although these are representative of the various economic segments in the Kenyan environment, the firms are largely large in size. The study did not take into account the accruals quality and cost of capital aspects of small and medium size companies in Kenya. The fact that most firms in Kenya are not listed implies that a suggestion for study on the effect of accruals quality on cost of capital of small and medium size enterprises is apt. The findings from such a study could be compared to those from this study to check if there are any significant differences between cost of capital and accruals quality characteristics of the listed and non listed firms as well as large and small scale enterprises in Kenya.

Fourthly, the study did not consider governmental organizations, their accruals aspects as well as their cost of capital attributes. The findings of this study are therefore limited to public companies yet parastatals play a significant part in the Kenyan economy. It therefore seems appropriate to recommend a study to evaluate the effect of accruals quality on cost of capital of governmental business enterprises and government associated organizations like public-private partnership special purpose vehicles.

Lastly, the study focused on companies listed in Kenya only. It therefore did not identify the accruals quality and cost of capital aspects of firms in other countries within the East African Community. A study to evaluate the effect of accruals quality on cost of capital among firms in the East African Community is suggested given that prevailing efforts are towards enhancing cross boarder business activities among members of this regional block namely Kenya, Uganda, Tanzania, Rwanda, Burundi and Southern Sudan.

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APPENDICES

Appendix 1: Companies Listed at the NSE

AGRICULTURAL
Eaagads Ltd
Kakuzi Ltd
Kapchorua Tea Co. Ltd
Limuru Tea Co. Ltd
Rea Vipingo Plantations Ltd
Sasini Ltd
Williamson Tea Kenya Ltd
AUTOMOBILES AND ACCESSORIES
Car and General (K) Ltd
CMC Holdings Ltd
Marshalls (E.A.) Ltd
Sameer Africa Ltd
BANKING
Barclays Bank Ltd
CFC Stanbic Holdings Ltd
Diamond Trust Bank Kenya Ltd
Equity Bank Ltd
Housing Finance Co Ltd
Kenya Commercial Bank Ltd
National Bank of Kenya Ltd
NIC Bank Ltd
Standard Chartered Bank Ltd
The Co-operative Bank of Kenya Ltd
COMMERCIAL AND SERVICES
Express Ltd
Hutchings Biemer Ltd
Kenya Airways Ltd
Longhorn Kenya Ltd
Nation Media Group
Scangroup Ltd
Standard Group Ltd
TPS Eastern Africa (Serena) Ltd
Uchumi Supermarket
CONSTRUCTION AND ALLIED
Athi River Mining
Bamburi Cement Ltd
Crown Berger Ltd

E.A.Cables Ltd
E.A.Portland Cement Ltd
ENERGY AND PETROLEUM
KenGen Ltd
KenolKobil Ltd Ord
Kenya Power LIGHTING Co Ltd
Total Kenya Ltd
INSURANCE
British-American Investments
CFC Insurance Holdings
CIC Insurance Group Ltd
Jubilee Holdings Ltd
Kenya Re-Insurance Corporation Ltd
Pan Africa Insurance Holdings Ltd
INVESTMENT
Centum Investment Co Ltd
City Trust Ltd
Olympia Capital Holdings Ltd
Trans-Century Ltd
MANUFACTURING AND ALLIED
A.Baumann CO Ltd
B.O.C Kenya Ltd
British American Tobacco Kenya Ltd
Carbacid Investments Ltd
East African Breweries Ltd
Eveready East Africa Ltd
Kenya Orchards Ltd
Mumias Sugar Co. Ltd
Unga Group Ltd
TELECOMMUNICATION AND TECHNOLOGY
AccessKenya Group Ltd
Safaricom Ltd

Appendix 2 Letter of Introduction

Dear Sir/Madam,

I am working towards a Doctor of Philosophy (Business Administration) degree in the School for Human Resources Development at the Jomo Kenyatta University of Agriculture and Technology. As part of the requirements for the award of the degree, I am expected to carry out research in respect of which I am studying "The Effects of Discretionary and Innate Accruals' Quality on Cost of Capital of Publicly Listed Companies in Kenya". To carry out the study, part of the objectives require me to assess the relationship between perceptual of investment professionals on quality of financial reports and accruals' quality. It is in this respect that I request you to participate in this project through your assessment of reporting quality of the companies quoted at the Nairobi Securities Exchange (NSE).

