DRIVERS OF THE IMPACT OF MERGERS AND ACQUISITIONS ON STOCK MARKET RETURNS OF LISTED FIRMS IN EASTERN AFRICA SECURITIES MARKETS

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Drivers of the Impact of Mergers and Acquisitions on Stock Market Returns of Listed Firms in Eastern Africa Securities Markets

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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 University Supervisors.

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DEDICATION

I dedicate this work to my husband Dr. H. Wanyika and my sons Lewis, Franklin, Jeffrey Austin and Ryan. I will forever be grateful for your moral and financial support throughout this challenging journey.

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LIST OF ABBREVIATIONS AND ACRONYMS

AAR   Average Abnormal Return

ADF   Augmented Dickey and Fuller Test

AR   Abnormal Return

BC   Board Characteristics

BH   Big Market Capitalization and High Book to Market Equity Portfolios

BL   Big Market Capitalization and low Book to Market Equity Portfolios

BM   Big Market Capitalization and Medium Book to Market Equity Portfolios

BW   Big Market Capitalization and Winner Portfolios

BRICK   Brazil, Russia, India, China, South Korea and South Africa

CAAR   Cumulative Average Abnormal Return

CAK   Competition Authority of Kenya

CAPM   Capital Asset Pricing Model

CAR   Cumulative Abnormal Return

CEO   Chief Executive Officer

CLAAR   Cumulative Long Run Average Abnormal Return

CMA   Capital Market Authority

DC   Deal Characteristics

DW   Durbin- Watson

EAC   East Africa Community

EBIT   Earnings before Interest and Tax

FC   Firm Characteristics

FCF   Free Cash Flow

FEM   Fixed Effect Method

FGLS   Feasible Generalised Least Square

GDP   Gross Domestic Product

HML   High Minus Low

ICT   Information, Communication and Technology

K-S   Kolmogorov- Smirnov

LAAR   Long run Average Abnormal Return

M&A   Mergers and Acquisitions

NSE   Nairobi Securities Exchange

OE   Operating Efficiency

PP   Phillips Perron Test

REM	Random Effect Method
RF	Risk free rate
RM	Market Return
SIG.	Significance
SH	Small Market Capitalization and High Book to Market Equity Portfolio
SL	Small Market Capitalization and Low Book to Market Equity Portfolio
SM	Small Market Capitalization and Medium Book to Market Equity Portfolio
SMB	Small Minus Big
SW	Small Market Capitalization and High Book to Market Equity Portfolio
SSA	Sub Saharan Africa
UK	United Kingdom
UNCTAD	United Nations Conference on Trade and Development
USA	United States of America.
US	United States
WML	Winners Minus Low
VIF	Variance Inflation Factor

DEFINITION OF TERMS

Acquisition: This is a complete absorption of one firm by another firm; the acquiring firm retains its name and identity. The acquiring company buys all the assets and liabilities of another company Reuvid, 2007).

Board independence: This is the ratio of independent to non-independent directors constituting the board of directors in a company. Independent directors provide the much needed monitoring role to the management (Masulis, Wang & Xie, 2007).

Board size: This is the total number of board of directors in a company (Liu & Wang, 2013).

Carhart four factor model: It is a security pricing/ valuation model which is a modified three-factor model, by adding one more factor to it, which would capture a one year momentum effect on stock returns (Carhat, 1997).

CEO/ Chairman duality: Is situation where one person heads both the management and the board of directors (Masulis *et al.*, 2007).

Deal characteristics: They are deal-specific factors relating to how mergers and acquisitions are financed, the type of target firm acquired, industry relatedness of the acquisition and relative deal size (Masulis, Wang & Xie, 2007).

Firm characteristics: These are firm-specific factors that determine the financial performance of a firm; they are also considered potential explanatory determinants of differences in return among the acquirer firm (Moeller, Schlingemann & Stulz, 2005).

Firm Size: Mule, Mukras and Nzioka (2015) define firm size as the amount and variety of production capacity and ability a firm possesses or the amount and variety of services a firm can provide to its customers. It therefore refers to how big or small a firm is and it is a key determinant of financial performance of an entity (Muigai, Nasieku & Muhanji, 2016).

Management over-confidence: This is a situation of being too sure about the outcome of an event (Baker, Dutta, Saadi & Zhu, 2012).

Merger: This is a combination of two or more firms in which all but one legally cease to exist and the combined organization continues to operate under the original name of surviving firm (Gaughan, 2011).

Operating efficiency: is a measure of how a firm employs its resources effectively. More so, it gives a review on how management utilizes assets (Muhammad & Zahid, 2014).

Tobin Q: Wang and Liu (2013) explain that Tobin Q is used as indicator of firm value, which measures a company's future discounted cash flows value.

ABSTRACT

The objective of this study is to determine drivers of the impact of M&A on stock market returns of listed firms in Eastern Africa securities markets. Specifically, the study sought to determine the impact of firm characteristics, deal characteristics, operating performance and board characteristics in the short run and long run on pre and post M&A stock market returns. This study was guided by free cash flow theory, mis-valuation theory, signaling theory, liquidity hypothesis, diversification theory and hubris theory. Event study approach was employed to determine impact of M&A on stock market returns in the short run and long run. In the short run, impact of M&A on stock market returns was determined using the market model approach for a period of twenty (20) days before the M&A and twenty (20) days after the M&A whereas in the long run pre and post M&A stock market returns was computed using the Carhart four factor model for a period of ten (10) years, that is, five (5) years before and five (5) years following the activity. The study employed quantitative research design. The study population was defined as all the listed firms involved in mergers and acquisitions activities between year 1998 and 2015 in the three Eastern Africa countries that include Kenya, Uganda and Tanzania. In total thirty (30) firms and twenty five (25) firms were studied in the short run and in the long run respectively. The study employed secondary data which was extracted from the audited annual financial statements of individual firms, Nairobi Securities Exchange and Capital Market Authority of Kenya library. Descriptive statistics including measures of central tendency; mean, maximum, minimum and measures of variation and standard deviation were generated and interpreted. Diagnostic tests were carried out. Cross sectional regression was employed in the short run while panel data regression technique was used in the long run. F-test was used to determine the significance of the overall model. To determine the significance of the individual variables, t-test was used. From the event study, it was observed that the initial reaction to M&A was positive; however, in the long run M&A stock market return was negative. The study concluded that firm characteristics namely; firm size and Tobin Q had a positive significant impact on pre and post M&A stock market returns in the short run. The long run analysis showed that firm size maintained its positive significant impact; however, Tobin Q was significantly negative. It was also found out that deal characteristics; that is, method of payment, target status and deal value had a significant impact on pre and post M&A stock market returns in the short run. Further, the results depicted a negative significant relationship between operating performance and pre and post M&A stock market returns both in the short run and in the long run displaying the hubris nature of the management across listed firms in Eastern Africa securities markets. Finally, the study found out that board size had a significant positive impact on M&A stock market returns in the short run; however, in the long run a significant inverse relationship was reported. The study concluded that firm size, Tobin Q, method of payment, target status, deal value, operating performance and board

size are useful in explaining variations in M&A stock market returns in the short run. However, in the long run, the findings shows that motive behind M&A explains only a small percentage of impact of M&A on stock market returns in firms listed in Eastern Africa securities markets. Most importantly, the study brings in new evidence that management in M&A firms in Eastern Africa are not influenced by hubris while making M&A investment decisions. This is depicted by the positive and significant impact of firm size on M&A stock market returns. The study recommends that managers should endeavour to maximize shareholders return while making M&A investment decisions.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

In light of the challenging economic conditions and the dynamic business environment, corporations must re-position themselves accordingly in the market in order to remain competitive. Consequently, many firms are resulting to corporate restructuring strategies with Mergers and Acquisitions (M&A) transactions accounting for the biggest percentage world over. Moreover, these activities are considered a changing agent. This is perhaps best illustrated by the ever changing composition of the 500 largest U.S firms. Of the original 500 corporations that composed the so called Fortune 500 at its inception in 1955, only 70 firms can be found on the list today (Depamphilis, 2011).

This condition is replicated in many securities markets worldwide with most corporations being eliminated either through a merger or an acquisition. Conversely, as the jungle law takes control, new corporations are formed. Over the years M&A activities have increased rapidly partly due to financial deregulation, globalization of real and financial markets and information technology improvement (Sonenshine & Reynolds, 2012; Muhammad & Zahid, 2014).

1.1.1   Global Overview of Mergers and Acquisitions

A vast number of papers have documented that globally; M&A have been analyzed and classified into six global M&A waves over the last 120 years. However, the focus has been on developed economies (Gaughan, 2011; Betrand & Betschinger, 2012; Berk DeMarzo & Harford, 2012). Scientific literature offers two hypotheses for the occurrence of M&A waves: neoclassical and behavioral hypothesis. Neoclassical theory argues that M&A waves occur when firms in the industries react to technological,

regulatory or economic shock in their operating environments (Harford, 2005; Martynova & Renneboog, 2008; Brealy & Myers, 2008).

On the other hand, behavioral theory postulates that long term fluctuations in market valuation are positively correlated with the number of takeovers (Ang & Chen, 2006). The first decade of the new millennium was characterized by an era of global mega M&A activities followed by a period of extended turbulence in the global credit market. Despite the effect of the 2001 economic recession that saw M&A activities drop significantly, conditions were in place for resurgence of M&A activities.

Research evidence shows that worldwide, M&A activities reached a historic peak in year 2007, with a global total value of US$ 4,784 billion wholly reflecting the frenetic levels of M&As activities in 1990s (Depamphilis, 2010). The possible major drivers of this era were cited as readily available credit and historically low interest rates (Hill, 2011). The documented M&A waves, their periods, characteristics and the factors that contributed to the end of the wave are presented in Table 1.1.

Table 1. 1: Historical Corporate Mergers and Acquisitions Waves

The Wave	Period	Characteristics	Factors that Contributed to the End of the Wave
First Wave	1895-1904	Horizontal restructuring	1904 stock market crash
Second Wave	1916-1929	Vertical consolidations	1929 stock market crash
Third Wave	1965-1969	Growth of conglomerates	Excessive leverage
Fourth Wave	1981-1989	Hostile takeovers	1990 recession
Fifth wave	1992-2000	Cross border, mega deals	Highly publicized LBOs
Sixth Wave	2003-2008	Private, leveraged buyouts	2008 financial crisis

Source: Depamphilis (2010).

Notably, the combination of escalating oil prices and unavailability of credit caused most of the world's economies to slip into recession in 2008 substantially reducing global M&A activities. In 2008 the value of M&A transaction dropped by 61% to a value of US$ 2898 billion from a value of US$4784 billion in 2007 due to global financial crisis (Ernst &Young, 2009). Despite the powerful interventions in monetary and fiscal policies created by various governments worldwide, recession continued in 2009 further decreasing M&A activities to a figure of US$1400 billion (UNCTAD, 2012). In an effort to offset deflationary pressure and restore business confidence, post 2008-2009 global financial crisis, various governments around the world intervened aggressively in the global credit market as well as in the manufacturing and non-manufacturing sectors of the economy. Those measures were seen as a hallmark of the recovery process that followed. Surprisingly the effect of those interventions on M&A activities were remarkably significant as presented in Table 1.2 (Depamphilis, 2010; UNCTAD, 2014).

Table 1. 2: Trend of M&A Activities Around the World

Year	Value Trillion US$
2010	1400
2011	1580
2012	1000
2013	1010
2014	1600

Source: UNCTAD (2014).

From this, it is crystal clear that despite the fluctuating market conditions companies will continue engaging in M&A investment decisions. However, the debate on whether M&A activities are generating returns to firms' shareholders in the 21st Century is a topical issue despite it being the subject of several studies since the first review paper on

corporate takeovers by Jensen and Ruback (1983). Interestingly and more importantly, a new trend is emerging; there is a growing demand for increased shareholder scrutiny on post M&A performance a critical factor in ensuring future M&A shareholder value creation (KPMG, 2010).

Extant literature from the global science shows that a greater percentage of M&A studies have been conducted in U.K and U.S markets (Moeller, Schlingermann & Stulz, 2005). The empirical findings appear consistent over time since the first review of takeover literature by Jensen & Ruback (1983). On average, target firms shareholders experience significant positive returns (Uygur, Meric & Meric, 2014). On the other hand a survey of empirical studies reveals that on aggregate acquiring firm shareholders experience insignificant positive abnormal returns or significant negative abnormal returns around M&A announcement dates (Alexandridis, Petmezas & Travlos, 2010).

1.1.2 Mergers and Acquisitions in Africa

In Africa, literature provides little on history of M&A activities. However, It is believed that similar to the developed economies, M&A activities in Africa occurred in waves as various firms in the industries reacted to 'shocks' in their operating environment (Harford, 2005; KPMG, 2012). It is has been documented that over the last decade, M&A activities in Africa have increased immensely. In 2010, Africa recorded a high M&A value of US$44 billion. Since then M&A activities have increased at a compound interest of 14% for the last four years (UNCTAD, 2014). This could be largely attributed to weak confidence in the international market (Ernst & Young, 2013).

In a pivotal paper using a sample of U.S acquirers in Africa, Triki and Chun (2011) report that over the last two decades, there has been a dramatic increase in the number of acquisitions of African businesses by foreign companies. In this paper, it is reported that over the last one decade, often, intra African mergers precede acquisition by foreign companies. Noted also is that in most cases, foreign corporations are much eager to

establish a foot print in Africa. However, due to lack of the necessary local knowledge, quite often they wait for an African company to reach a certain scale before they make a move. For example, significant proportion of about 53% of one hundred and fifty two (152) M&A deals completed in Africa in year 2011 were between African nations (Tyre & Lindsay, 2012).

The scenario is however not uniform across the continent. A case in point is North Africa where M&A investments remain largely stagnated due to political upheaval though there are some notable M&A activities going on. In 2011, M&A activities value amounted to US$9 billion and since then, the value has increased by a compound interest of 35% due to the region's potential in mineral resources (UNCTAD, 2014). The trend of M&A activities in Africa is presented in Table 1.3.

Table 1. 3: Trend of M&As Activities in Africa

Year	Value Trillion US$
2010	44
2011	46
2012	53
2013	56
2014	58

Source: UNCTAD (2014).

Notwithstanding earlier evidence that indicated M&A activities in Sub-Saharan Africa (SSA) countries were limited, there is now documented evidence showing that M&A activities have been increasing for the last decade. Statistics show that M&A activities in the region have increased at a compound interest of 22% since 2007 as presented in Table 1.4. This is due to a wide range of macroeconomic, structural and institutional reforms that were undertaken in SSA countries over the last decades in order to improve

the investment climate (Opolot, Mutenyo & Kalio, 2009). Among the star performers in SSA include South Africa, Zambia, Mozambique, Mauritius, Nigeria, Ghana, Tanzania and Kenya (Ernst & Young, 2013). South Africa has emerged as the leading investor in M&A activities (Tyre & Lindsay, 2012).

Despite the positive trend, very few studies in SSA have conducted research on the long run effect of M&A activities with notable exemptions of South African studies (Smit &Ward, 2007; Halfar, 2011). Past literature review reveals that short run event studies dominate most of research work on M&A in Africa. Moreover, few country specific studies done on this important subject appear to report mixed findings. Mushdzhi and Ward (2004) document that South African acquiring firm shareholders earn significant negative returns. In Nigeria, Barde and Salisu (2015) observes that M&A announcements have no effect on shareholder wealth in the short run.

Table 1. 4: Trend of M&A Activities in Sub-Saharan Africa

Year	Value Billion US$
2010	29
2011	37
2012	21
2013	27
2014	28

 Source: UNCTAD (2014).

1.1.3 Mergers and Acquisitions in Eastern Africa

History has it that in Eastern Africa, mergers and acquisitions activities began in early 1980s (Marembo, 2011). Contrary to the past evidence that indicated low levels of M&As activities in Eastern Africa region, recent statistics shows that M&A deal

volume have increased at a compound interest of 18% since 2010 (KPMG, 2014). The region has become an attractive target for M&A activities as investors flock in, in anticipation of the long term growth prospects. It is argued that one of the possible catalysts of these M&A activities is the formation of the East Africa Community (EAC). Moreover, local companies are taking part in M&A deals in a bid to protect their market share and create value for their shareholders.

Notably, the financial service sector has witnessed significant increase in M&A transactions. Going forward, the sector is expected to experience increased significant deals due to the revised regulatory capital requirement. In addition, the wide ranges of macroeconomic, structural and institutional reforms undertaken by countries in Eastern Africa have improved the investment climate in the region. KPMG's Deal Space Report of 2014 showed that in Eastern Africa, Kenya has been leading in M&A activities. The country has experienced substantial increase in M&A activities with over 134 transactions closed from the year 2010.

The Deal Drivers Report published by Merger markets, rank Kenya as Africa's fourth most sought country for M&A (Ng'ang'a & Ndale, 2014). The establishment of Competitions Authority of Kenya (CAK) under the Competitions Act Cap 504 laws of Kenya is associated with impressive growth in M&A activities (RoK, 2014; Inoti, Onyuma & Muiru, 2014). CAK is an autonomous public institution charged with the responsibility of ensuring fair business practices, approving and regulating M&A (Robinson & Zerdin, 2013).

In addition, the thriving Information, Communication and Technology (ICT) sector has also contributed to increase in M&A activities significantly. Kenya Economic Survey (2012) report show transport and communication sector grew by 20% during the five year period (2007 to 2011) (Ng'ang'a & Muthang'ato, 2013). Growth in ICT is expected to continue and contribute to both gross domestic product (GDP) growth and M&A

activities (RoK, 2012). M&A activities are set to heighten due to increased business confidence, consumer demand and gradually improving economic conditions.