While your cooperation in completing the questionnaire attached onto this letter is highly valued, your participation is voluntary. The results will be used only in an aggregated form and, therefore, your anonymity and the confidentiality of your responses are assured. The completed questionnaire will be securely stored and made available only to my project supervisors and me. Access to any coding of information in the questionnaire will also be restricted to my research supervisors and me. The results will be contained in the thesis that will be available at the Jomo Kenyatta University of Agriculture and Technology library in Juja. It is also hoped that aspects of the results will be published in aggregate in various professional and academic journals.

Your participation is highly appreciated and I look forward to receiving your completed questionnaire. Should you have any queries regarding the project or questionnaire, please feel free to contact me on 0722564952 or the School for Human Resources Development at Juja.

Thank you.

Yours faithfully,

Oluoch Josephat Oluoch

Appendix 3: Research Questionnaire

The questionnaire relates to the company identified in **A** below

A. Company identity_____

B. Identity of the Security Analyst Firm_____

C. For how long have you carried out security analysis of the company identified in **A above**? (tick [√] as appropriate)

Code	Analysis period	Tick [√] as Appropriate
C.1	0-5 years	
C.2	6-10 years	
C.3	11-15 years	
C.4	16 years and over	

D. The following statements describe the relevance of the information provided in the financial statements of the company. By ticking (√) in the appropriate box, consider to the extent you agree with each statement.

Code	Question	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
D1	The company provides forward-looking information that help analysts to form expectations and predictions about its future					
D2	The business' opportunities and risks information provided in the annual report greatly complement the corresponding financial information					
D3	Financial statements of the company provide information about the effect of various market events and transactions on the company's financial results					

Code	Question	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
D4	Financial statements by the company show an in-depth accrual picture of those through relevant explanatory notes					
D5	The company relies more of fair value accounting than historical cost accounting					
D6	Financial information is released soon after the conclusion of the company's financial year.					
D7	On the overall, information reported by the company is relevant for security fundamental evaluation					

E. The following statements describe the understandability of the financial information provided in the financial reports of the company. By ticking (√) in the appropriate box, consider to the extent you agree with each statement.

Code	Question	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
E1	The company provides its annual reports in a well organized manner					
E2	The company provides clear and understandable explanatory notes in their financial statements					
E3	The company comprehensively explains the business jargon used in its financial statements					
E4	The company uses graphs, tables and illustrations that are presented in a manner that greatly clarify the presented information					

Code	Question	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
E5	The information provided in financial statements of the company is fully understandable for security evaluation					

F. The following statements describe the comparability of the information provided in the financial statements of the company. By ticking (√) in the appropriate box, consider to the extent you agree with each statement.

Code	Question	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
F1	The company rarely changes the format of their financial statements over successive financial periods					
F2	The company always supplies information about its previous 2 to 5 financial periods					
F3	The company strictly adheres to International Financial Reporting standards when preparing its financial statements					
F4	The company strictly adheres to legal stipulations and guidelines when preparing financial statements					
F5	The financial statements of the company strictly conform to the industry format of financial reporting					
F6	Changes in accounting policies of the company are always fully disclosed in the explanatory notes to the annual accounts.					

Code	Question	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
F7	It is very easy to compare information in the financial statements of the company over time and with other firms					

G. Here are some statements describing the reliability of information in the financial statements of the company. By ticking (√) in the appropriate box, consider to the extent you agree with each statement.

Code	Question	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
G1	While discussing annual results, the company usually provides balanced highlights of positive and negative events					
G2	The company's financial reports more often than not receive an unqualified audit report					
G3	The company always restates financial statements to reflect changes in international financial reporting standards					
G4	The annual financial statements usually provided by the company are largely complete with no material omissions of accrual information					
G5	The company hardly engage in window dressing and manipulation of financial information they present in financial statements					

Code	Question	Strongly Agree	Agree	Not Sure	Disagree	Strongly Disagree
G6	There are rarely any changes in the accounting policies that have been adopted by the company					
G7	The company usually provides adequate information on corporate governance					
G8	On the overall, information in the financial statements of the company is reliable for security evaluation					

H. How do you rate the changes in the following qualitative aspects accounting information provided in the financial statements of the company over the period you have been evaluating its securities? Tick (√) as appropriate.

Code	Qualitative Aspect	Tremendous improvement	Relative Improvement	No change	Relative Deterioration	Extreme Deterioration
H1	Relevance					
H2	Reliability					
H3	Understandability					
H4	Comparability					

Appendix 4: CMA Licensees

Investment Banks

CFC Stanbic Financial Services Limited
Standard Investment Bank Limited
Barclays Financial Services Limited
NIC Capital Limited
CBA Capital Limited
Equity Investment Bank Limited
African Alliance Kenya Investment Bank Limited
Dyer and Blair Investment Bank Limited
Faida Investment Bank Limited
Renaissance Capital (Kenya) Limited

Investment Banks

Old Mutual Asset Managers (K) Limited
Old Mutual Investment Services (K) Limited
ICEA Lion Asset Management Limited
Pinebridge Investments East Africa Limited
Genesis (K) Investment Management Limited
British American Asset Managers Limited
Stanlib Kenya Limited
Sanlam Investment Management Kenya Limited
Standard Chartered Investment Services Limited
Co-optrust Investment Services Limited
CIC Asset Management Limited
Madison Asset Management Services Limited
Apollo Asset Management Company Limited
Dry Associates Limited
Canon Asset Managers Limited
Amana Capital Limited
Aureos (K) Managers Limited
FCB Capital Limited
Zimele Asset Management Company limited
Fusion Capital Asset Management Limited

Investment Advisors

Cititrust Kenya Limited
Co-Op Consultancy & Insurance Agency Limited
VFS International (K) Limited

Citidell Company Limited
Raya Limited
Winton Investment Services Limited
Regnum Consultants Limited
Bora Capital Limited
Tsavo Securities Limited
Lifestyle Management Limited
Deloitte Financial Advisory Limited
Executive & Corporate Advisory Services (K) Ltd.
Iroko Securities (K) Limited
J W Seagon & Company Limited
The Profin Group (K) Limited
PriceWaterhouse Coopers Associates

Appendix 5: Form A- Application for Authority to Conduct Research

PART II

(*To be completed by the applicant*)

1. Personal Information

(a) Surname of the Applicant………..…………………………………………………….

(b) Other Names………………………………………………………………....................

(c) National Identification Number (ID No.) ………………………………………………

(d) Permanent Residence Address……………………………..……………………………

………………………………………..……………………………………………..…

(e) Postal Address……………………………….…………………………………….

(f) Contacts: Telephone…………………..…………….….……Fax……………………

E-mail……………………………………………………………………………………

(g) Age……………………………….Sex…………………………………………………

(h) Qualifications…………………………………………………………………………..

(*Please attach the above details for other research staff and their curriculum vitae*)

2. Personal References (*Give names and full addresses of two senior academic/professional Referees. These shouldbe professionally qualified in the field of research which the applicant wishes to undertake*).

(i) Name …………………………………………………………………………….

Address …………………………………………………………………………

Occupation ……………………………………………………………………….

Contacts: Tel:……………………………………. Fax……………………………….