Amidst the positive trend in Eastern Africa M&A activities, studies examining impact of mergers and acquisitions returns in the region are relatively few (Kariri, 2013). This is largely a function of limited availability of reliable data concerning M&A transactions (Triki & Chun, 2011). For a researcher to conclusively determine impact of M&A announcements, short-run impact as well as long-run impact should be conducted (Oler, Harrison & Allen, 2008; Zaremba & Plotnicki, 2014). Empirical literature review of studies conducted in the Eastern Africa region shows that focus has been on the effect of M&A activities on the financial performance of firm (Kithitu, Cheluget, Keraro & Mokamba, 2012; Wawire, Byaruhanga, Okaka & Odera, 2012; Inoti *et al.,* 2014).

Nearly all studies in Eastern Africa have used the accounting based approach with prevalence to financial ratios (Chesang, 2002; Gwaya & Mungai, 2015). Accounting based approach has been highly criticized lately due to its countless limitations (Selcuk & Yilmaz, 2011). Further, these studies dominate the impact of M&A announcements in the banking and insurance sectors hence the scope is very narrow. On the other hand, studies examining the long run impact of M&A on stock market returns of listed firms in Eastern Africa are scarce. Precisely, literature review reveals that research on long-term performance of stock following M&A announcements has not been undertaken in the Eastern Africa region.

Given the widely documented evidence in the developed financial markets that M&A activities are wealth-destroying to shareholders, there is a felt need to conduct an elaborate study in Eastern Africa to substantiate whether the empirical evidence exhibited in developed financial markets is different from the evidence from emerging markets. This research is an attempt to fill this important gap in M&A literature. Specifically, this study examined the impact of mergers and acquisition announcement in the short and in the long run. In addition, this is a comprehensive research aimed at

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finding out the drivers of the impact of M&A on stock market returns of listed firms in Eastern Africa securities markets.

1.2 Problem Statement

Many firms around the world use M&A strategies in an attempt to enhance financial growth. Despite this popular move, the question of impact of M&A on stock market return in the short run and in the long run remain an important, but largely unresolved empirical issue (Halfar, 2011). Theoretically M&A are initiated to improve efficiency thereby creating corporate wealth through synergies and scale effects (Depamphilis, 2011). Empirical literature on the outcome of the resultant firm; however, contradicts theoretical explanation on rationale of M&A (Alexandridis, Petmezas & Travlos, 2010).

Globally, studies on impact of corporate M&A on stock market returns shows mixed evidence. For example, some studies conclude that M&A increase shareholders wealth in the short run (Oler, Harrison, & Allen, 2008; Dilshad, 2013; Shah & Arora, 2014). Other studies conclude that M&A destroy shareholders wealth (Bruner, 2002; Conn, Cost, Guest & Hughes, 2005; Billet & Qian, 2006; Martynova & Renneboog, 2008; Fu, Lin & Officer, 2013). Surprisingly, some studies have documented that M&A have no effect on shareholders wealth (Smit & Ward, 2007; Barde & Salisu, 2015).

In Eastern Africa, studies on impact of M&A on stock market return are very few albeit the numerous studies undertaken. Empirical review shows quite a number of studies have focused on effect of M&A on financial performance from the financial statements point of view (Gwaya & Mungai, 2015). A study Inoti *et al.* (2014) concluded that corporate acquisitions do not have effect on profitability and asset utilization on acquiring firms in Kenya. The study recommends further studies be carried out to determine the impact of M&A from a stockholder point of view.

Despite the large body of literature that has studied M&A financial performance, drivers of impact of M&A on stock market return in Eastern Africa remain poorly understood. A study by Triki and Chun (2011) assessed the determinants of post acquisition long term performance of US M&A in Africa. The model controlled for deal characteristics, governance structure and target legal environment. The study concluded that governance structure and target legal environment had a significant impact on the performance of the acquirers.

On the other hand, deal characteristics failed to exhibit significant impact on acquirer performance. It is crystal clear studies in Eastern Africa have failed to develop a guiding framework on the drivers of impact of M&A. Therefore, this study seek to close this gap by determining the impact of M&A on stock market returns and investigating drivers of impact of M&A on listed firms that have been involved in M&A activities in Eastern Africa securities market.

1.3 Research Objectives

1.3.1 General Objective

The main objective of this study is to investigate the drivers of impact of M&A on stock market returns of listed firms in Eastern Africa securities markets.

1.3.2 Specific Objectives

In order to achieve the general objective of this study, this study pursued the following specific objectives:

1) To find out the impact of firm characteristics on pre and post M&A stock market returns of listed firms in Eastern Africa securities markets.
2) To establish the impact of deal characteristics on pre and post M&A stock market returns of listed firms in Eastern Africa securities markets.

3) To find out the impact of operating efficiency of the firm on pre and post M&A stock market returns of listed firms in Eastern Africa securities markets.

4) To assess the impact of board characteristics on pre and post M&A stock market returns of listed firms in Eastern Africa securities markets.

5) To establish the joint impact of firm characteristics, deal characteristics, operating efficiency and board characteristics on pre and post M&A stock market returns of listed firms in Eastern Africa securities markets.

1.4 Research Hypotheses

This study was guided by the following research hypotheses;

$H0_1$: There is no significant impact of firm characteristics on pre and post M&A stock market returns of listed firms in Eastern Africa securities markets.

$H0_2$: There is no significant impact of deal characteristics on pre and post M&A stock market returns of listed firms in Eastern Africa securities markets.

$H0_3$: There is no significant impact of firm operating efficiency on pre and post M&A stock market returns of listed firms in Eastern Africa securities markets.

$H0_4$: There is no significant impact of board characteristics on pre and post M&A stock market returns of listed firms in Eastern Africa securities markets.

$H0_5$: There is no joint significant impact of firm characteristics, deal characteristics, operating of efficiency and board characteristics on pre and post M&A stock market returns of listed firms in Eastern Africa securities markets.

1.6 Significance of the Study

The research study is conducted on firms listed in Eastern Africa securities markets. Therefore, the findings are likely to be of profound importance to central banks of the respective countries in formulating policies towards establishing an appropriate level of M&A. For example, Central Bank of Kenya controls and recommends mergers between or among weak banks as a way of avoiding failures and protecting the interest of depositors; therefore CBK can institute a framework of policies that can be used as a guideline for M&A in the region.

The Competitions Authority of Kenya also stands to benefit from this study. This is a regulatory body in charge of regulating M&A between or among corporations in the country. From this study the organization has an opportunity to know whether the M&A activities that they approve do create or elude shareholders wealth.

Investors in financial institutions such as commercial banks, microfinance institutions, insurance companies and management intending to merge or acquire others corporations might stand a better chance of knowing which strategy can create more value. Similarly, the findings of this research is likely to enable investors and shareholders to make timely investment decisions hence reducing possibility of plunging firms into financial distress or ultimate collapse. In addition, the study is likely to benefit the transaction advisors. These are experts who analyze stock performance and based on their findings advice their clients on which firms they should invest in.

This study is likely to enrich understanding on valuation models, precisely the accuracy of market model and Carhat model in predicting stock return. Scholars may also wish to use the findings of this study as a basis for further research on the unresolved and dynamic issues of stock valuation models and M&A. Moreover, the study provided more insight on whether motives behind M&A explain the impact of M&A on stock

market returns in the short run and in the long run period in listed firms in Eastern Africa securities markets.

1.7 Scope of the Study

This thesis work focused on drivers of impact of M&A on stock market returns of listed firms in Eastern Africa Securities markets. Geographical focus was on the listed firms in Eastern Africa securities markets that have been involved in M&A from 1998 to 2015. The year 1998 is important because it coincided with the liberalization of financial service sectors in many Eastern Africa countries (Kodongo, Makoteli & Maina, 2014). Meanwhile, the year 2015 ensured current data availability. The period was considered long enough to establish sufficient trends. Specifically, the study covered corporations involved in M&A activities that are listed in Kenya, Uganda and Tanzania securities markets.

1.8 Limitations of the Study

The study employed secondary data that was obtained from financial statements of the firms selected. Therefore, the researcher acknowledges that secondary data gathered from audited financial statements and annual reports of listed firms could have undetected errors; thus, the study results were subject to the inherent limitations of firm financial statements as reported to the general public. Secondly, in the testing of long run impact of M&A on stock market returns, a ten year period was used covering five (5) years before and five (5) years following M&A. This time period may be considered inadequate to sufficiently provide an exhaustive understanding of long run post M&A of stock market return.

In addition, the study used a few performance metrics, evaluation techniques; Market Model and Carhat Model to establish impact of M&A on stock market returns in the short run and in the long run respectively. Therefore, the study results and conclusions

were inherently limited by the power of the selected statistical techniques used and metrics defined (Halfar, 2011). Considering the limitations highlighted, the possibility of arriving at a skewed conclusion was evident, however, steps to mitigate these limitations have been outlined in chapter three of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provides theoretical framework on corporate M&A, reviews conceptual and empirical literature, critiques empirical studies and identifies the research gap.

2.2 Theoretical Review

Researchers over the years have advanced several theories in an attempt to justify the occurrence of M&A in firms. However, among the many theories of M&A activities, seven theories appear to be relevant for this study and include: Free Cash Theory, Managerial Discretion Hypothesis, Overvaluation Hypothesis, Signaling Hypothesis, Liquidity Theory, Diversification Theory and Hubris Theory. According to a study conducted by Andrade & Stafford (2004) the three motives for M&A activities are economic, financial and managerial.

2.2.1 Free Cash Flow Theory

The free cash flow hypothesis was advanced by Jensen (1986). He defined free cash flow as cash flow in excess of that which is required to fund all projects that have positive net present values when discounted at the relevant cost of capital. Jensen (1986) argued that manager are usually reluctant to distribute free cash flow to the shareholders because in doing so they will reduce company resources under their control while not increasing their own wealth since dividends are not their personal goal.

Management is usually concerned with the expansion of the firm due to the direct impact it has on management remuneration scheme. Therefore, management will use free cash flow to fund mergers and acquisition activities in order to grow the company.

Also, because raising fund in the capital market for later investment activities put the management under direct watch of stock market, management will be inclined to hold some free cash flow to fund such project (Easterbrook, 1984). As a result, management prefers to retain free cash flow to grow their company through M&A, even though the returns from such activities are negative. This is consistent with empirical result suggesting that managers with unused borrowing power and large free cash flow are more likely to undertake low or even value destroying M&A transactions rather than focusing on maximizing the shareholders wealth.

Free cash flow hypothesis is relevant in this study because it is one of the main motivations for M&A. Cash rich firms engage in empire building activities. Empirically, Lang, Stulz and Walking (1991) document that acquisitions by cash rich companies are value destroying. Harford (1999) find support that firms with abundant free cash flow are likely to make value decreasing acquisitions. However, Masulis, Wang and Xie (2007) observe that higher free cash flow indicate better recent performance thus high quality management. Free cash flow hypothesis has been tested in developed market given the mixed evidence. It is therefore important to test the hypothesis in a developing market substantiate whether free cash flow has an impact on shareholders' return following M&A in East Africa.

2.2.2 Managerial Discretion Hypothesis

This theory was articulated by Mueller (1969) and it is also known Empire Building Hypothesis. The managerial motive for acquisition suggests that managers are motivated to invest in M&A for selfish reasons. Masulis, Wang and Xie (2007) document that managers make acquisition decisions to build their sphere of influence and for bargain compensation. In most cases, management compensation is directly related to the size of the firm they control. Large firms are usually large acquirers, that being so, they make empire building M&A to grow fast and defend their firms from being acquired.

Empirical evidence concurs with the managerial discretion hypothesis. Moeller, Schlingemann and Stulz (2004) find robust evidence that bidder size is negatively correlated with the acquirer's announcement return. They support their findings by stating that on average, large firms pay higher premiums when they making M&A activities, consequently they destroy firm value. Perhaps these conclusions ignore the pressure experienced by managers of large firms in an effort to sustain earnings growth that can support share price of the firm.

Managers of large firms are compelled to make larger M&A investments because of the sufficient impact they have on earnings growth of the firm. Therefore, even though the resulting M&A investment may destroy value, the motive for making this decision may be more to maximize shareholders wealth than to preserve management autonomy. Research evidence shows that large firms make large acquisitions that result to large dollar losses (Moeller *et al.,* 2005). This is however documented in developed markets only. It is therefore important to test the hypothesis in a developing market to substantiate whether size of the firm have an impact on pre and post M&A stock market returns of listed firms in Eastern Africa securities markets.

2.2.3 Overvaluation Hypothesis

Invoking wealth creation and efficient capital hypothesis Shleifer and Vishny (2003) argue that during market booms company shares become overvalued. In most cases management is usually aware of this and they may wish to protect the shareholders from wealth loss following market adjustment. This is usually achieved through acquisition of real assets with their overvalued shares. This philosophy suggests that managers use overvalued stock to buy the asset of lower valued firms (Depamphilis, 2010). This requires that valuations of many firms measured by their price to earnings or market to book ratios compared to other firms must increase at the same time.

Managers whose stocks are believed to be overvalued move concurrently to acquire companies whose stock prices are lesser valued (Rhodes-Kropf & Viswanathan, 2004). The use of overvalued stock means the acquirer can issue fewer shares, resulting in less earning dilution. Reflecting the influence of overvaluation, the method of payment according to this theory would normally be stock. The overall outcome of such an investment decision is a negative net present value.

Numerous studies confirm that long term fluctuations in the market valuations and the number of takeovers are positively correlated (Dong, Hirshleifer, Richardson & Teoh, 2006; Ang & Cheng, 2006). According to Ang and Cheng (2006) the acquirer can periodically profit by buying undervalued targets for cash at a price below its actual value or by using equity. A common criticism to the valuation theory is that it is impossible to acquire accurate and tangible information about the acquisition results; furthermore, the concept of private information as a basis for M&A warrants further consideration.

Research evidence in developed markets shows that firms with high valuations have worse announcement returns (Dong, Hirshleifer, Richardson & Teoh, 2006). This could be that when highly valued firms make acquisitions they communicate to the market that these high valuations are not warranted fundamental. In most cases, high valued firms acquire undervalued firms in a share for share exchange hence issuing fewer shares. This reduces the probability of diluting the ownership position of current shareholder in the combined firm. In the current study, overvaluation hypothesis is tested in order to determine how M&A firms in Eastern Africa are valued and substantiate whether the valuation have an impact on pre and post M&A stock market returns.

2.2.4 Signaling Hypothesis

The Signaling Model of Leland and Pyle (1977) and Myers and Majluf (1984) argues that as a result of information asymmetry, firms acquire targets through equity if they

believe that their firms' shares are overvalued but if they know that the firms' shares are undervalued they prefer cash offers when acquiring target instead. Therefore, Signaling Model suggests that the method of payment acts as a signaling device about the acquiring firm's stock value with cash offers being interpreted as good news while equity offers are interpreted as bad news. Consequently, cash offer M&A proposals should trigger positive market reaction while share offers M&A proposals are expected to have a negative market reaction impact on the acquiring firm's share price. In summary cash offers acquisitions should generate more abnormal return than equity offer acquisitions.

Signaling hypothesis has been supported by numerous studies, Ismail (2008) demonstrates that share prices of firms involved in M&A activities are revalued accordingly as the offer medium signal private information. There is a general consensus among empirical studies that M&A firms realize positive abnormal returns in cash acquisitions as compared to share swap acquisitions (Isa & Lee, 2011). Signaling hypothesis is only valid in strong- form of market efficiency. Most studies on signaling hypothesis have been conducted in developed markets (these markets are known to be strong- form efficient). Therefore, it is necessary to test the hypothesis in developing market to determine the method of payment used by M&A firms in Eastern Africa. Further, the study tests whether the method of payment has an impact on pre and post M&A stock market returns.

2.2.5 Liquidity Hypothesis

Chang (1998) suggests that in a competitive acquisition market, the acquisition transaction itself would result to a zero net present value transaction. This outcome however would depend on the availability of information which will in turn generate competition among potential acquirers (Draper & Paudyal, 2006). Information about a public target firm is usually available for scrutiny and valuation while for a private target firm, shares do not trade publicly and therefore it is hard to obtain its information.

Assuming an efficient market, share prices of a public target are reasonable estimates of firm value; therefore, announcement of public firm reaction triggers negative market reactions. Due to the illiquid nature of the market for private target firm and lack of competition, acquiring firms are able to negotiate for better value of acquisition and thereby acquire a private firm at a premium. This suggests that private firm acquisitions generate positive market reactions.

Empirical studies support the hypothesis that acquirers of private firm experience positive abnormal returns while public firm acquirers realize negative abnormal return (Fuller *et al.,* 2002; Draper & Paudyal, 2006). However, these studies have been conducted in developed markets. Therefore, it is important to test liquidity hypothesis in a developing market to determine whether target firm status has an impact on pre and post M&A stock market returns.

2.2.6 Diversification Theory

The idea behind diversification being a motive behind M&A is related to the modern portfolio theory. The theory states that the market value of the firm can be increased by investing in many uncorrelated investment projects at optimal risk. The common justification for M&A relates to creation of financial synergy which results in reduced cost of capital and for firms to shift from their core product line or business or market into product lines that have higher growth prospects. This involves a conglomerate merger, where two firms in completely different industries merge (Depamphilis, 2010). Conglomerates are used to smooth-out wide fluctuations in earnings and provide more consistency in long-term growth. Typically, companies in mature industries with poor growth prospects will seek to diversify their businesses through M&A.