E-mail……………………………………………………………………………

Date …………………………………. ……………………………………………………

(Referee's Signature)

(ii) Name ……………………………………………………………………………

Address ……………………………………………………………………………

Occupation ………………………………………………………………………

Contacts: Tel:……………………………………. Fax……………………………

E-mail……………………………………………………………………………

Date …………………………………. ……………………………………………..................

(*Referee's Signature*)

3. (a) Have you applied for a Permit to conduct research in Kenya before? Yes/No

(b) Title of the research (if any) previously applied for ……………………………………

……………………………………………………………...

…………………………………………………………………………………………

(c) The application was approved/rejected *vide* the NCST's letter Ref. No. …………

………………………………………………….Dated …………………………………

4. (a) Have you sought affiliation with a Kenyan Institution approved for affiliation purposes?

Yes/No……………………if yes, please give name of institution………….. …………

……………………………………………………………………………………………

(b) If No, you should seek research affiliation with a relevant approved Kenyan institution and provide name of the Institution (*A list of Institutions approved for affiliation is appended*). Affiliation is mandatory before a permit can be issued. It is the responsibility of the researcher to look for such affiliation at own cost, if any.

Note--- Affiliation is **not** required for researchers under approved bilateral or multilateral aid schemes.

5. Name of University/ Organization under which the research Project is being undertaken…………………………………………………………………………..

6. (a) Source(s) of Finance

…………………………………...

……………………………………………………………………………………………

(b) Amount …………………………………………………...

7. Title of the research project

…………………………………………………………...

……………………………………………………………………………………………

……

8. Purpose of the research (e.g. MSc., PhD., Post-Doctoral, others (*specify*)

…...

……

……..

9. Location of Fieldwork: Location/Division …………………………...........................

District………………………………………….. Province …………………………………

10. Estimated period of the project: from ………………...............to……......................

11. I will need access to the following Public Records

….……………………………...

……

……...

12. I will interview the following Government Officials

……………………………………...

……

……

13. I will need to interview members of the Public whom I will select as follows:

230

……

……

…………………………………………………………………………………………………......

....

(*Please incorporate details of sampling procedures, if relevant in the description*

of your project).

14. I intend to use the attached copies of questionnaire(s) *(if applicable)*

…………………………………………………………………………………………………

…………………………………………………………………………………………………

15. I certify that I have read and understood the conditions given in parts **I** and **II**. I do agree to abide by them as required and that the information given by me in part **II** is correct to the best of my knowledge.

16. I,…………………………………………………….(Name) do agree to deposit **two (2) bound** copies of a final comprehensive report/thesis on my research project with the NCST within a year from the date indicated as the completion date of the project in **No. 10** in part **II** above.

Signature ……………………………. Date …………………………………….

PART III

(For official use by institution where research is undertaken)

1. Name of the Institution…………………………………………………………

2. Recommendation by the Head of the Institution

………………………………………………..…………………….......................

……………………………………………………………………………………………

……………………………………………………………………………………………

……………………………………………………………………………………………

……………………………………………………………………………………………

3. Name………………………………………………………………………………

4. Position…………..…………………………………………………………………

5. Official Stamp and Signature……………..…………………………………………

Date……………………………………………………………………………………

PART IV

(For official use only)

1. Comments by NCST Specialist Sub-Committee

…………………………………………...

....

....

....

Date……………………………………. …………………………………………………

Chairman of the Sub-committee

2. NCST Research Committee Recommendations

…………………………………………………...

....……………

…………………………………………………………………………………………….......

..……………………………………………………………………………………………………

…………...