Empirical studies support the conclusion that shareholders do not benefit unrelated M&A (Lins & Servaes, 1999). They support their findings by stating that the share prices of conglomerate often trade at conglomerate discount. In most cases investors

perceive unrelated M&A as riskier because they are difficult for management to understand. More so, the investor find difficulty in understanding the various parts of diversified business and therefore valuation becomes a problem (Best & Hodges, 2004). These studies have been conducted in developed markets. It is therefore important to test diversification hypothesis in a developing market to determine its impact on pre and post M&A stock market returns.

2.2.7 Hubris and the Winner's Curse

Hubris Hypothesis of Roll (1986) implies that managers look for acquisition of firms for their own potential motives and that the economic gains are not the only motivation for the acquisitions. As a result of hubris, managers believe that their own valuation of a target company is superior to the market valuation. This tendency may result in such bidders overpaying for target firms because of over optimism in evaluating synergies. Current or historical good performance is likely to induce overconfidence among managers. Thus overconfident managers may make incorrect decisions, such as acquiring a poor target, and thereby destroying shareholder value. Moreover, competition among the bidders is likely to result in the winner overpaying because of excessive overconfidence even if significant synergies are present (Depamphilis, 2010).

Managers are usually overconfident of their valuation and their desire not to lose in a bidding war may drive the purchase price of an acquisition far higher than the actual economic value of that company, which increases the difficulty in earning the acquirer's cost capital on net acquired assets once they are restated to reflect their market value (Uysal, 2006; Harckbarth & Morellec, 2008). In the end, the winner is cursed in that he paid more than the company's worth and ultimately he feels remorseful for the action.

Hubris hypothesis has been supported by a few studies despite the different proxies of management overconfidence employed. Doukas and Petmezas (2007) documented that M&A activities done by overconfident managers exhibits inferior abnormal returns

relative to those created by rational managers. In different study, Baker, Dutta, Saadi and Zhu (2012) concluded that market react negatively to M&A deals undertaken by overconfident managers. It is evident that the hypothesis has been tested in developed market. However, in the developing market the theory has not been tested. Therefore, this study seeks to find out the impact of hubris or managerial overconfidence on pre and post M&A stock market returns of listed firms in Eastern Africa securities market.

2.3 Conceptual Framework

Kombo and Tromp (2009) defined a conceptual framework as an abstract or general idea inferred or derived from specific instances. These scholars further define a conceptual framework as a set of broad ideas and principles are taken from relevant fields of enquiry to structure a subsequent presentation. Therefore a conceptual framework is a hypothesized model whose objectives are to identify the relationship between the study variables (Kombo & Tromp, 2006). McBurney & While (2010) reinforce these definitions of conceptual framework by reiterating that in a conceptual framework, description and categories are systematically placed in a broad structure of explicit prepositions stating relationships between two or more empirical properties to be studied.

The objective of the proposed conceptual framework for this study assisted in conceptualizing the effect of performance drivers on pre and post mergers and acquisitions announcements stock market returns of listed firms in Eastern Africa securities markets. First, the study determined pre and post M&A announcements stock market returns in the short run and in the long run period. Then the study conceptualized the relationship between the performance drivers and pre and posts M&A announcements stock market returns of listed firms in Eastern Africa securities markets. The performance drivers included firm characteristics, deal characteristics, operating efficiency and board characteristics. The conceptual framework is based on four

independent variables, and two dependent variables as shown diagrammatically in Figure 2.1.

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┌─────────────────────────────┐
│ Firm Characteristics        │
│                             │
│     • Firm size             │
│     • Free cash flow        │
│     • Tobin's q             │
└─────────────────────────────┘

┌─────────────────────────────┐
│ Deal Characteristics        │
│                             │             ┌──────────────────────────────┐
│     • Payment method        │             │ Impact of M&A on Stock Market│
│     • Type of the target firm│            │ Returns                      │
│     • Relative Size of the deal│          │     • Short run Return       │
│     • Relatedness           │             │     • Long run Return        │
└─────────────────────────────┘             └──────────────────────────────┘

┌─────────────────────────────┐
│ Operating Efficiency        │
│                             │
│     • Cash flow to total asset│
└─────────────────────────────┘

┌─────────────────────────────┐
│ Board Characteristics       │
│                             │
│     • Board size            │
│     • CEO duality           │
│     • Board independence    │
└─────────────────────────────┘
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Independent Variables   **Dependent Variables**

Figure 2.1: Conceptual Framework

2.3.1 Firm Characteristics

Several studies shows firm characteristics as key drivers of impact of M&A on stock market return (Moeller, Schingemann & Stulz, 2004; Masulis, Wang & Xie, 2007; Alexandridis, Petmezas & Travlos, 2010). Guided by influential and recent studies in the developed markets we investigate whether firm size, free cash flow and Tobin Q explains impact of M&A on stock market return. Mule, Mukras and Nzioka (2015) define firm size as the amount and variety of production capacity and ability a firm possesses or the amount and variety of services a firm can provide to its customers. It therefore refers to how big or small a firm is and it is a key determinant of financial performance of an entity (Muigai, Nasieku & Muhanji, 2016).

Empirical evidence presented acknowledges firm size (commonly referred to as acquirer size) as one of the most robust determinants of M&A return (Gulobov, Yawson & Zhang, 2015). Larger firms are usually more diversified hence associated with more returns and less risk. In addition, they have access to capital markets which offers them access to investment opportunities (Serrasqueiro & Nunes, 2008; Yang & Chen, 2009).

In line with the concept of economies of scale, a positive relationship is postulated between firm size and return to M&A activities; however, managerialism hypothesis suggests that large firms fall under the empire building managers who undertake M&A activities for selfish reasons (Gorton, Kahl & Rosen, 2009). Several studies report a negative association between firm size and M&A stock market returns (Moeller *et al.,* 2004; Masulis *et al.,* 2007; Bouzgarrou & Louhichi, 2014). To test this hypothesis, firm size was measured by the logarithm of total assets and expects a negative coefficient between firm size and M&A stock market returns.

The Free Cash Flow Hypothesis advanced by Jensen (1986) postulates that free cash flow is inversely related to M&A stock market returns. Jensen argues that managers with unused borrowing power and large free cash flow are more likely to undertake low or

even value destroying M&A transactions. Conversely, Masulis, Wang and Xie (2007) argue that higher free cash flow in a firm can also be a proxy for better recent performance; predicting a positive association between free cash flow and cumulative abnormal return. However, Moeller *et al.* (2004) observe a negative correlation between free cash flow and cumulative abnormal return supporting the findings of Harford (1999). To test this hypothesis, free cash flow was determined by deducting depreciation, common and preference dividends from earnings before interest. A negative relationship between free cash flow and M&A stock market returns is expected.

The study also examined the impact of firm value on M&A stock market returns. The variable reflects firm attitude toward investments activities (Wolfe & Savala, 2003). In this study, Tobin Q is used as a proxy for firm value to test for overvaluation hypothesis. Firms with high q ratio signify that they are highly valued while low q ratios firms are undervalued (Moeller *et al.,* 2005). Dong *et al.* (2006) documented that high valued firms makes acquisitions that generate negative abnormal return compared to the low valued firms. Previous studies reveal that Tobin Q has ambiguous effect on M&A stock market returns.

Lang, Stulz and Walkling (1989) and Servaes (1991) show that abnormal returns are lower for acquisitions by firms with low Tobin Q while Delong (2003) and Moeller *et al.* (2004) find an inverse relationship. To test this hypothesis Tobin Q was measured using a ratio of bidder firm asset's market value divided by its book value of asset. In light of recent empirical evidence by Gulobov, Yawson and Zhang (2015), a negative relationship was predicted.

2.3.2 Deal Characteristics

Deal characteristics such as method of payment, type of the target firm, industry relatedness of the acquisition and relative deal size could have an impact on M&A stock market returns (Isa & Lee, 2011). The method of payment used to finance acquisition

can be through cash, stock or even a mixture of equity and cash. In this study we focus on either M&A made through cash or stock offers. It has been documented that firms experience negative returns when they pay for acquisition using equity whereas cash offers deals generate positive abnormal return (Heron & Lie, 2002; Alexandridis *et al.,* 2010).

The previously mentioned scholars support the findings using the Signalling model of Leland and Pyle (1977) and Myers and Majluf (1984) explaining that using cash as a method of payment signals to the market that the company's shares are undervalued; consequently, the market reacts positively. To test this hypothesis, two dummy variables are created where one (1) represents all equity acquisitions while zero (0) denotes all cash acquisitions. In congruence with other studies, we expect equity offers to correlate negatively with M&A stock market returns while a positive relationship is predicted in cases of cash offers.

Type of the target firm reflects whether a firm acquired is publicly listed or not. In this study, we focus on listed firms that merged or acquired a public or private firm during the study period. There seems to be a consensus on impact of target status on M&A stock market returns; generally, public firm acquisitions generate negative abnormal return while acquirers of private firm experience positive returns (Faccio *et al.,* 2006).

Depamphilis (2010) point out that why private firms are acquired at a discount is not well documented; however, Chang's (1998) Liquidity Hypothesis offers some possible explanation. It states that because private firms are often difficult to value due to unavailability of information, acquirers offer lower price to compensate for this perceived risk. To test the impact of target status on M&A stock market returns, indicator variables were created to represent public firms and private firms' acquisitions. An inverse relationship was expected between public targets and M&A stock market returns while on the other hand acquisition of private targets was predicted to be positively correlated.

In M&A, a firm may make a related or a diversified acquisition. A related transaction occurs when one firm acquires another firm that promotes acquirers core business whereas a diversified merger and acquisition involves a strategy of acquiring businesses that are outside the firm line of business (Depamphilis, 2010). Theoretically, shareholders should benefit from diversified acquisitions due to financial synergies that result to reduced cost of capital coupled with the possibility of shifting to business lines or markets with higher growth prospects.

Conversely, empirical studies conclude that diversified M&A destroy value (Sign & Montgomery, 2008). Conglomerate mergers are perceived as riskier investment and therefore, markets react negatively to their acquisition announcement. To test this hypothesis we create a dummy variable of one (1) that represents diversified acquisitions and zero (0) to denote related acquisitions. We expect diversification to be inversely related to M&A stock market returns while relatedness should have a positive relationship.

In line with other studies by Asquith, Bruner and Mullins (1983) and Moeller, Schlingemann and Stulz (2004), this study also tested the impact of relative deal size on M&A stock market returns. Prior studies have documented that bidder relative deal size is positively related with announcement return (Jensen & Ruback, 1983; Fuller *et al.,* 2002). To test this hypothesis, relative deal size was measured by dividing deal value by the acquiring firm equity prior to the announcement; a positive relationship between relative deal size and M&A stock market returns was predicted.

2.3.3 Operating Efficiency of the Firm

Operating efficiency is a measure of how a firm employs its resources effectively. More so, it gives a review on how management utilizes assets (Muhammad & Zahid, 2014). An improvement in the ratios usually translates to improved profitability. Efficiency theory explains the main motive behind M&A is to gain operating and financial synergy

(Wadhwa & Syamala, 2015). In the current study, operating efficiency is used to test the management overconfidence hypothesis.

The Hubris Hypothesis put forward by Roll (1986) remains relevant in explaining M&A stock market returns. Over the years, the theory has gained popularity in form of management overconfidence (Baker, Dutta, Saadi & Zhu, 2012). In his seminal paper, Roll (1986) argued that managers are irrational while making M&A investments and more often they end up making poor investment decisions.

Similar views were held by Heaton (2002). The few studies that have looked at managerial overconfidence report that managerial overconfidence is negatively correlated to M&A stock market returns (Doukas & Petmezas, 2007; Malmendeir & Tate, 2008). This study follow the work of Baker, Dutta, Saadi and Zhu (2012) who used operating efficiency of the firm as a proxy for managerial overconfidence to establish whether it is correlated with M&A stock market returns.

High operating efficiency of the firm may have two possible impacts on M&A stock market returns. First, high operating efficiency in a firm could be as a result of efficient management skills; therefore, when these firms engage in acquisitions activities they effectively integrate a new target firm. Consequently, the market reacts positively to such an event. On the other hand, the management of these firms may suffer from overconfidence thereby losing their focus; this could result in poor operating performance. Therefore, when making acquisition decisions the overconfident nature of the management will lead to poor target selection, target firm overpayment and poor post integration of the target firm. Thus, the market will react negatively to such an event. Based on past research work, a negative relationship was expected.

2.3.4 Board Characteristics

Monitoring by the board of directors is an important internal control mechanism which determines a firm performance post M&As (Liu & Wang, 2013). The primary responsibilities of the board of directors include: advising, monitoring, evaluating, and, if necessary, replacing managers, designing executive compensation, and approving major corporate decisions such as mergers and acquisitions (Masulis *et al.,* 2007).

To investigate the impact of board characteristics on M&A stock market return three attributes are employed. The attributes are board size, duality and board independence.

The board of directors is shareholder's primary mechanism for management oversight; hence, its features can cause significant effects on shareholder value (Perry & Shivdasani, 2005). Board size affects the quality of deliberation among members and ability of the board to arrive at optimal corporate decisions. Documented evidences have demonstrated that small boards are more efficient than large board (Garg, 2007; Liu & Wang, 2013). To test this hypothesis, board size was measured using the total number of board of directors. A positive relationship was predicted.

Duality is situation where one person heads both the management and the board (Masulis, Wang & Xie, 2007). Separating CEO and chairman positions provides the company with a leadership core, and brings clear corporate strategy and mission. Accordingly, separating CEO and chairman positions make the firm more stable and sustainable, which leads to improved corporate performance (Liu & Wang, 2013). The common belief is that duality has a significant negative impact on bidder returns, suggesting that separating the two positions can help rein in empire building by CEOs, cause them to be more selective in their acquisition decisions, and thus lead to greater shareholder wealth (Masulis *et al.,* 2007). To test this hypothesis, CEO Duality was measured using a nominal scale that took a value one (1) if the position of CEO and Chairman of the board are held by different individuals and zero otherwise.

The ratio of independent to non-independent directors should be at least two to one. Importantly, independent directors provide the much needed monitoring role to the management. Further, independent directors invest their reputation in an organization; consequently, they are likely to guard and act in the shareholders' best interest. Hermalin and Weisbach (2003) find evidence that a board with more independent members make decisions in the best interest of shareholders; however, Masulis *et al.* (2007) noted that there is no consensus that a more independent board should lead to better performance. To test the impact of board independence on M&A stock market returns, the number of independent board members was divided with the total board size. A positive relationship was predicted.

2.4 Empirical Literature

2.4.1 Empirical Literature on Impact of M&A on Stock Market Returns

Theoretical motivations for M&A are quite many but most importantly, mergers and acquisition activities are initiated to generate operating and financial synergies that can, in turn, foster corporate growth, boost profitability, and improve shareholders' wealth (Depamphilis, 2011). Synergies are considered important determinants of shareholders wealth creation (Houston, James & Ryngaert, 2001; Delong, 2003). Equally, M&A constitute investment activities; accordingly, the net additional cash flow present value generated from these business combinations should be positive.

Nonetheless, a survey of empirical studies mostly concentrated in U.S and U.K markets reveals that on aggregate, acquiring firm's shareholders experience insignificant positive abnormal returns or significant negative abnormal returns around the announcement dates (Alexandridis, Petmezas & Travlos, 2010). However, studies on target firm shareholders' return following M&A appear consistent over time since the first review of takeover literature by Jensen and Ruback (1983). On average target firms' shareholders experience significant positive returns (Uygur, Meric & Meric, 2014).

A greater percentage of mergers and acquisitions studies are in U.S markets; for example, Andrade, Mitchell and Stafford (2001), Moeller, Schlingermann and Stulz (2005), Oler, Harrison and Allen (2008) just to mention a few. Andrade *et al.* (2001) note that evidence on value creation for acquiring firm shareholders is not clear. In their study, the 3 days abnormal return for acquirer was 0.7% while in the longer event the return was -3.8% both of which were statistically insignificant making it difficult to conclude that acquiring firms were losers in an acquisition transaction.

Similarly, Oler *et al.* (2008) used a sample of 2500 U.S horizontal acquisitions to determine the effect of an acquisition announcement. Their findings showed that the initial market response to an acquisition announcement is positive; however, this is contradicted by negative returns in the long run perhaps suggesting that short-window event studies alone should not be used to capture economic impact of a strategic action. In a different study, Moeller *et al.* (2005) examined a total of 4,136 U.S acquiring firm returns from year 1998 to 2001. The trio observed the acquiring firms' shareholders lost 12% cents per dollar spent on acquisitions around the acquisition announcement in the 1998 through 2001, whereas they lost 1.6% cents per dollar in the 1980s.

The findings suggested poorer returns for acquiring firms' shareholders in the latter period; this was attributed to higher stock valuations, higher premiums, greater use of equity as a method of payment and more takeover defenses. Martynova and Renneboog (2006) did a comprehensive study of European takeover market; specifically they investigated the shareholder wealth effect of 2419 mergers and acquisitions. They found that the announcement effects to the bidder firm were statistically significant at only 0.5 %. Similarly, Dilshad (2013) conducted a study on profitability analysis of mergers and acquisitions, using a sample of 18 firms involved in M&A in the banking sector from 2001 to 2010; evidence illustrates significant cumulative abnormal return for the acquirers in the short run.

Although most of the extant M&A studies have been done in developed financial markets, some studies have examined impact of M&A on the shareholders wealth in emerging markets. Sehgal, Banerjee and Deisting (2012) examined the impact of M&A using a sample of 214 companies from BRICKS market for a period between 2005 through 2009. Post event abnormal returns for India, South Korea and China firms were significantly negative while strong positive returns were reported for South Africa. No significant cumulative average abnormal returns were reported in Brazil and Russia. Overall, on average, significant negative post event abnormal returns were reported for BRICKS market.

In a different paper, Shah and Arora (2014) examined a sample of 37 merger and acquisition in the Asia Pacific region in year 2013 alone, while the return to target firm cumulative Average abnormal return (CAAR) were positive and significant as expected, bidder firm returns were insignificant. In Africa, the few country specific studies done appear to report negative returns or no impact in the short run. However, South Africa's research work on market reaction to M&A is quite appealing (Bruner, 2002; Viljoen, 2013; Ndadza & Mokoaleli-Makoteli, 2014). Mushdzhi and Ward (2004) report that South African acquiring firms' shareholders lost approximately 0.55% which was significant around the announcement dates.

Conversely, Smit and Ward (2007) using a sample of 27 firms found that acquiring firms in the same country neither earned significant positive abnormal return nor negative abnormal return in the short run. In Nigeria, Barde and Salisu (2015) observed that M&A announcements have no effect on shareholder wealth in the short run while a study by Kariri (2013) using a sample of six firms drawn from commercial banks in Kenya failed to exhibit significant changes in the 11 days event window. The empirical evidence shows clearly that there is a void that needs to be filled.

From the literature review, the study notes that nearly all studies in Eastern Africa have used the accounting based approach with prevalence to financial ratios (Chesang, 2002; Inoti *et al.,* 2014; Gwaya & Mungai, 2015). Further, these studies dominate the effect of M&A in the banking sector.

2.4.2 Firm Characteristics and Impact of M&A on Stock Market Returns

A number of studies in developed financial markets have exhibited firm characteristics as a major determinant of M&A stock market returns (Moeller, Schingemann & Stulz, 2004; Masulis, Wang & Xie, 2007). In our quest to find the drivers of the impact of M&A on stock market returns, guided by influential and recent studies, this study investigated three explanatory variables namely firm size, Tobin Q and free cash flow (Gulobov *et al.,* 2015).

There seems to be a consensus on the impact of firm size on M&A stock market returns; empirical evidence shows absolute size of the acquirer firm and M&A stock market returns are inversely related (Moeller, Schingemann & Stulz, 2004; Masulis *et al.,* 2007; Bouzgarrou & Louhichi, 2014; Gulobov *et al.,* 2015). Moeller *et al.* (2004) examined a sample of 12,023 acquisitions by public firms in U.S.A from 1980 to 2001. Moeller *et al.* (2004) found that on average the acquiring firms' shareholders lose by 25.2% million on announcement. Further, they provided evidence that firm size is inversely related to acquirers' return in the announcement period. The trio further observed that compared to small firms, large firms have a higher Tobin Q and a lower BM ratio which is a sign of overvalued firms.

Masulis, Wang and Xie (2007) conducted a study to find out determinants' acquisition return using U.S acquirers. The bidder characteristics they controlled included acquirer size, Tobin Q and free cash flow. The trio found that bidder size and Tobin Q were negatively related to acquirers' announcement at 1% and 10% significance level. Surprisingly they reported a positive though insignificant relationship between free cash

flow and bidder return. While defending their findings they argued that higher free cash flow can proxy for better recent firm performance which may be associated with quality managers.

Gorton, Kahl and Rosen (2009) demonstrate that small acquirers realize abnormal returns than large buyers in the short run. The explanation behind this is that small firms tend to be more focused and quite often do not engage in conglomerate transactions. Under certain circumstances, larger deals may offer significant abnormal returns. Gulobov, Yawson and Zhang (2015) conducted a study on extra-ordinary acquirers using a sample of U. S. publicly listed firms for the period between January 1990 to December 2011. They employed an extensive list of explanatory variables in order to find out which one had more explanatory power. The acquirers' characteristics they controlled for included acquirer's size, Tobin Q and free cash flow. They reported that firm size (acquirer size) had a significant negative effect on acquirers return while Tobin Q and free cash flow were found to be insignificant determinants of acquirers return.

Prior studies document that acquirer's free cash flow has an ambiguous effect on M&A stock market returns. Earlier findings indicate a negative and significant association between free cash flow and M&A stock market returns (Harford, 1999; Moeller *et al.,* 2004). Harford documented that cash rich firms usually make value destroying acquisitions. Contrary to earlier studies, recent studies' findings document an insignificant relationship between free cash flow and M&A stock market returns (Fu, Lin & Officer, 2013; Bouzgarrou & Louhichi, 2014; Gulobov *et al.,* 2015). Surprisingly, Masulis *et al*. (2007) reported a positive though insignificant relationship between free cash flow and bidder return.

While defending their findings the scholars argued that higher free cash flow can proxy for better recent firm performance which may be associated with quality managers. Past empirical studies find that there is no consensus on effect of Tobin's Q on M&A stock market returns. Lang, Stulz and Walking (1991) and Servaes (1991) reported a positive

relationship between Tobin Q and acquirers' return for tender offer acquisitions and public firm acquisitions, respectively. On the contrary, Moeller *et al.* (2004) found a negative relation in a comprehensive sample of U.S acquisitions. Similarly, Masulis *et al.* (2007) reported that Tobin Q was negatively related to acquirer's announcement at 10% significance level.

Martynova and Renneboog (2009) too reported a significant inverse relationship between Tobin Q and acquisition return for the European acquirers supporting growth opportunities hypothesis. Finally, Bouzgarrou and Louhichi (2014) sought to know if financing decision explains market reaction to M&A announcement using a sample of 265 listed acquirers in France between January 1997 and December 2008; they controlled for acquirer's firm characteristics including Tobin Q, firm size and free cash flow. The duo documented an inverse relationship between Tobin Q and M&A stock market returns.

Past research findings on impact of firm characteristics that is firm size, free cash flow and Tobin Q on M&A stock market returns are few, moreover, much of the work regarding firm characteristics' impact on M&A stock market returns has been done in the developed financial markets in the short run. Previously presented theoretical explanations and contradictory empirical results could be a result of different samples, industry groups, time horizons, indicators and business environments.

2.4.3 Deal characteristics and Impact of M&A on Stock Market Returns

Several studies in developed financial markets document that deal characteristics such as method of payment, target status, relatedness and deal value have an impact on M&A stock market returns. Martynova and Renneboog (2006) research findings show that method of payment; that is, all cash offers, equity offers and mix of cash and equity offers do not significantly influence profitability of corporate takeovers. Moeller,

Schlingemann and Stulz (2005) documented an inverse relationship between abnormal return and equity offers.

Contrary to the U.S findings Martynova and Renneboog (2008) conducted a study on mergers and acquisitions for firms in European countries; they reported that acquirer's returns on equity financed acquisitions were higher than for all cash bids. In a different paper, Savor and Lu (2009) concluded that successful acquirers using stock as a form of payment create value; however, these findings were later withdrawn. Alexandridis, Petmezas and Travlos (2010) while conducting a study on gains from mergers and acquisitions around the world find that Acquirers beyond the most competitive takeover markets (the U.S., U.K. and Canada) pay lower premia and realize gains, while share-for-share offers are at least non-value destroying for their shareholders.

In a different study Fu, Lin and Officer (2013) challenged recent theory and evidence that suggest that overvalued firms can create value for shareholders if they exploit their overvaluation using their stock as currency to purchase less overvalued firms. They showed that overvalued acquirers significantly overpay for their targets and these acquisitions do not in turn lead to synergy gains. Moeller, Schingemann and Stulz (2005) in their study found that U.S acquirers of private firms often realize positive excess returns of between 1.5-2.6%.

Faccio, McConnel and Stolin (2006) conducted a study on returns to U.K. acquirers of listed and unlisted companies for the period between 1996 and 2001; well they reported that for private companies acquisitions are associated with positive returns while listed companies acquirers earned negative returns though statistically insignificant. Draper and Paudyal (2006) while looking at the returns of U.K. public and private companies found that acquirer's returns are always positive when target are privately owned and slightly negative when target are publicly traded (the so called listing effect) regardless of the country.

Alexandridis, Petmezas and Travlos (2010) documented that acquirers of public firms in competitive markets such as U.S., U.K., and Canada destroys value; however, beyond competitive markets they observed that acquisition of public target creates value. Similary, Isa and Lee (2011) documented that public acquisitions generate greater abnormal returns than private firm acquisitions. Although the findings did not support proven hypothesis they did not validate the liquidity hypothesis or management motive hypothesis in the Malaysian context either.

Finally, Gulobov *et al.* (2015) documents that the interaction of public and all equity financed transactions are significant and inversely related to acquirer's cumulative abnormal return. In relation to industry relatedness of the target firm empirical studies support the conclusion that investors do not benefit from unrelated diversification with some studies suggesting that the magnitude of the conglomerate discount is usually overstated (Campa & Simi, 2002). Some studies report that most related acquisitions are more likely to experience higher financial returns (Harding & Rovit, 2004; Megginson, Morgan & Nail, 2004; Singh & Montgomery, 2008).

On the other hand, Lampa and Kedia (2002) found that diversification is sometimes associated with higher firm value. Finally, the few studies that have looked into the effect of relative deal size on M&A stock market returns report a direct relationship between the two. Relative deal size will be defined as the transaction value of the deal acquisition divided by acquirer's market capitalization. Moeller *et al.* (2004) find that stock return to the acquirer around the announcement dates increases with relative deal size. Similar findings were reported by Jensen and Ruback (1983).

Fuller *et al.* (2002) and Isa and Lee (2011) also reported that relative size or deal value is positively related with M&A stock market returns. Conversely, Bayazitova *et al.* (2010) found that mega mergers deals, on average, destroy value. In their study to determine the acquirers return explanatory variables, Gulobov *et al.* (2015) reported that

relative size significantly and positively related to acquirer's return for occasional and frequent acquirers; however, in the full sample, the relationship was not significant.

We noted that most of the previous studies on impact of deal characteristics on M&A stock market returns have been conducted in the developed markets, particularly the U.S. and U.K. markets, and very little research has been done in the developing markets. Hence, it begs the question of whether their findings are equally relevant to a developing market. This study therefore investigate the effect of deal characteristics on M&A stock market returns using a sample of listed firms in Eastern Africa securities markets that have been involved in mergers and acquisitions.

2.4.4 Operating Efficiency and Impact of M&A on Stock Market Returns

Few studies have studied impact of operating efficiency (our proxy for management overconfidence) on M&A stock market returns. However, we note that researchers have used other proxies such as frequent acquirers, CEO media exposure and CEO timing of option. Aktas, de Bodt, and Roll (2005) present a rational expectations model with respect to frequent acquisitions and the relevant CEO M&A decision-making process. In their model, they predicted that for rational CEOs, the cumulative abnormal return (CAR) and time between two successive deals (duration trend) should both be negative during the implementation of the M&A program. For the hubris-infected CEOs, the CAR and duration trends should both be positive.

Aktas *et al.* (2005) argue that rational CEO ride on the success of their previous deals, in the end they become more aggressive and overbid in subsequent deals causing them to experience negative CAR. On the other hand hubris-infected CEOs become more cautious as they get negative feedback from investors on their previous bids. Aktas, de Bodt, and Roll (2005) did a study on the behavior of 2,589 CEOs from 1992-2002 and found support for the hypothesis.

Malmendier and Tate (2008) investigated the impact of CEO overconfidence on M&A. In their study a company CEO was termed as overconfident if he or she continued to hold company options for a long period and does not intend to reduce personal exposure to company specific risk. A total of 477 large publicly U.S. firms from year 1980 to 1994 were studied. They found that overconfident managers are more likely to undertake M&A and the market usually react significantly negatively to the acquisitions activities of overconfident managers.

Doukas and Petmezas (2007) used a different proxy to study the effect of management overconfidence on market reactions to M&A. They classified a CEO as overconfident if he or she has acquired five or more firms within three years of the first acquisition. The study was conducted using a sample U.K. data set spanning 1980-2004. The study findings concluded that overconfident managers generate inferior abnormal returns relative to those created by 'rational' managers. Their researchers' results resonate with the empirical findings of Malmendier and Tate (2008).

In another study, Laamanen and Keil (2008) examine the market performance of M&A deals carried out by frequent acquirers: those who made at least four (4) acquisitions in ten (10) years. They used a sample of 611 large U.S. public acquirers operating in seven different sectors between 1990 and 1999. They found that high rate of acquisitions and variability had a negative effect on acquiring firms' market performance three (3) years following the acquisition.

Surprisingly, when they split their sample into two that is frequent acquirers (more than 10 acquisitions) and less frequent acquirers (between four and nine acquisitions), they found that frequent acquirers performed better than less frequent acquirers in the long run (between ten (10) to thirteen (13) years). They supported their findings by stating that frequent acquirers popularly known as serial acquirers over time accumulate acquisition experiences and gradually grow their acquisition capacity. Consequently, when they make acquisition they tend to outperform less frequent acquirers.

Doukas and Petmezas (2007) criticized use of CEO timing of option exercises as a proxy for managerial overconfidence stating that it may fail to signal true essence of management overconfidence. They argued that the proxy tends to capture managers' overconfidence about the firm's future performance rather than just overconfidence about the outcome of the merger. In their study the duo used a different proxy – frequent acquirers, however, use of this proxy has received criticism in equal measure. First, the consideration of five or more acquisitions within three years is arbitrary. Moreover, frequent acquisitions and a well-coordinated acquisition program may lead to positive experience and acquisition capacity in the long-run and may result in better firm performance post M&A (Laamanen & Keil, 2008).

Baker, Dutta, Saadi and Zhu (2012) examined the relationship between managerial overconfidence and market reaction to M&A announcements. They used a sample of 1389 completed acquisitions by Canadian acquirers listed on the Toronto Stock Exchange for the period between 1993 and 2003. Using firm operating efficiency as their proxy for managerial overconfidence they documented that market react negatively to M&A deals undertaken by overconfident managers. They concluded that good performers are bad acquirers. Amidst the different proxies of management overconfidence employed by the few studies we also note that these studies have been done in developed markets only. Therefore, a study was conducted on impact of operating efficiency our proxy for managerial overconfidence on M&A stock market returns of listed firms in Eastern Africa securities markets.

2.4.5 Board Characteristics and Impact of M&A on Stock Market Returns

Prior research on the relation between board composition and corporate performance generally appears to show that board composition does influence the manner in which corporate boards accomplish discrete tasks, including hiring and firing of the CEO, responding to mergers and hostile takeovers (Dahya & McConnell, 2005). Raheja (2005) researched optimal board size and composition under various conditions (the type of

industry and industry characteristics). The study concluded that board size and composition could affect the performance of the company especially in situations where bad projects are passed which have a direct effect on firm performance. Some studies favor smaller board sizes (Haniffa & Hudaib, 2006; Garg, 2007) while others advocate for large board sizes (Abidin, Kamal & Jusoff, 2009); Sulong & Nor, 2010). Cremers and Nair (2005) found evidence that the market for corporate control is effective only when a firm's internal corporate governance is strong, and vice versa.

Masulis, Wang and Xie (2007) investigated whether board composition, especially the market for corporate control; affect the profitability of firm acquisitions in the short run. Using a sample of 3,333 completed acquisitions in U.S from 1990 to 2003, they found that acquirers with more anti-takeover provisions experience significantly lower announcement period abnormal stock returns. This supports the hypothesis that managers at firms protected by more anti-takeover provisions are less subject to the disciplinary power of the market for corporate control and thus are more likely to indulge in empire-building acquisitions that destroy shareholder value. They also found that acquirers operating in more competitive industries or having separate positions of CEO and board chairman experience higher abnormal returns. However, neither the board size nor board independence was significantly related to bidder's announcement returns.

Song and Lei (2008) examined the influences of board composition and ownership structures on the firm performance in European firms. A strong positive relationship between the level of ownership and performance was found, while no strong connection was found between the inside directors or level of managerial ownership and profitability. Chan and Emanuel (2011) examined the relationship between board governance and acquirer's abnormal return in the short run using a sample of 80 Australian acquisitions that occurred between 1999 and 2005.

The intention of the study was to find out whether better board governance can lead to higher M&A stock market returns. They however failed to find evidence to link board governance and acquirer's return. Triki and Chun (2011) using a sample of US acquisitions in Africa over the last two (2) decades assessed the long term performance of international acquisitions in Africa and the impact of firm and country level governance characteristics on reported performance. Their findings showed that US acquirers did not benefit from these transactions. Board size had a negative and significant coefficient at the 90% level. These showed large boards seem to be able to prevent US acquirers from undertaking successful acquisition and finally US acquirers with previous experience in Africa report higher performance (coefficients positive and significant at 95%).

Saibaba (2013) examined the impact of duality on the valuation of companies listed in BSE 100 index. The study also indicated that the firms with large board sizes have better valuation in the Indian context. Zhou *et al.* (2013) believed that a board of directors with different professional backgrounds, work experience and professional training has broader perspective therefore best positioned to solve problems.

Liu and Wang (2013) investigated the impact of board size and duality on corporate performance using thirty six (36) M&A cases of China's listed real estate companies in Shanghai and Shenzhen Stock Exchanges from 2008 to 2009. Empirical analysis revealed that large board size had a significant negative effect on the performance. The results also showed that the CEO-Chairman duality has a significant impact on the long-term performance. One finds that most of the studies on the influence of board characteristics on bidder firm financial performance have been done in the developed countries only. More so focus has been on the short run impact of M&A. Therefore, a research was conducted to study the impact of board characteristics on M&A stock market returns of listed firms in Eastern Africa securities markets.