3. Approved/Not approved

Date…………………………………… …………………………………………………

Chairman, NCST Research Committee

Appendix 6: Overall Accruals Quality Variables

Year	ΔWC	CFO_{t-1}	CFO_t	CFO_{t+1}	$\Delta SALES$	PPE_t
1993	-0.112570	0.073201	0.100317	0.010150	-0.473510	0.007760
1994	-0.123830	0.080521	0.038020	0.042730	0.112444	0.023694
1995	-0.078010	-0.173810	0.115853	-0.508480	-0.060320	0.271800
1996	0.069255	0.005139	0.034044	0.006740	0.149428	0.011630
1997	0.050343	-0.015830	0.125396	0.051404	-0.161660	0.013558
1998	0.006717	0.002609	0.084720	0.003999	-0.091830	0.018689
1999	-0.225140	0.146402	-0.004280	0.020301	-0.202280	0.015521
2000	0.015127	0.011419	-0.004280	-0.043450	-0.161640	0.015521
2001	0.000363	0.030456	-0.004280	-0.092460	0.115895	0.023694
2002	0.007284	-0.081700	-0.003250	0.046650	-0.053770	0.023694
2003	0.005512	-0.062790	-0.003250	0.030094	-0.119810	0.019222
2004	-0.034790	0.024100	0.034044	1.08E-05	0.000941	0.016569
2005	0.036889	1.027684	0.038020	-2.613680	0.007145	0.015521
2006	0.033555	6.03E-06	0.066834	0.005777	-0.100690	0.011630
2007	0.043514	-0.018460	0.084720	0.059972	-0.188650	0.013558
2008	0.016475	0.002237	0.125396	0.032441	-0.030060	0.018689
2009	0.009609	0.032377	0.229958	0.018787	0.378029	0.024099
2010	0.015585	0.021787	0.158215	0.062475	0.045869	0.018072
2011	0.016643	0.011625	0.194186	-0.031390	0.174685	0.018689
2012	0.023821	0.038556	0.074085	0.004408	0.261667	0.020449
2013	0.018439	-0.020320	0.123326	0.042249	0.398124	0.029301

Appendix 7: Segmental Accruals Quality

Year	Const.	Auto	Energy	Agric	Comm.	Manuf	Bank	Insu	Inves.
1997	0.25872	0.81077	0.67827	0.05772	0.06257	0.04436	0.07213	0.13108	1.33023
1998	0.26903	0.95638	0.78500	0.06220	0.06340	0.11485	0.09520	0.13130	1.35227
1999	0.26788	0.84458	0.66558	0.07621	0.06932	0.20672	0.11111	0.20747	2.04972
2000	0.07453	0.45845	0.68767	0.06198	0.11351	0.20702	0.10864	0.20079	2.03043
2001	0.08836	0.39509	0.35359	0.05119	0.10067	0.21160	0.11044	0.19455	2.06446
2002	0.08877	0.39868	0.32413	0.04633	0.11978	0.21297	0.10874	0.20060	2.09995
2003	0.08610	0.24739	0.22021	0.04787	0.15609	0.14286	0.10792	0.23237	2.29088
2004	0.06537	0.23647	0.18051	0.07288	0.15278	0.05808	0.10705	0.14388	1.05893
2005	0.07336	0.31783	0.19667	0.11414	0.16102	0.05686	0.10538	0.16130	1.08147
2006	0.06745	0.47372	0.64023	0.13028	0.13775	0.06310	0.10198	0.17138	1.08013
2007	0.07097	0.39157	0.68710	0.12839	0.13614	0.06730	0.11340	0.19010	1.16146
2008	0.08064	0.34328	0.75719	0.12016	0.11069	0.11099	0.10978	0.15636	0.50592
2009	0.11176	0.29751	0.73318	0.15820	0.11344	0.14419	0.10093	1.03254	0.43981
2010	0.14355	0.39358	0.77030	0.13244	0.07558	0.14649	0.10086	1.41518	0.61377
2011	0.15853	0.37053	0.35009	0.15558	0.10565	0.13507	0.09168	1.43307	0.56452
2012	0.17269	0.30901	0.34101	0.15481	0.09137	0.13893	0.07854	1.42904	0.52833
2013	0.17726	0.24102	0.36023	0.15708	0.10664	0.10407	0.06629	1.45923	0.63108