2.5 Critique of the Existing Literature

Although literature review shows that considerable attention has been given to impact of M&A, there is very little empirical evidence on drivers of the impact of M&A. Researchers have not affirmed in stating the actual drivers of impact of M&A on stock market return in Eastern Africa and Sub-Saharan Africa (Opolot *et al.,* 2009). Past studies on drivers of the impact of M&A have been conducted in the developed markets, particularly the U.S. and U.K. markets (Alexandridis *et al.,* 2010). Hence, it begs the question of whether their findings are equally relevant to a developing market.

Research evidence shows that studies on impact of managerial overconfidence on M&A stock market returns are quite few (Baker, Dutta, Saadi & Zhu, 2012)). In addition researchers have employed different proxies of management overconfidence in studying its effect on impact of M&A on stock market return. Moeller *et al.* (2004) used firm size to support managerial overconfidence hypothesis. Doukas and Petmezas (2007) classified a CEO as overconfident if he or she has acquired five or more firms within three years of the first acquisition while Malmendier and Tate (2008) defined a company CEO as overconfident if he or she continued to hold company options for a long period. In their research work, Baker *et al. (*2012) note that identifying a suitable proxy for CEO managerial overconfidence can be a challenging task. Managerial overconfidence proxies employed by earlier studies such as timing of CEO option exercise and frequent or multiple acquirers have been subject to a lot of criticism (Doukas & Petmezas, 2007; Malmendeir & Tate, 2008).

There is scarcity of short run and most importantly long run studies on impact of M&A on stock market returns in firms listed in Eastern Africa securities markets. The few studies that exist are country-specific with a narrow scope, characterized by differences in research event window periods and variations in the performance metrics applied (Halfar, 2011). In their research, Smit and Ward (2007) pointed that in order for the results to be reliable, the research event windows should exceed two years from the

acquisition date. Oler, Harrison and Allen (2006) recommend that short run studies on effect of M&A should be accompanied by long run studies.

Ma, Whidbee and Zhang (2011) questioned various methodologies and metrics of the event studies conducted by a number of researchers. Further evaluation of studies and reports show that there is variation in research methodologies; and this explains the mixed results around whether M&A generate shareholders wealth in the long run (Halfar, 2011; Inoti *et al.,* 2014).

In summary, deficiency of long run event window studies, varied results of short run event window studies, myriad use of performance metrics and use of questionable research methods are primary motivations behind this study. Against this background, this study constructively contributes to the understanding of short run and long run impact of corporate M&A in listed firms in Eastern Africa securities markets which represent a section of emerging markets with unique characteristics; very different from developed financial markets.

The study improved on research methodologies of Halfar (2011). As per Halfar *(*2011), the study determined impact of M&A on stock market returns in the long run using Carhat Four Factor model (1997) owing to the revelation that the model is more reliable compared to the famous Capital Asset Pricing Model and Fama and French Three-Factor Model (Arx & Ziegler, 2008). Moreover, in line with Smit and Ward (2007) recommendation of longer event window period (beyond two (2) years), the research work was conducted over a five (5) years period following M&A, in addition comparison was done with five (5) years period pre M&A long term return. Further, the study investigated the drivers of impact of M&A on stock market returns of listed firms in Eastern Africa securities markets.

2.6 Research Gaps

A major conclusion by Halfar (2011) is that impact of M&A on stock market returns could be explained by firm and deal characteristics. Literature review reveals that most of the studies that have sought to investigate drivers of the impact of M&A on stock market returns have been carried out in developed financial markets (Moeller *et al.,* 2005; Martynova & Rennebog, 2008; Alexaandridis *et al.,* 2010; Fu *et al.,* 2013; Golubov *et al.,* 2015). Therefore this study sought to fill this void by conducting a comprehensive research on drivers of the impact of M&A on stock market returns of listed firms in Eastern Africa securities markets.

Furthermore, Dutta and Jog (2009) argue that most of the studies have used data on US companies (Martynova & Rennebog, 2008). In their studies, the researchers found that the Canadian acquirers do not earn significant abnormal negative returns in the long run. Therefore, this study intends to close this gap by using firms involved in M&A that are listed in Eastern Africa securities markets. This provides an out sample data with different developing countries capital markets and different regulatory regimes. For example one of the most important differences between developed and developing financial markets is the form of M&A antitrust regulation which is stricter in developed markets and less favorable to acquiring firms.

Moeller *et al.* (2005) argue that focusing on acquirer's abnormal returns around the transaction dates were positive particularly in 1990-1995, however losses incurred by relatively few large mega transactions between 1998 -2001 offset the gain during the earlier period. Zolar and Meier (2008) provide evidence that return around the announcement dates are not a good predictor of the ultimate success or failure of an acquisition. Harrison, Oler and Allen (2008) provide evidence that the initial stock market reaction around the announcement dates after an acquisition is always biased. The trio therefore recommended that short run event studies should be supplemented with long run event studies.

Barde and Salisu (2015) recommend that a long run study need to be conducted to determine if M&A activities create or destroy shareholders' wealth. Smit and Ward (2007) too recommended a longer study which should be more than two years in duration. Therefore, this study estimated impact of M&A in the short run and in the long run using firms listed in Eastern Africa securities markets. For consistency in comparison, long run event study was conducted five (5) years before M&A and five (5) years after M&A.

Studies on firm's long term financial performance unfortunately are few (Liu & Wang, 2013). In Eastern Africa, literature review reveals that long run performance of stock following M&A has not been conducted. Triki and Chun (2011) using a sample of US acquisitions in Africa over the last two (2) decades, assessed the long term performance of international acquisitions in Africa and the impact of firm and country level governance characteristics on reported performance. This study intends to close this gap by using a sample of listed firms that have been involved in M&A activities in Eastern Africa securities market to determine long run returns following M&A.

Further, short run events studies in Eastern Africa are country specific addressing the issue on a narrow scope. There is need to increase the scope by conducting a multi-sector, multi-country study since it is evident that M&A activities are happening in all sectors of the economy (Ernest & Young, 2014). In conclusion this study intended to close existing gaps by conducting a comprehensive study on the drivers of the impact of M&A on stock market returns of listed firms in Eastern Africa securities markets. To the best of our knowledge, this is the first study of its kind in the region that sought to determine impact of M&A on stock market returns in the short run and long run as well as conceptualizing drivers of pre and post M&A stock market returns of listed firms in Eastern Africa securities markets.

2.7 Chapter Summary

Relevant literature has been reviewed in this chapter particularly paying attention to theoretical review, conceptual framework and empirical review. Theories that explain the occurrence of M&A been reviewed. They include Free Cash Theory, Managerial Discretion Hypothesis, Overvaluation Hypothesis, Signaling Hypothesis, Liquidity Theory, Diversification Theory and Hubris Theory. A conceptual framework has been drawn which hypothesizes the relationship between the dependent and independent variables. Past relevant research work on drivers of the impact of M&A; that is, firm characteristics, deal characteristics, operating efficiency and board characteristics been covered under empirical literature review. A critique of the existing literature has been given and finally past literature research gaps have been identified.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the methodology that was used to achieve the research aim and objectives. According to Cooper and Schindler (2011) research methodology is the plan and structure or the glue that holds all the elements of the research together. Section 3.2 discusses research design and justifies the design chosen while sections 3.3 to 3.10 describe the target population, sampling frame, sampling technique and sample size, data collection instruments, data collection procedures, pilot testing, measurement of variables, data analysis and presentation.

3.2 Research Design

Gay, Mills and Airasian (2010) posit that a research design is the structure or the blue print that guides the process of research from the formulation of the research questions and hypotheses to reporting the research findings. Kothari (2009) on the other hand postulates that the research design includes an outline of what the researcher will do from writing hypothesis and its operational implications to the final analysis of data. This study employed an event study approach to determine the impact of M&A on stock market returns in the short term and over a long term period in firms listed in Eastern Africa securities markets. Event studies examine stock returns for corporations experiencing a specific event. The aim is to measure the effect of the event on the value of a corporation (Kothari & Warner, 2006). Studies similar to the current study that has employed the use of event study design include (Dube, 2006; Arx & Zeigler, 2008; Selcuk & Yilmaz, 2011). Further, the study also used quantitative research design. The research design was selected because data collected for study variables in the long run

were in quantitative in nature. This approach is useful for study with both cross-sectional and longitudinal characteristics (Gujarat, 2009).

3.3 Target Population of the Study

McMillan and Schumacher (2010) view population as the large collection of all subjects from where the sample is drawn while Gay *et al.* (2010) observe that population refers to all possible cases which are of interest to a study. In this study, the target population was defined as all the listed firms involved in mergers and acquisitions activities between year 1998 and 2015 in the three Eastern Africa countries that include Kenya, Uganda and Tanzania. Appendix (1) presents all the listed firms that have been involved in mergers or acquisitions for period under study. Both short run and long run studies were carried out and therefore a larger scope was paramount to ensure data availability for the period understudy.

3.4 Sampling Frame

Sampling frame is the list of accessible population of the people, events or documents that could be included in a survey and from where the researcher will pick a sample to collect data (Muganda, 2010; Gatara, 2010). It is a list of all items where a representative sample is drawn for the purpose of research. The sampling frame for this study consisted of the all mergers and acquisitions activities in the three Eastern Africa countries that include Kenya, Uganda and Tanzania.

3.5 Sampling Technique and Sample Size

Newing (2011) posits that a sample refers to a subset of a population or subset of elements drawn from a larger population. On the other hand Kothari (2011) describes a sample as a collection of units chosen from the universe to represent it. The sampling method was however purposive and restricted only to mergers and acquisitions made by listed firms in the Nairobi Securities Exchange (NSE), Dar es Salaam Stock Exchange

(DSE) and Uganda Securities Exchange (USE) which acquired a listed or a private firm within the three Eastern Africa countries that is Kenya, Uganda and Tanzania between 1998 and 2015.

Appendix (1) presents all the listed firms that have been involved in mergers or acquisitions for period under study. Most critical, the firm selected must have had all the information regarding the operationalization of the variables and this reduced the total sample size to thirty firms (30) and twenty five (25) firms in the short run and long run respectively. Halfar (2011) used purposive sampling technique while studying effect of mergers and acquisition on long run financial performance of acquiring companies in South Africa respectively.

3.6 Data Collection Instrument

Mugenda (2008) notes that scientific inquiry demands that a researcher develops tools that yield accurate and meaningful data in order to make a conclusive decision. The study employed secondary data that was collected from audited annual company reports and central banks' reports and publications, Capital Market Authority and Nairobi Securities Exchange. Collection of secondary data was done using secondary data collection sheet presented in Appendix (11) which aided in collecting data used to compute M&A announcement in the short run and in the long run. In addition, data relating to the four independent variables namely: firm characteristics, deal characteristics, operating efficiency our proxy for managerial overconfidence and board characteristics was gathered. Nearly all studies on effect of M&A have used secondary data (Moeller *et al.,* 2005; Alexandridis *et al.,* 2010; Wang & Liu, 2013).

3.7 Data Collection Procedures

Since the study employed secondary data, data collection involved visiting websites of listed selected firms and downloading the published financial statements for a period of five (5) before and five years after the event in the long run study. On the other hand short run study data was collected twenty (20) days before and 20 days after M&A announcement. Information on specific components was keyed using the secondary data collection tool presented in Appendix (III). Further, the tool was used to collect data regarding deal characteristics accessed from Capital Market Authority, security exchanges and central banks of respective countries in Eastern Africa countries.

3.8 Measurement of Variables

The four independent variables in this study included firm characteristics, deal characteristics, operating efficiency and board characteristics. The various variables under firm characteristics included firm size, firm value and free cash flow. Firm size was measured using the logarithmic transformation of total asset that the firm owns. Wang and Liu (2013) explains that Tobin Q is used as an indicator of firm value, which measures a company's future discounted cash flows value. Following Guest *et al.* (2009) and Kodongo *et al.* (2014) Tobin *Q* was calculated by the summation of market value of equity and book value of debt divided by book value of total asset. Free cash flow was measured using earnings before interest and tax minus depreciation plus investment tax credit minus common and preference dividends.

Deal characteristics understudy included payment method, type of target firm, relatedness and relative size. Payment method, target status and relatedness were measured with a numerical scale. Method of payment comprised equity denoted by an indicator variable of one (1) and zero (0) if the method of payment used comprised all cash. In case a listed firm acquired a listed (public) firm, an indicator value of one (1) was used and if the acquired firm was unlisted (private) an indicator value of zero (0)

was used. Relative deal size was measured by the deal value divided by the bidding firm's equity days prior to the announcement. Relatedness was qualitative in nature; diversifying transaction was denoted by an indicator value one (1) while related transaction was denoted by an indicator of zero (0).

On the other hand, operating efficiency of the firm was used as a proxy for management overconfidence. Operating efficiency was measured by ratio of cash flow to total asset of the acquiring firm. Finally board characteristics variable had variables; these included board size, CEO duality and board independence. Board size was measured by the number of the board of directors on board. CEO Duality was measured using a nominal scale that took a value of one (1) if the position of CEO and Chairman of the board are held by different individuals and zero (0) otherwise. Board independence was measured by a percentage of independent directors on a board against the total board size.

Dependent variables for this study were two; impact of M&A on stock market returns in short run return and impact of M&A on stock market returns in the long run. To determine the impact of M&A on stock market in the short term, an event study was conducted. The variables required for event study analysis included daily securities prices; that is, the maximum and the minimum prices for the firms involved in mergers and acquisitions and the daily index for the NSE 20share which was used as a proxy for the market for the period under study.

Long term return following M&A activities were estimated using Carhat Factor Model. The data description included: annual adjusted closing prices for all firms selected, annual NSE 20 average index, 91 - days (3 months) Government of Kenya Treasury Bill rate, annual market capitalization for all the firms selected, annual book value of equity for all the firms selected, market to book value of equity for the selected firms and earnings after tax to measure prior firm performance.

3.8.1 Event Study- Market Model Specification

This study employed standard event methodology to compute impact of M&A on stock market returns in the short run. The first step in measuring impact of a merger or an acquisition on stock value entailed defining the event period. The event is centered on the announcement date usually designated as date zero in the event time. The purpose of an event study is to capture all the effects on stock price. Longer periods were used to make sure that all the effects of the events were captured; this subjected the abnormal return estimates to more noise.

Before M&A date, the estimation period is 20 days, from day T_{-51} to T_{-31} relative to the day of merger or an acquisition (day 0) and T_1 to T_{+20} that is 20 days after the merger or an acquisition. Date zero represented the date when a merger or an acquisition was made for a particular firm and it denoted different calendar dates for different firms in the sample. Before a merger or an acquisition, the estimation period was 20 days from 51 to 31 day relative to the announcement day; that is, day 0. The estimation period after the announcement period was 20 days after the announcement day (day 0). After identifying the event period for this study, daily actual returns were calculated for all the firms included in the sample. From the daily maximum and minimum securities prices, average securities prices were established after which the actual returns were estimated using equation (3.1).

$$R_{jt} = \frac{P_1 - P_0}{P_0} \tag{3.1}$$

Where R_{jt} represents the actual return, P_1 is the security value at time t =1 while P_0 is the security value at time t = 0. The third step involved determination of the predicted returns for each day t in the event period for each firm j. The predicted returns represent the return that would be expected if no event took place. In line with other studies,

standard event methodology was used to compute the predicted returns for the sample firms involved in mergers and acquisitions over the event window (-20, +20) around the announcement date (Golubov, Petmezas & Travos, 2012; Harford, Humphery-Jenner & Powel, 2012; Golubov, Yawson & Zhang, 2015).

First, market model parameters; alpha (y- intercept) and the beta (slope) of the prices for firm i on day t were estimated. This was achieved by running a simple regression on stock return against the market return for the days in the event period after which the parameters obtained were used in the computations of predicted returns on each of the event days using the market model presented in equation (3.2). While using the market model, a clean period must be chosen; the period may be before the event and or after event period but it must not be the event date; this was ensured.

$$\bar{R}_{i,t} = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t} \tag{3.2}$$

Where; $R_{m,t}$ represents the return on a market index (the NSE 20 weighted Index for day t); α_i is a measure of the mean return over the period; β_i is coefficient that measures sensitivity of firm i to the market and it is a measure of risk. $\varepsilon_{i,t}$ is statistical error term with mean zero and constant variance. The method is widely used because it takes explicit account of both the risk associated with the market and the mean return (Weston& Weaver, 2002). The fourth step involved calculation of the abnormal returns. These are measured as the returns in excess of those predicted by the Market Model (Golubov, Yawson & Zhang, 2015). Abnormal returns were determined by subtracting predicted returns from the actual returns as shown in Equation (3.3).

$$AR_{i,t} = R_{i,t} - \bar{R}_{i.t} \tag{3.3}$$

Where $AR_{i,t}$ represents the abnormal return for firm in time t, $R_{i,t}$ represents the actual return for stock i on time t while $\bar{R}_{i.t}$ represents the predicted returns obtained calculated from the Market Model. To determine the cumulative abnormal returns

(CAR) for each firm, abnormal return for each firm were cumulated over the window period (-20, +20). This is shown in Equation (3.4).

$$CAR_{i,t} = \sum_{t=-20}^{20} AR_{i,t}$$
(3.4)

Finally, to determine the average total effect of the event across all the firms over the event period, abnormal returns were averaged across the firms to produce the average abnormal returns (AAR) for that day as presented in equation (3.5):

$$AAR_t = \frac{\sum_i AR_{i,t}}{n}$$
(3.5)

Where *n* represented the number of firms in the sample. The idea behind averaging across the firms is that stock returns are usually noisy but the noise tends to cancel out when averaged across a large number of firms. Therefore, the more the firms in a sample, the better the ability to distinguish the effect on an event. Average abnormal returns (AAR) for each day over the entire event period (-20, +20) were then cumulated for each day over the entire event period to produce the cumulative average abnormal returns (CAAR) as presented in equation (3.6) below:

$$CAAR_t = \sum_{t=-20}^{20} AAR_t$$
(3.6)

For each performance measure; that is, CAR and CAAR test statistics were computed and compared to its assumed distribution under the null hypothesis that means abnormal return equals zero against an alternative hypothesis that means abnormal return is not equal to zero. The null hypothesis is rejected if the test statistics exceed a critical value typically correspond to 5% or 1% tail region (Khothari & Warner, 2007; Kaufeler & Mouriten, 2012).

3.8.2 Long term Study- Carhat Four Factor Model Specification

Capital Asset Pricing Model (CAPM) is one of the most widely used asset pricing models in finance; however, despite its popularity, the model has come under a lot of criticism and the debate over its validity is far from ending(Estrada, 2011). In response to CAPM criticism, Fama and French (1996) advanced the Three Factor Model which states that required rate of return is determined by market premium, size premium and value premium as shown in equation 3.7. Recently the model has become an increasingly accepted model in corporate finance.

$$E(RP)_{it} = Rf_t + B_i(Rm_t - Rf_t) + B_s SMB + B_h HML \qquad (3.7)$$

Where $E(RP_{it})$ measures the expected return on asset i during period $t.(Rm_t - Rf_t)$ measures market premium while SMB and HML measure size premium and the book-to-market premium respectively.β_i, β_s, and β_h measure the factor sensitivities for market premium, size premium and book-to-market premium respectively. Carhart (1997) in his research on the persistence of stock return of US mutual fund included an additional factor–the momentum factor into the Fama and French Three Factor Model. Carhart (1997) reported that inclusion of the momentum factor into Three Factor Model significantly improved the model explanatory strength. The model is presented in Equation 3.8.

$$E(RP_{it}) = Rf_t + \beta_i(Rm_t - Rf_t) + B_S(SMB) + \beta_h(HML) + \beta_w(WML) + \varepsilon_{i,t} \qquad (3.8)$$

In this model, $E(RP_{it})$ is the expected return on asset i during period t while $Rm_t - Rf_t$ is the market premium and SMB is size effect premium. Similarly HML is book-to-market premium while WML is the momentum effect premium.β_i, B_S, β_h and β_w are measures of factor sensitivities for market premium, size premium, book-to-market premium and the momentum effect premium respectively. Lastly, $\varepsilon_{i,t}$ represent the error term. The two models; three and four factors have been widely used in determining long

run abnormal return following M&A announcement in developed markets (Moeller, Schlingemann & Stulz, 2005; Arx & Zeigler, 2008; Dutta & Jog, 2009; Fu, Lin & Officer, 2013 and Zaremba & Plotnicki, 2014).

A closer look at M&A long term studies in Africa shows that Fama and French Three Factor Model has been employed in determining the long run abnormal return following M&A. This includes the research studies by Halfar (2011) who used the Control Portfolio Model adapted from Fama and French (1996) to determine the effect of M&A on long run financial performance of South Africa acquiring companies. In addition, Triki and Chun (2011) used Fama and French Three Factor Model to evaluate the performance of US acquirers in Africa.

However, review of Africa M&A studies reveals that none of the studies undertaken so far has employed Carhart Four Factor Model in determining the long run return following M&A announcements. This study therefore aims at bridging the gap by using Carhart Four-Factor Model in estimating long term return following M&A in firms listed is Eastern Africa securities markets. To compute the SMB and HML factors, we followed Fama and French (1996) methodology. To compute the size factor (SMB) all the stocks selected were sorted into two groups based on their market capitalizations, for the number of years under study at the end of December of each year. The two groups were the big (B) group and the small (S) group. Market capitalization median was determined; stock above the median market capitalization formed the big group portfolio while stock below the median formed the small group portfolio.

Secondly, all the firms were ranked independently based on book-to-market ratio and three portfolio groups were formed. The formed portfolios included low (L) book-to-market portfolio group that consisted of 30% with the lowest book-to-market ratio, medium (M) book-to-market portfolio group comprised the 40% with medium book-to-market ratio and high (H) book-to-market portfolio group comprised the 30% with the highest book-to-market ratio.

The intersection of the two size groups with the three book-to-market ratio groups formed six (6) portfolios; S/L, S/M, S/H, B/L, B/M, and B/H. SMB portfolio was computed by getting the difference between the average annual returns on the three small stocks portfolio (S/L, S/M and S/H) and the average annual returns on the three big stocks portfolio (B/L, B/M, and B/H) as shown in Equation 3.9. On the other hand, HML was computed by taking the difference between the average annual returns on the two high book-to-market ratio stocks portfolio (S/H and B/H) and the average annual returns of the two low book-to-market ratio stocks portfolio (S/L and B/L) as presented in Equation 3.10.

$$\text{SMB} = \frac{1}{3}(\text{S/H} + \text{S/M} + \text{S/L}) - \frac{1}{3}(\text{B/H} + \text{B/M} + \text{B/L}) \tag{3.9}$$

$$HML = \frac{1}{2}(S/H + B/H) - \frac{1}{2}(S/L + B/L) \tag{3.10}$$

To estimate the WML (Winner minus Loser) variable for each month from Jan of year *t-1* to December of year *t-1*, stocks were sorted based on size and prior performance. Two portfolio groups were formed namely: Winner (W) portfolio group containing of 50% with stocks with the highest past returns and Loser (L) portfolio (L) which comprised of 50% of the stocks with lowest past returns. The interaction of winners and losers portfolio groups with size portfolios formed four (4) portfolio groups; S/W, B/W, S/L, B/L. WML variable was determined as presented in Equation 3.11.

$$WML = \frac{1}{2}(S/W + B/W) - \frac{1}{2}(S/L + B/L) \tag{3.11}$$

Table 3. 1: Summary of the Measurement of Variables

Independent Variables	Measurement
Firm Characteristics	
Firm size	Logarithmic transformation of total asset.
Tobin Q	Market value of equity plus book value of debt / book alue of total asset.
Free cash flow	EBIT minus depreciation plus investment tax creditminus common and preference dividends.
Deal Characteristics	
Payment method	Indicator variable is one (1) if the payment is comprised equity and zero (0) if the method of payment is all cash
Type of firm acquired (target status)	Indicator variable is one (1) if the target is a public (listed) target and zero (0) when the target firm acquired private (unlisted) firm.
Relatedness/ Focus	Indicator variable is one (1) if the bidder firm and target firm are operating in different industry and an indicatorvariable of zero (0) for related transactions.
Relative size	Deal value divided by the market value of the bidding firm equity prior to the announcement of M&A.
Operating Efficiency	Cash flow divided by total asset of the firm.
Board Characteristics	
Board size	Number of board of directors.
CEO duality	Indicator variable of one (1) if the position of CEO and Chairman of the board are held by different individuals and zero (0) otherwise.
Board independence	Percentage of independent directors on a board against the total board size.
Dependent Variables	
M&A stock market returns in the short run	Daily securities for firms selected, Daily NSE 20Share index.
M&A stock market returns in the long run	Annual adjusted securities closing prices, Annual NSE 20 share average index, 91-day government of Kenya treasury bill rate, Market capitalization for all the firms, Annual book value of equity for all firms,.Market to book value of equity and earnings after tax all the firms.

Source: (Gulobov,Yawson & Zhang, 2015; Nwani, 2015; Fu, Lin & Officer, 2013; Isa & Lee, 2011; Alexandridis, Petmezas & Travos, 2010; Masulis, Wang & Xie, 2007; Moeller, Schlingemann & Stulz, 2005).

3.9 Data Analysis

Zikmund, Babin, Carr and Graffin (2012) posit that data analysis is the application of reasoning to understand the data that has been gathered with the aim of determining consistent patterns and summarizing the relevant details revealed in the investigation. Data was purely quantitative and therefore quantitative tools were employed. Before

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actual analysis, data cleaning was done. According to Bryman (2012) data organization involves orderliness in data.

The research study had two set of data; cross sectional data in the short run and panel data in the long run. For both sets of data, appropriate descriptive statistics such as measures of central tendency; mean, mode and measure of variation; standard deviation were generated, presented using tables and graphs and interpreted appropriately. Before subjecting data to inferential analysis, multiple linear regression assumptions were tested. Data was checked for normality, independence assumption or lack of autocorrelation, multi-collinearity, homoscedasticity of residuals and linearity.

Numerical methods; Kolmogorov-Smirnov (K-S) and Shapiro-Wilk tests were employed to check normality of the dependent variables (Shapiro & Wilk 1965; Shevlin & Miles, 2010). Autocorrelation occurs when a variable correlates with itself; if the cases are auto correlated, they are related to one another therefore not independent. Durbin- Watson Coefficient was used to test autocorrelation. Durbin Watson statistics ranges between 0 and 4 (Gujarat, 2009). For independent observation, statistics range between 1.5 and 2.5 while a value closer to 0 indicates positive correlation while a value closer to 4 indicates negative correlation (Tabachnick & Fidell, 2014).

Multi-collinearity in the data was tested using Variance inflation statistics. Multi-collinearity is an undesirable situation that occurs where two or more predictors in a multiple linear regression are highly correlated (Argyrous, 2011). Breusch Pagan test was used to detect heteroscedasticity in the data. Heteroscedasticity is a situation where the error variance is not constant (Gujarat, 2009). Finally, we checked for linearity assumption using graphical analysis. In addition to OLS assumption, panel unit root test was carried out to check if panel data was stationary. This was done using Fisher type Augmented Dickey and Fuller (ADF) and the Fisher-type Phillips Perron (PP) tests to avoid spurious regression estimates in the empirical analysis (Kodongo *et al.,* 2014).

Data was then subjected to inferential analysis. To determine drivers of the impact of M&A on stock market returns of listed firms in Eastern Africa securities markets in the short run, linear regression was used. Linear regression method has been used widely in studies assessing M&A announcements return in the corporate world (Moeller, Schingermann & Stulz, 2005; Alexandridis *et al.,* 2010; Fu *et al.,* 2013). On the other hand, to study drivers of the impact of M&A on stock market returns of listed firms in Eastern Africa securities markets in the long run period, panel regression analysis was conducted (Gujarat, 2009).

3.9.1 Statistical Model Specification

To determine the impact of firm characteristics, deal characteristics, operating efficiency of the firm and board characteristics on pre and post M&A stock market returns of listed firms in Eastern Africa securities market in the short run and in long run, two statistical models guided our study. In the short run, the study was guided by the models presented as follows:

Model 1 - Impact of firm characteristics on pre and post M&A stock market returns of listed firms in Eastern Africa securities markets in the short run.

$$Y_t = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon_t \qquad\qquad (3.\,12)$$

Where:

Y_t represents pre and post M&A stock market returns in the short run in time *t*.

X_1 is a measure of firm size.

X_2 represents free cash flow.

X_3 is a measure of firm value.

α is the model intercept.

$\beta_1, \beta_2, \beta_3,$ are the measures the sensitivity factors for firm size, firm value and free cash flow.

ε_t is the error term of the model.

Model 2 - Impact of deal characteristics on pre and post M&A stock market returns of listed firms in Eastern Africa securities markets in the short run.

$$Y_t = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon_t \qquad (3.13)$$

Where:

Y_t represents pre and post M&A stock market returns in the short run in time *t*

X_1 is a measure of the method of payment.

X_2 represents target status.

X_3 is a measure of relatedness of the acquisition.

X_4 is a measure of deal value of the merger or acquisition.

α is the model intercept

$\beta_1, \beta_2, \beta_{3}, \beta_{4},$ are the beta coefficients for the method of payment, target status, relatedness and deal value respectively.

$\varepsilon_{i,t}$ is the error term of the model.

Model 3 - Impact of operating efficiency of the firm on pre and post M&A stock market returns of listed firms in Eastern Africa securities markets in the short.

$$Y_t = \alpha + \beta_1 X_1 + \varepsilon_t \qquad\qquad (3.14)$$

Where:

Y_t represents pre and post M&A stock market returns in the short run in time t.

X_1 is a measure of operating efficiency of the firm.

β_1 is the beta coefficient for the operating performance of the firm.

α is the model intercept.

ε_t is the error term of the model.

Model 4 - Impact of board characteristics on pre and post M&A stock market returns of listed firms in Eastern Africa securities markets in the short run.

$$Y_t = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon_t \qquad\qquad (3.15)$$

Where:

Y_t is the pre and post M&A stock market returns in the short run in time t.

X_1 is the board size.

X_2 represents CEO/Chairman duality.

X_3 is the board independence.

α is the model intercept.

β_1, β_2, β_3, are the beta coefficients for the board size, CEO Duality and board independence respectively.

$\varepsilon_{i,t}$ is the error term of the model.

Model 5: The general model on the drivers of the impact of M&A on stock market returns of listed firms in Eastern Africa securities markets in the short run.

$$Y_t = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon_t \qquad (3.16)$$

Where:

Y_t is measure of pre and post M&A stock market returns in the short run in time *t*.

X_1 is represents the firm characteristics; that is, firm size, free cash flow and firm value.

X_3 is the deal characteristics; that is, payment method, target status, relatedness and relative size.

X_3 is the operating efficiency of the firm.

X_4 is the board characteristics that is board size, CEO duality, board independence.

α is the model intercept.

β_1, β_2, β_3, β_4 are the beta coefficients for firm characteristics, deal characteristics, operating performance and board characteristics.

$\varepsilon_{i,t}$ is the error term of the model.

To determine drivers of the impact of M&A on stock market returns of listed firms in Eastern Africa securities markets in the long run, the panel model guided our study.

However, deal characteristics variable was dropped in the long run analysis because it is comprised information that is released once; that is, when a merger or an acquisition occurs. The general model that guided the study in the long run is presented in Equation 3.17.

$$Y_{it} = \alpha + \beta_1 X_{1,it} + \beta_2 X_{2,it} + \beta_3 X_{3,it} + \varepsilon_{i,t} \tag{3.17}$$

$$\binom{i = 1, 2, 3, \ldots, N}{t = 1, 2, 3, \ldots, T}$$

Where;

Y_{it} is measure of pre and post M&A stock market returns in the long term for firm i in time t.

$X_{1,it}$ is the firm characteristics; that is, firm size, free cash flow, firm value for firm i in time t.

$X_{2,it}$ is the operating efficiency of firm i in time t.

$X_{4,it}$ is the board characteristics; that is, board size, CEO/Chairman duality and board independence for firm i in time t.

α is the model intercept.

β_1, β_2, β_3, are the beta coefficients for firm characteristics, operating efficiency and board characteristics respectively.

$\varepsilon_{i,t}$ is the error term of the model.

Gujarat (2009) explains that panel data regression model's estimations is normally done using two approaches: Fixed Effect Method (FEM) and Random Error Method (REM). To take care of individuality of each firm, equation 3.17 can be rewritten as shown in

equation 3.18. This estimation technique is known as the fixed effect approach and it shows that the intercept may differ across individuals though each individual's intercept does not vary over time (time invariant).

$$Y_{it} = \alpha_i + \beta_1 X_{1,it} + \beta_2 X_{2,it} + \beta_3 X_{3,it} + \varepsilon_{i,t} \tag{3.18}$$

To allow for fixed effect intercept to vary between companies, dummy variable technique was employed as shown in Equation3.19.

$$\alpha_1 + \alpha_2 D_{2i} + \alpha_3 D_{3i} + \cdots + \alpha_{24} D_{24i} + \beta_1 X_{1,it} + \beta_2 X_{2,it} + \beta_3 X_{3,it} + \varepsilon_{i,t} \tag{3.19}$$

Where D_i is the dummy variable that equals to one (1) if the observation X belongs to firm *1* and otherwise zero (0). The sample size consisted of only 25 firms therefore only 24 dummy variables were used to avoid falling into the dummy variable trap. This means there is no dummy for 25th firm and therefore α_1 represent the intercept for 25th company while α_2, $\alpha_3, \ldots \ldots, \alpha_{24}$ are the differential intercepts. The alternative specification of the fixed effect model involves forming a regression model that allows for the intercept to vary across both individual firms and time with the slope coefficients remaining constant. Equation 3.20 presents Fixed Effect Model with time invariant intercept.

$$Y_{it} = \alpha_1 + \alpha_2 D_{2i} + \alpha_3 D_{3i} + \cdots + \alpha_{24} D_{24i} + \lambda_0 + \lambda_1 D_{mt\,1} + \ldots \ldots + \lambda_t D_{mt} \beta_1 X_{1,it} +$$
$$\beta_2 X_{2,it} + \beta_3 X_{3,it} + \varepsilon_{i,t} \tag{3.20}$$

Where D_{mt} is the time dummy variable that equals to 1 if the observation belongs to year *t*, 0 otherwise and ranges from year one (1) to year ten (10) while D_i is the dummy variable that equals to one (1) if the observation is *X* belongs to firm *1* and otherwise zero (0). Fixed Effect Model estimation introduces too many dummy variables in the model that results in reduction in degrees of freedom. Further, many variables in the

model may present multi-collinearity issues which may make accurate estimation of parameters difficult (Gujarat, 2009).