Key:

Const: Construction & Allied Segment

Auto: Automobiles & Accessories Segment

Energy: Energy & Petroleum Segment

Agric: Agricultural Segment

Comm: Commercial & Services Segment

Manuf: Manufacturing & Allied Segment

Bank: Banking Segment

Insu: Insurance Segment

Inves: Investment Segment

Appendix 8: Innate Accruals Quality Variables

Year	LnTA	LnδCFO	LnδREV	LnLOOC	LnNOLI
1997	0.127160	0.118697	0.030203	0.226211	0.127135
1998	0.125668	0.106298	0.035734	0.225509	0.137531
1999	0.130795	0.102550	0.081839	0.222452	0.251546
2000	0.126052	0.029700	0.054237	0.222307	0.264962
2001	0.125408	0.057369	0.026790	0.217842	0.414552
2002	0.124443	0.057369	0.015230	0.217167	0.404155
2003	0.122058	0.008155	0.004396	0.216792	0.391057
2004	0.119681	0.159669	0.026859	0.216303	0.346451
2005	0.121040	0.142604	0.023409	0.214652	0.226396
2006	0.122160	0.215542	0.034266	0.234286	0.198227
2007	0.121643	0.135033	0.044009	0.220838	0.119758
2008	0.118087	0.106298	0.042148	0.220568	0.109362
2009	0.115951	0.086892	0.112623	0.224305	0.109362
2010	0.117233	0.021853	0.081325	0.222407	0.101985
2011	0.115610	0.019678	0.055151	0.229113	0.091589
2012	0.114082	0.001847	0.035654	0.230913	0.176093
2013	0.113299	0.102603	0.027854	0.243244	0.211639

Appendix 9: Segmental Innate Accruals Quality

Year	Const.	Auto	Energy	Agric	Comm.	Manuf	Bank	Insu	Inves.
1997	0.12406	0.56684	0.49783	0.04997	0.12065	0.10267	0.08240	0.13488	1.18718
1998	0.16641	0.68237	0.63825	0.11124	0.09696	0.16428	0.09892	0.05802	1.26864
1999	0.15050	0.66470	0.50352	0.06635	0.09394	0.18575	0.11568	-0.09522	2.18646
2000	0.14588	0.71163	0.60061	0.08167	0.10116	0.18139	0.10505	0.21137	1.80794
2001	0.16412	0.41218	0.34692	0.06116	0.11762	0.14931	0.10462	0.27821	1.59547
2002	0.09065	0.26824	0.40700	0.05366	0.13424	0.14346	0.10363	0.12786	2.01741
2003	0.10140	0.40653	0.52889	0.09138	0.13593	0.13037	0.10239	0.18486	2.27506
2004	0.05011	0.30092	0.33909	0.06451	0.14538	0.10399	0.10879	0.03935	1.77538
2005	0.11994	0.29544	0.15026	0.07473	0.14257	0.10746	0.10534	0.53572	0.67198
2006	0.13667	0.31008	0.62982	0.08936	0.11405	0.11998	0.11755	0.43615	0.87667
2007	0.14610	0.25508	0.66928	0.09010	0.10736	0.09589	0.11056	0.53254	0.91883
2008	0.16174	0.39740	0.79671	0.13349	0.10178	0.11180	0.10273	0.51197	0.86025
2009	0.14067	0.36587	0.75625	0.14515	0.09799	0.10826	0.09765	0.67630	0.64709
2010	0.14192	0.41867	0.59365	0.14897	0.08551	0.14329	0.08455	1.02580	0.78528
2011	0.11725	0.49549	0.56052	0.16179	0.10006	0.12191	0.08523	1.32617	0.82839
2012	0.16702	0.67789	0.27488	0.14922	0.10695	0.10064	0.08276	1.33140	0.66901
2013	0.13054	0.25653	0.43750	0.15472	0.10026	0.09502	0.08225	1.57487	0.53750