In alternative specification, Equation 3.17 was estimated as Random Effect Model where individual differences in the intercept of each company are reflected in the error term (Gujarat, 2009; Tabachnick & Fidell, 2014). The intercept value for an individual company is then reflected in the error term expressed as shown in equation 3.21.

$$\alpha_{1i} = \alpha_1 + \varepsilon_i \qquad\qquad i = 1,2,3, \ldots\ldots, N \qquad N = 25 \qquad (3.21)$$

Where ε_i is a random error term with a mean value of zero and constant variance (σ_ε^2). Substituting equation 3.21 into equation 3.17 equation 3.22 was obtained.

$$Y_{it} = \alpha + \beta_1 X_{1,it} + \beta_2 X_{2,it} + \beta_3 X_{3,it} + \beta_4 X_{4,it} + \varepsilon_i + \mu_{it} \qquad (3.22)$$

But taking;

$$\omega_{it} = \varepsilon_i + \mu_{it} \qquad (3.23)$$

Substituting Equation 3.23 into Equation 3.22 Equation 3.24 was obtained.

$$Y_{it} = \alpha + \beta_1 X_{1,it} + \beta_2 X_{2,it} + \beta_3 X_{3,it} + \beta_4 X_{4,it} + \omega_{it} \qquad (3.24)$$

The composite error ω_{it} consists of two components: ε_i which is the cross-sectional or individual specific error component and μ_{it} which is the combined time series and cross-sectional error component. The usual assumption made by the Random Effect or Error Component Model is that individual error term components are not correlated with each other and are not auto-correlated with the cross-sectional and time series unit. This is presented in equation 3.25.

$$\varepsilon_i = N(0, \sigma_\varepsilon^2)$$

$$\mu_{it} = N(0, \sigma_\mu^2)$$

$$E(\varepsilon_{it}\,\mu_{it}) = 0E(\varepsilon_i \varepsilon_j) = 0 \qquad\qquad\qquad\qquad i \neq j$$

$$E(\mu_{it}\mu_{is}) = E(\mu_{it}\mu_{jt}) = E(\mu_{it}\mu_{js}) = 0 \qquad\qquad (i = j; t = s) \qquad (3.25)$$

To determine the suitable estimation effect between fixed and random effect model for the study, Hausman test was carried out (Gujarat, 2009; Kodongo *et al.,* 2014).

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSIONS

4.1 Introduction

The study sought to investigate drivers of the impact of M&A on stock market returns of listed firms in Eastern Africa securities markets. This chapter presents the results of the analyses of data collected from the audited annual financial reports of firms listed in Eastern Africa securities markets that have been involved in M&A, Capital Markets Authority, short run and long run impact of M&A on stock market returns. Data for audited annual financial reports and deal characteristics concerning M&A was provided by Capital Markets Authority, daily security prices and market index data were obtained from Nairobi Securities Exchange while Treasury bill (91-days government of Kenya) was obtained from the Central Bank of Kenya.

The study findings have been presented under the following sections: stylized facts regarding M&A in Eastern Africa, impact of M&A on stock market returns in the short run and in the long run, descriptive statistics for short run analysis, diagnostic tests, regression analysis, hypothesis testing in the short run, descriptive statistics for long run analysis, specification test, regression analysis and hypothesis testing in the long run.

The study focused on firms listed in the securities markets of the three Eastern Africa countries namely Kenya, Uganda and Tanzania which acquired either a public or a private target in the same countries using data for the period 1998 through 2015. The study required two set of data: cross sectional data for short run analysis and panel data for long run analysis. In compiling the final sample the study ensured that all the M&A firms selected had all the information regarding the operationalisation of all the variables of the study. In addition, the assumptions of the event study that is market efficiency, merger or acquisition activity is unanticipated event and that there were no confounding

effects were followed in selection of final sample. The final sample of the study comprised of firms listed in the NSE that acquired or merged with a public or a private target in Kenya, Uganda and Tanzania for the period between 1998 through 2015. Precisely, thirty (30) firms involved in M&A were studied in the short run while in the long run sample comprised twenty five (25) M&A firms.

4.2 Stylized Fact on Mergers and Acquisition Activities in Eastern Africa

This section discusses the sector, country and year distribution of thirty (30) completed publicly traded M&A firms listed in the NSE that acquired a private or a public target firm in Kenya, Uganda and Tanzania for the period between 1998 through 2015. Figure 4.1 below present's sector distribution of listed completed M&A in the three Eastern African countries.
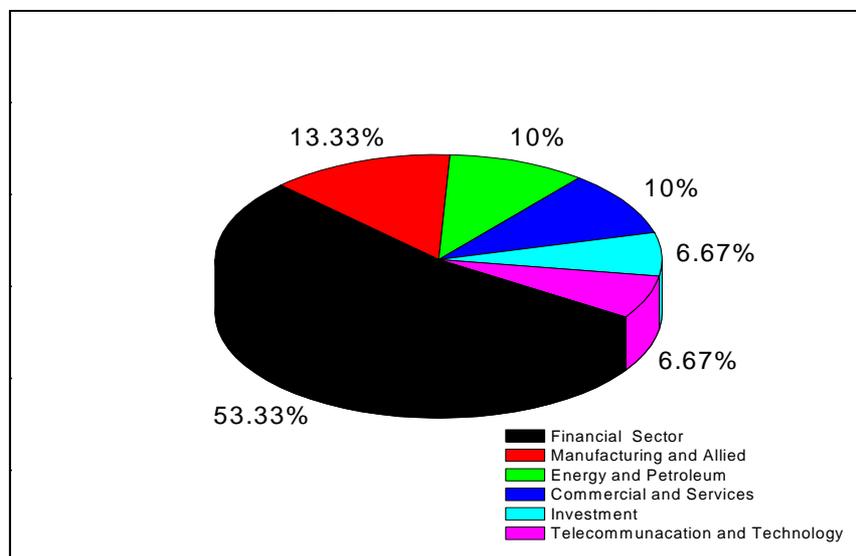
Figure4. 1: Sector Distribution of Completed Public M&A in Eastern Africa

Notably, the financial service sector has attracted the highest number of M&A transactions accounting for 53.33% of total completed public M&A transactions. This is attributed to the revised regulatory capital requirements within the three countries. Manufacturing sector followed attracting 13.33% of the total public M&A while energy & petroleum and commercial & services took the third position with both sectors attracting 10% each of the total M&A.

Finally, technology and investment sectors took the fourth position both of which attracted 6.67% each of the total completed public M&A transaction. Despite the financial sector accounting for the largest number of acquisitions, it can be seen clearly that almost all sectors in East African countries are experiencing M&A activities.

This shows that the macroeconomic, structural and institutional reforms undertaken by these countries have improved the investment climate in the region thereby raising business confidence. Table 4.1 presents the country distribution of completed listed M&A activities made by firms listed in the securities markets in the three Eastern African countries under study. The study focused on public quoted companies making private or public acquisitions in the three Eastern African countries. Kenya is leading in M&A activities accounting for 80% of the total deals while Tanzania and Uganda took a share of 10% each. The study findings agree with the recent Deal Drivers Report published by Merger Markets, that ranked Kenya as Africa's fourth most sought after country for M&A (Ng'ang'a & Ndale, 2014).

Table 4. 1: Country Distribution of Completed M&A Made by Listed Firms in Eastern Africa

Countries	Frequency	Percentage
Kenya	24	80
Uganda	3	10
Tanzania	3	10
Total	30	100

4.3 Impact of M&A on Stock Market Returns

4.3.1 Short run Impact of M&A on Stock market Returns

Event study was used to determine impact of M&A on stock market returns in the short run. Figure 4.2 represents beta values for the firms under study. The beta coefficient for each company was categorized as either defensive if the beta coefficient was less than 1 and aggressive if it was greater than 1. It is important to note that most of the companies which were defensive before M&A were defensive even after the M&A. These include C04, C11, C15, C19, C20, C20, C20, C24 and C29. This showed that for the majority of the firms M&A did not have an effect on risk factor. Nevertheless, some companies were aggressive before M&A and defensive after. For instance C12 and C26 changed from aggressive to defensive securities.
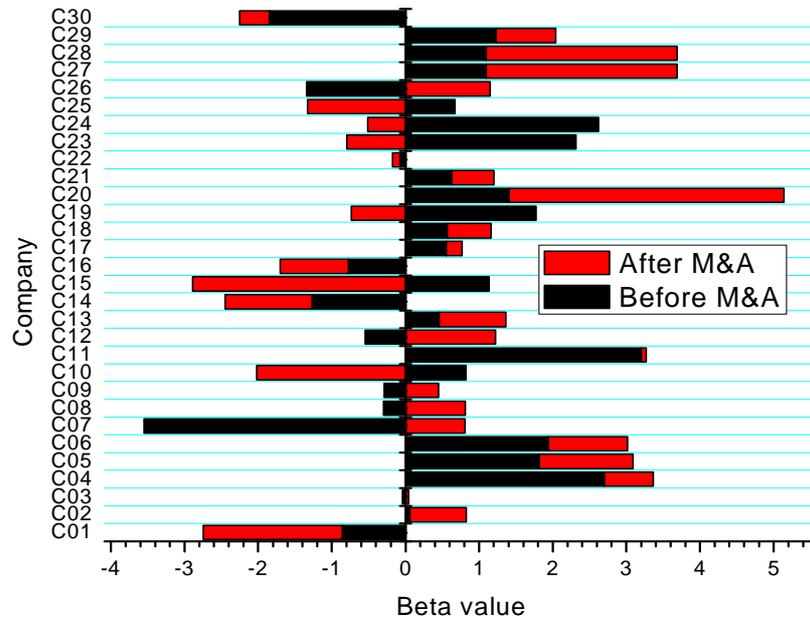
Figure4. 2: Summary of Beta Values Analysis before and after the M&A for all the Firms

Table 4.2 presents the analysis of abnormal returns before and after M&A firms. The table shows the cumulative abnormal returns (CAR) and the respective t-statistics for various sub–windows within the event window period. The various holding periods include: CAR$[-20 + 20]$, CAR$[-10 + 10]$, CAR$[-5 + 5]$, CAR $[-2 + 2]$and CAR$[-1 + 1]$. The study hypothesized that M&A activities do not create wealth for the firm shareholders; that is, CAR=0 while the alternative hypothesis stated that M&A create wealth for the firm shareholders that is CAR≠0. Cumulative abnormal return -10, +10 had a t-statistic of 2.115 with a P value of value of 0.043. The return was significant at 5% and therefore we rejected the null hypothesis and concluded that M&A generate significant returns to the concerned firms' shareholders for the event window $[-10 + 10]$days.

Table 4. 2: Cumulative Abnormal Returns for Different Holding Periods

| | | | | | 90% Confidence Interval of the Difference | |
| | | | | Mean | | |
	T	Df	Sig. (2-tailed)	Difference	Lower	Upper
One-Sample Test						
Test Value = 0						
CAR [−1 + 1]	1.762	29	.089*	.01631	-.0026	.0352
CAR [−20 + 20]	1.908	29	.066*	.05982	-.0043	.1239
CAR [−10 + 10]	2.115	29	.043**	.02042	.0007	.0402
CAR [−5 + 5]	0.747	29	.461	.02261	-.0393	.0845
CAR [−2 + 2]	1.193	29	.243	.01242	-.0089	.0337

Considering CAR $[-1 + 1]$ and CAR $[-20 + 20]$ there was enough evidence to warrant rejection of the null hypothesis since their P values were 0.089 and 0.066 both of which were significant at 10%. Finally cumulative abnormal returns for the event window $[-5 + 5]$ and $[-2 + 2]$ were not significant 10% since their p values were 0.461 and 0.243 and thus we failed to reject the null hypothesis.

This study therefore concludes that for the event period $[-5 + 5]$ and $[-2 + 2]$ M&A activities do not create wealth to the shareholders of firm. We analyzed returns in different event window periods and we report positive returns for CAR$[-1 + 1]$, $[-10 + 10]$ and CAR$[-20 + 20]$. This is consistent with the findings of Oler, Harrison and Allen (2008), Sehgal, Banerjee and Deisting (2012) and Dilshad (2013) who reported significant positive returns in the short run for the U.S BRICK and Europe markets respectively. Cumulative abnormal returns for the sub windows $[-5 + 5]$ and $[-2 + 2]$ were insignificant implying that M&A do not generate returns.

Our findings are in agreement with research findings of Jensen and Ruback (1983), Smit and Ward (2007), Martynova and Renneboog (2008) and Barde and Salisu (2015) who reported no returns to mergers and acquisition firms in the short run. On average, the research findings are in agreement with the existing evidence which shows mixed performance of firms following M&A.

Figure 4.3 presents average abnormal returns (AAR) and cumulate average abnormal returns (CAAR) for the entire event window; that is, $[-20, +20]$ days. The results show that on average pre M&A stock market returns are very volatile; the trend however does not seem to disappear post M&A. The study also finds that M&A stock market return returns increase from day zero although the positive performance is short lived with returns starting to decrease sharply from day four. Six days after M&A activities, the firms experience negative returns all through. The study therefore concludes that on average post M&A stock market returns are negative.

The results are consistent with research findings of Mushdzhi and Ward (2004) and Moeller *et al.* (2005) who reported negative returns for South African firms and U.S firms respectively. Bharath and Guojun (2006) argue that there are several determinants of volatility in M&A stock market returns. The first reason could be shock in the industry and firms may react by engaging in M&A activities. Following a successful M&A, volatility in returns may stabilize or decline. Post-merger integration risk is another contributing factor and based on this argument, if the process is completed successfully, the volatility should decrease – at least in the short run. The third reason is borrowed from Portfolio Diversification Principle which states that volatility should decline following any merger and even more so for inter-industries M&A. The results of the study shows that on average, CAAR are negative and that post-merger integration risk outweighs any diversification benefits in the immediate aftermath of M&A.
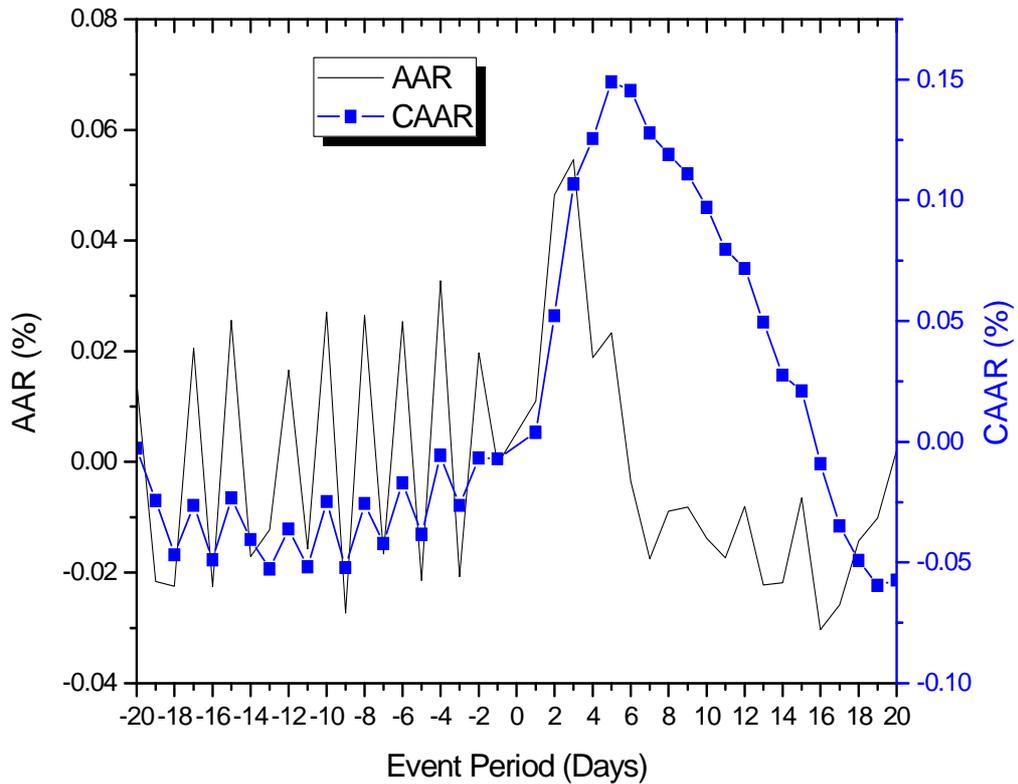
Figure 4. 3: Average Abnormal Return and Cumulative Average Abnormal Return for Listed Firms in Eastern Africa Securities Markets Involved in Mergers and acquisitions for the Window Period [-20+20] Days.

Owing to the documented literature that deal characteristics could possibly have an effect on M&A stock market return, this study address this issue by looking into whether methods of payment, target status and relatedness have an impact on the cumulative abnormal return. In regard to the method of payment the sample was divided into two: full cash offers and share for share offers. Table 4.3 presents cumulative abnormal return analysis in relation to the method of payment. The results show cash offers generate significant positive returns to the M&A firms in two different holding periods. These

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were CAR[−1 + 1] and CAR[−20, +20] with P-values of 0.047 and 0.077 respectively both of which were significant at 5% and 10%. Cumulating abnormal returns for the other holding periods was not significant while share for share offers cumulative abnormal returns were all insignificant. This means that where firms used share offer as the payment method, the shareholders earned no returns. The results are in line with past empirical literature by Dong *et al.* (2006), Alexandridis *et al.* (2010) and Isa and Lee (2011) among others. The study findings are supported by the Signaling Hypothesis by Myers and Majluf (1984) which states that firms use share payment when they believe that their shares are overvalued; as a consequence, markets react negatively to a share offer.