Key:

Const: Construction & Allied Segment

Auto: Automobiles & Accessories Segment

Energy: Energy & Petroleum Segment

Agric: Agricultural Segment

Comm: Commercial & Services Segment

Manuf: Manufacturing & Allied Segment

Bank: Banking Segment

Insu: Insurance Segment

Inves: Investment Segment

Appendix 10: Segmental Discretionary Accruals Quality

	Const.	Auto	Energy	Agric	Comm.	Manuf	Bank	Insu	Inves.
1997	0.13466	0.24393	0.18044	0.00775	-0.05808	-0.05831	-0.01027	-0.00381	0.14352
1998	0.10263	0.27402	0.14675	-0.04904	-0.03356	-0.04943	-0.00372	0.07328	0.07194
1999	0.11739	0.17988	0.16206	0.00986	-0.02462	0.02097	-0.00457	0.30268	-0.14794
2000	-0.07135	-0.25319	0.08706	-0.01969	0.01235	0.02564	0.00359	-0.01058	0.25384
2001	-0.07576	-0.01709	0.00667	-0.00997	-0.01695	0.06229	0.00582	-0.08366	0.46349
2002	-0.00188	0.13044	-0.08287	-0.00733	-0.01446	0.06950	0.00511	0.07274	0.09604
2003	-0.01530	-0.15914	-0.30869	-0.04351	0.02016	0.01248	0.00553	0.04752	0.02160
2004	0.01526	-0.06445	-0.15858	0.00837	0.00740	-0.04590	-0.00174	0.10453	-0.71250
2005	-0.04658	0.02239	0.04641	0.03941	0.01845	-0.05060	0.00004	-0.37442	0.39844
2006	-0.06922	0.16364	0.01041	0.04093	0.02370	-0.05688	-0.01557	-0.26476	0.19670
2007	-0.07513	0.13648	0.01783	0.03829	0.02878	-0.02859	0.00284	-0.34245	0.24209
2008	-0.08110	-0.05412	-0.03951	-0.01332	0.00892	-0.00081	0.00706	-0.35561	-0.36021
2009	-0.02891	-0.06836	-0.02307	0.01304	0.01544	0.03593	0.00328	0.35624	-0.05713
2010	0.00163	-0.02510	0.17665	-0.01652	-0.00992	0.00320	0.01631	0.38938	-0.15397
2011	0.04128	-0.12496	-0.21042	-0.00621	0.00560	0.01316	0.00645	0.10690	-0.26464
2012	0.00567	-0.36887	0.06614	0.00558	-0.01557	0.03829	-0.00422	0.09764	-0.14262
2013	0.04672	-0.01551	-0.07728	0.00237	0.00637	0.00905	-0.01595	-0.11564	0.09358

Key:

Const: Construction & Allied Segment

Auto: Automobiles & Accessories Segment

Energy: Energy & Petroleum Segment

Agric: Agricultural Segment

Comm: Commercial & Services Segment

Manuf: Manufacturing & Allied Segment

Bank: Banking Segment

Insu: Insurance Segment

Inves: Investment Segment

Appendix 11: Accruals Quality Qualitative Factors

FIRM	LnX1	LnX2	LnX3	LnX4	YAQ	MAQ	MIAQ	LnYAQ
ARM	1.3122	1.3863	1.4351	1.0863	3.9786	0.0153	0.0925	1.3809
BMR	1.3122	1.3122	1.4816	1.3218	3.8946	0.0192	0.0242	1.3596
CRWN	1.2322	1.3863	1.3863	1.3863	3.8571	0.0242	0.0344	1.3499
CBLES	1.2322	1.4214	1.2809	1.0469	3.8554	0.0295	0.4136	1.3495
PLAND	1.3122	1.3863	1.4816	1.4171	4.0598	0.0344	0.0985	1.4011
C&G	1.3863	1.4214	1.3350	1.2528	3.8607	0.0429	0.0508	1.3508
MARSH	1.4553	1.3499	1.0261	1.4171	4.2170	0.0508	1.4967	1.4391
CMC	1.4553	1.4214	1.4816	1.0528	4.0821	0.0517	0.0153	1.4066
SAM	1.3122	1.3499	1.2809	1.2164	3.6366	0.0659	0.1986	1.2910
KENOL	1.3863	1.2730	1.2238	1.3545	3.7116	0.0925	1.2226	1.3115
KPLC	1.3499	1.2730	1.0816	1.3759	4.0509	0.0985	0.0517	1.3989
TOT	0.4881	1.4214	1.3350	1.2528	3.9679	0.4967	0.2664	1.3782
KAK	0.6190	1.0498	1.1632	1.0116	2.6661	1.2226	0.0429	0.9806
KAP	0.5390	1.1896	0.8755	1.0116	2.5375	1.0830	0.1001	0.9312
LMR	1.0498	1.1451	1.2809	1.0986	3.1500	0.1001	0.0659	1.1474
REA	1.3122	1.1451	1.3350	1.2528	3.5393	0.1310	0.1310	1.2639
SAS	0.8267	1.2190	0.8755	1.7538	2.1670	0.1648	0.2506	0.7733
WILL	0.9445	1.8267	0.6931	0.7538	2.2455	0.1986	0.0192	0.8089
EXP	0.1336	0.8267	0.8755	0.8650	2.0509	1.2506	0.1648	0.7183
NAT	0.4881	1.5198	1.0261	1.3863	4.4000	0.2664	0.0295	1.4816
STD	1.0214	1.4553	1.4351	1.6171	4.1884	0.3031	0.1917	1.4323
KQ	1.3863	1.1451	1.2238	1.2528	3.5107	0.4136	0.0488	1.2558
EABL	1.3863	1.3499	1.0261	0.3863	4.1143	0.9268	0.3031	1.4145
BAT	1.4214	1.4214	1.2809	1.4759	4.0652	0.2806	0.0260	1.4025
ORCH	1.4214	1.4214	1.4351	1.4759	4.2152	0.1917	0.1076	1.4387
UNGA	1.4214	1.2730	1.3863	1.1394	3.7098	0.7473	0.0728	1.3110
BBK	1.3863	1.3122	1.3863	1.3863	3.9286	0.1231	0.0432	1.3683
CFC	1.4214	1.3863	1.4351	1.3863	4.0857	0.1191	0.1188	1.4075
DT	1.2730	1.3122	1.6238	1.4759	3.7652	0.1188	0.0199	1.3258
HFCK	1.1451	1.3122	1.2809	1.3218	3.5518	0.1076	0.1473	1.2675
KCB	1.1896	1.3122	1.3863	1.2164	3.5938	0.0851	0.0479	1.2792
NBK	1.3122	1.4214	1.4351	1.4171	4.0455	0.0728	0.0144	1.3976
NIC	1.4553	1.3122	1.3863	1.3863	4.0000	0.0603	0.1231	1.3863
STNCHT	1.3499	1.2322	1.5261	1.2164	3.8152	0.0488	0.2806	1.3390
JBLEE	1.3122	1.4214	1.4816	1.3545	4.0330	0.0479	0.9268	1.3945
PANAF	1.4214	1.3863	1.3863	1.3545	4.0045	0.5432	0.1191	1.3874
CENT	1.3863	1.3499	1.3863	1.3545	3.9330	0.0260	0.0866	1.3694
CITY	1.3499	1.3499	1.4351	1.4171	4.0098	0.0199	0.0603	1.3887
OLYM	1.1896	1.3122	1.4863	1.3545	3.7188	0.6144	1.0830	1.3134