Table 4. 3: Interaction between Method of Payment and Cumulative Abnormal Return for Different Holding Period

Method of Payment		One-Sample Test Test Value = 0				90% Confidence Interval of the Difference	
		T	Df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Cash	CAR [−1 + 1]	2.121	19	0.047**	0.021	0.000	0.043
	CAR [−20 + 20]	1.867	19	0.077*	0.041	-0.005	0.088
	CAR [−10 + 10]	1.630	19	0.119	0.022	-0.006	0.051
	CAR [−5 + 5]	0.977	19	0.341	0.036	-0.041	0.113
	CAR [−2 + 2]	0.790	19	0.439	0.008	-0.015	0.032
Share swap	CAR [−1 + 1]	0.313	9	0.762	0.006	-0.038	0.050
	CAR [−20 + 20]	1.138	9	0.284	0.097	-0.095	0.288
	CAR [−10 + 10]	1.544	9	0.157	0.017	-0.008	0.042
	CAR [−5 + 5]	-0.079	9	0.939	-0.004	-0.128	0.119
	CAR [−2 + 2]	0.867	9	0.409	0.020	-0.032	0.071

*(**)…..Significant at 5% (10%)

Table 4.4 presents results on interaction between target status and cumulative abnormal return for different holding periods. The findings show that in the entire event period, acquisition of private and public target firms generated insignificant positive return; however, it was noted that the returns for private firm's acquisitions were more by 0.004 compared to the public firm acquisitions. It was also observed that acquisition of private firms generated significant positive returns in two different holding periods namely CAR $[-1 + 1]$ and CAR$[-10 + 10]$. Their P-values were 0.078 and 0.099 respectively and both were significant at 10%. On the other hand, acquisition of public firms generated insignificant returns.

The findings of the study agree with findings of Fuller *et al.* (2002), Conn *et al.* (2005), Facio *et al.* (2006), and Draper and Paudyal (2006). The results nonetheless contradict the findings of Isa and Lee (2011) who found that abnormal returns are higher for public acquisitions. The evidence found supports the managerial motive by Draper and Paudyal (2006) and liquidity hypothesis by Chang (1998).

Table 4. 4: Interaction between Target Status and Cumulative Abnormal Return for Different Holding Periods

Target status		T	Df	Sig. (2-tailed)	Mean Difference	90% Confidence Interval of the Difference	
						Lower	Upper
Private	CAR [−1 + 1]	1.845	22	0.078*	0.019	-0.002	0.041
	CAR [−20 + 20]	1.545	22	0.137	0.061	-0.021	0.142
	CAR [−10 + 10]	1.725	22	0.099*	0.020	-0.004	0.043
	CAR [−5 + 5]	0.821	22	0.420	0.032	-0.049	0.113
	CAR [−2 + 2]	1.323	22	0.199	0.016	-0.009	0.041
Public	CAR [−1 + 1]	0.311	6	0.766	0.007	-0.045	0.058
	CAR [−20 + 20]	1.354	6	0.225	0.057	-0.046	0.160
	CAR [−10 + 10]	1.199	6	0.276	0.023	-0.024	0.070
	CAR [−5 + 5]	-0.474	6	0.652	-0.009	-0.053	0.036
	CAR [−2 + 2]	0.055	6	0.958	0.001	-0.053	0.056

One-Sample Test, Test Value = 0

(**)…..Significant at 10%

Finally, we present the analysis of cumulative abnormal return in relation to relatedness of the M&A. These results are presented in Table 4.5. The findings show that in the entire event period [−20 + 20] cumulative abnormal return for both diversifying M&A and related M&A were insignificant. However, for the event window periods [−1 + 1] and [−10 + 10] cumulative return for related M&A were significant at 10% since their P-values were 0.064 and 0.066 respectively. On the other hand cumulative abnormal returns for firms that diversified their operations were insignificant in all sub-window periods.

Table 4. 5: Interaction between Relatedness and Cumulative Abnormal Return for Different Holding Period

Relatedness						90% Confidence Interval of the Difference	
		One-Sample Test					
		Test Value = 0					
		T	**Df**	**Sig. (2-tailed)**	**Mean Difference**	**Lower**	**Upper**
Relatedness	CAR [−1 + 1]	1.959	21	0.064*	0.022	-0.001	0.046
	CAR [−20 + 20]	1.429	21	0.168	0.057	-0.026	0.140
	CAR [−10 + 10]	1.942	21	0.066*	0.025	-0.002	0.052
	CAR [−5 + 5]	0.268	21	0.792	0.008	-0.051	0.066
	CAR [−2 + 2]	1.561	21	0.133	0.018	-0.006	0.044
Diversification	CAR [−1 + 1]	-0.009	7	0.993	-0.000	-0.034	0.034
	CAR [−20 + 20]	1.484	7	0.181	0.067	-0.040	0.174
	CAR [−10 + 10]	1.172	7	0.280	0.008	-0.008	0.023
	CAR [−5 + 5]	0.749	7	0.478	0.064	-0.138	0.266
	CAR [−2 + 2]	-0.243	7	0.815	-0.005	-0.054	0.044

(**)…..Significant at 10%

The findings are in harmony with the empirical studies that have concluded that investors do not benefit from unrelated acquisitions (Campa & Simi, 2002; Harding & Rovit, 2004; Megginson, Morgan & Nail 2003; Singh & Montgomery, 2008) among others. The research findings fail to support Portfolio Diversification Perspective.

4.3.2 Long run Impact of M&A on Stock Market Returns

There are different markets in which commodities and stocks are retailed. In the stock market, investors and non-investors strive to explain the stock return from past stock data. Initially, stock return was assumed to be influenced by market return from which Capital Asset Pricing Model was developed, though it was criticized for being a single factor model. Consequently, Fama and French (1993) sealed the gap by developing the Three Factor Asset Pricing Model which was later improved to include the momentum

factor by Carhart (1997). In the current study, long run return was determined using Carhart Four Factor Model; it was assumed that return was a factor of excess market returns, SMB, HML and WML.

Descriptive statistics for various portfolio groups created from Carhat factors; namely, market capitalisation, book-to-market ratio and momentum are presented in Table 4.6 below. The results shows that 47.6% of the companies were small companies and 52.4% were big companies according to size classification as grouped by Cahart return modelling. Book-to-market ratio classification shows that almost a third of the 25 companies which had exercised M&A fell in every category of high, medium and low. The fourth factor included in the Cahart model was momentum which classified stocks as the either a winner or a loser depending on the past performance of security price prior to the M&A. Results revealed that 51.2% of the firms involved in M&A were in the losers category while 48.8% were winners.

Table 4. 6: Descriptive Statistics for Market Capitalizations Book-to-Market Ratio and Momentum Portfolios

Carhart Factors	Portfolio Groups	Frequency	Percent
Market capitalization	Small	119	47.6
	Big	131	52.4
	Total	**250**	**100**
Book to market ratio	High	86	34.4
	Medium	81	32.2
	Low	83	33.2
	Total	**250**	**100**
Momentum	Winners	128	51.2
	Losers	122	48.8
	Total	**250**	**100**

Descriptive statistics for SMB and HML portfolios are presented in Table 4.7 and 4.8 respectively. From Table 4.7 small stocks had a mean of 0.15 offering the highest return. Small stock portfolios also recorded the highest monthly return of 3.05 over the period.

The difference between the small stock and big stock portfolios formed SMB portfolios. SMB portfolios had a mean return of 0.03 against mean excess return for the market portfolio of -0.01. This showed that SMB portfolios offered high returns at relatively higher total risk compared to market portfolio. This showed that to a small extent NSE adequately rewarded investors who invested in small stocks due to the high risk premium associated with SMB portfolios.

Table 4. 7: Descriptive Statistics for the Returns of Size Sorted Portfolios

Portfolios	Minimum	Maximum	Mean	Std. Deviation
Small	-0.64	3.05	0.15	0.55
Big	-1.01	1.18	0.11	0.40
SMB	-0.97	1.02	0.03	0.59
Rm-rf	-0.46	1.13	-0.01	0.35

The results in Table 4.8 show the highest mean return was recorded by high stocks portfolios; moreover, these stocks recorded a total risk of 0.58 which was considered high too. Low stocks portfolio had a total risk of 0.37. The difference between high, medium and low stocks portfolios formed HML portfolios. Compared with market portfolios, HML portfolios offered a high mean return of 0.02, though the portfolio recorded the highest total risk. This showed that the security market rewarded HML stock investors better than the market portfolios investors.

Table 4. 8: Descriptive Statistics for the Returns of the Book to Market Sorted Portfolios

Portfolios	Minimum	Maximum	Mean	Std. Deviation
High	-0.75	3.05	0.17	0.58
Medium	-1.01	1.18	0.08	0.46
Low	-0.60	1.48	0.14	0.37
HML	-1.29	1.43	0.02	0.78
Rm-rf	-0.46	1.13	-0.01	0.35

To estimate the effectiveness of momentum factor in explaining variations in stock returns, past returns on all the stocks concerned were used to determine momentum portfolios. Descriptive statistics for momentum portfolios are presented in Table 4.9. The results indicate that loser portfolios recorded a high mean return compared to winner stock portfolios. The difference between winners and losers stock portfolios formed WML portfolios. WML portfolios had a mean return of 1.98 and a total risk of 2.63 both of which were very high compared to market portfolio. This showed that NSE rewarded WML portfolio investors adequately.

Table 4. 9: Descriptive Statistics for the Returns of Momentum Sorted Portfolios

Portfolios	Minimum	Maximum	Mean	Std. Deviation
Losers	-1.01	3.05	0.18	0.52
Winners	-0.75	1.45	0.08	0.42
WML	-4.03	4.31	1.98	2.63
Rm-rf	-0.46	1.13	-0.01	0.35

Multiple regression analysis was used to calculate the return for ten portfolios formed from the intersections of size with book-to-market ratios and size with momentum factor. The findings are presented in Tables 4.10 and 4.11. The results presented show

that market risk premium ($Rm_t - Rf_t$) for all the ten portfolios are statistically significant at 5% level of significance, which contradicts the assumptions of the multifactor model. The results show that the highest R square reported by the model is 70% for portfolio S/L while the lowest R squared is 24.9% offered by B/W portfolios. The F-statistics indicate that the explanatory power of the Fama-French-Carhart Multi-Factor Model is statistically significant at 1% level of significance for all the ten portfolios.

At 5% level of significance, the size factor (SMB) failed to explain the variations in M&A returns for the S/M, S/H, SLB/M and B/L portfolios. As anticipated we report positive coefficients for S/H and S/L portfolios and negative coefficient for B/M and B/L portfolios, however, they were all insignificant. Surprisingly, the study finds a positive and significant relationship between SMB and M&A returns for the B/H portfolio indicating presence of significant big firm effect for stocks in the portfolio (Malin & Veeraraghavan, 2004). The inability of the size factor to offer significant explanation to variations in M&A returns of stocks in these five portfolios indicates that the variable is not a reliable factor in explaining variations in returns of stocks listed on the Nairobi Securities Exchange over the sample period. The study findings are in agreement with Nwani (2015) who reported the insignificance of size effect in explaining variations in returns while investigating Fama & French – Carhat Multifactor Model in U.K. Similar findings were documented by Cakici and Tan (2014). The study shows that at 5% significance level, value factor (HML) was statistically insignificant in explaining variations in M&A returns over the sample period. However the expected relationships were reported for S/L, B/L, SM, and BH portfolios.

The findings failed to support the Fama and French (1992, 1996) empirical studies for the US equity market. However, this does not mean that the model is invalid in Kenya; actually the model is universally applicable in all markets. The Carhat Model value and growth factors are significant in explaining variations in returns as documented by

various empirical studies such as those by Morelli (2007) and Malin and Veeraraghavan (2004). The study failed to justify the inconsistency of the results obtained but acknowledged that there could be forces present in our data that overcame value and growth effect in explaining variations in returns.

At 5% significance level, momentum factor (WML) could not significantly explain the relationship between the factor and the excess returns on S/W, S/Land B/W portfolios. This shows that the momentum factor is insignificant in explaining stock returns. Nonetheless, at 5% significance level, WML variable significantly explained variation in returns for the B/L portfolios. This illustrated that big market capitalization stocks significantly offered future returns. Consistent with Nwani (2015) the study concluded that momentum factor significantly explains the returns of big market capitalization stocks but fails to explain small market capitalization returns.

Table 4. 10: Carhart Four Factor Model Regression Results for Size and Value Factors

		Unstandardized Coefficients		Standardized Coefficients							
		Beta	Std. Error	Beta	T	Sig.	R	R^2	Adjusted R^2	F	Sig.
SM	(Constant)	0.03	0.10		0.33	0.75	0.64a	0.41	0.32	4.60	.006b
	Rm-rf	0.66	0.16	0.64	4.19	0.00*					
	SMB	-0.02	0.15	-0.03	-0.15	0.88					
	HML	-0.03	0.13	-0.06	-0.25	0.80					
	WML	0.02	0.03	0.10	0.52	0.61					
SH	(Constant)	0.15	0.07		2.15	0.04	0.74a	0.54	0.51	18.00	.000b
	Rm-rf	1.16	0.14	0.72	8.09	0.00*					
	SMB	0.11	0.11	0.12	0.97	0.34					
	HML	-0.09	0.10	-0.11	-0.83	0.41					
	WML	0.03	0.03	0.15	1.27	0.23					
SL	(Constant)	0.34	0.19		1.81	0.09	0.84b	0.70	0.61	8.20	.001c
	Rm-rf	0.96	0.25	0.61	3.84	0.00*					
	SMB	0.27	0.14	0.32	2.00	0.07					
	HML	-0.10	0.14	-0.13	-0.70	0.49					
	WML	-0.06	0.06	-0.16	-0.94	0.36					
BM	(Constant)	-0.00	0.08		-0.05	0.96	0.60a	0.36	0.30	6.10	.001b
	Rm-rf	0.71	0.16	0.55	4.54	0.00*					
	SMB	-0.04	0.12	-0.06	-0.38	0.71					
	HML	-0.09	0.11	-0.14	-0.77	0.44					
	WML	0.04	0.03	0.23	1.38	0.18					
BH	(Constant)	0.21	0.12		1.75	0.10	0.83a	0.69	0.60	7.70	.002b
	Rm-rf	1.22	0.30	0.63	4.01	0.00*					
	SMB	0.39	0.15	0.45	2.64	0.02*					
	HML	0.05	0.12	0.08	0.40	0.70					
	WML	-0.02	0.04	-0.09	-0.45	0.66					
BL	(Constant)	0.10	0.05		2.08	0.04	0.52a	0.27	0.22	5.40	.001b
	Rm-rf	0.45	0.12	0.44	3.90	0.00*					
	SMB	-0.15	0.08	-0.28	-1.98	0.05					
	HML	-0.06	0.07	-0.13	-0.78	0.44					
	WML	0.02	0.02	0.14	0.94	0.35					

a Dependent Variable: Return. b Predictors: (Constant), WML, Rm-rf, SMB, HML.
c Predictors: (Constant), WML, SMB, Rm-rf, HML.

Table 4. 11: Carhat Four Factor Model Regression Results for Size and Momentum Factors

		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	R	R^2	Adjusted R^2	F	Sig.
		B	**Std. Error**	**Beta**							
SW	(Constant)	0.085	0.057		1.489	0.143	0.57	0.320	0.267	6.01	0.000
	Rm-rf	0.419	0.103	0.484	4.080	0.000					
	SMB	0.135	0.085	0.240	1.590	0.118					
	HML	-0.008	0.083	-0.019	-0.010	0.921					
	WML	-0.010	0.023	-0.081	-0.450	0.652					
SL	(Constant)	0.010	0.065		0.156	0.877	0.58	0.343	0.298	7.57	.000
	Rm-rf	0.717	0.131	0.596	5.454	0.000					
	SMB	0.101	0.097	0.133	1.035	0.305					
	HML	-0.063	0.08	-0.118	-0.790	0.435					
	WML	0.019	0.022	0.114	0.869	0.388					
BW	(Constant)	0.010	0.059		0.162	0.872	0.50	0.249	0.199	5.05	0.000
	Rm-rf	0.521	0.133	0.435	3.919	0.000					
	SMB	0.094	0.092	0.138	1.024	0.310					
	HML	-0.085	0.084	-0.173	-1.010	0.315					
	WML	0.040	0.023	0.279	1.770	0.081					
BL	(Constant)	0.024	0.045		0.540	0.589	0.59	0.348	0.304	7.99	0.000
	Rm-rf	0.412	0.097	0.446	4.260	0.000					
	SMB	-0.107	0.065	-0.208	-1.640	0.107					
	HML	-0.113	0.064	-0.277	-1.770	0.081					
	WML	0.055	0.017	0.466	3.310	0.002					

Table 4.12 present descriptive statistics of M&A stock market returns in the long run; five years before and five years after the M&A. The result shows a mean return of 0.06 five years before M&A and an average return of 0.021 five years after the event. This shows that in the long run M&A do not improve shareholders' returns for listed firms in Eastern Africa securities market. Post M&A standard deviation was lower than pre M&A standard deviation indicating that M&A firms had low risk after the event.

Table 4. 12: Descriptive Statistics for the Pre M&A and Post M&A Long run Return

	Group Statistics				
	Type	N	Mean	Std. Deviation	Std. Error Mean
Return	Pre -M&A Return	125	0.060	0.428	0.038
	Post M&A Return	125	0.021	0.344	0.031

Further, we compared the pre M&A long run returns with post M&A long run returns to test if M&A announcements generate significant returns for the shareholders of firms listed in Eastern Africa securities markets. The results are presented in Table 4.13. The study hypothesized that M&A activities do not generate returns in the long run to the shareholders of firms listed in Eastern Africa securities markets; that is, LAR=0; against an alternative that stated that M&A activities generate returns to the firm's shareholders; that is LAR≠0. The test of equality means shows that there was no significant difference between pre M&A long run return and post M&A long run return. The t value was 0.8 with a P value of 0.43, this was insignificant. The study therefore failed to reject the null hypothesis and concluded that in the long run M&A do not generate significant returns to mergers and acquisition firms listed in Eastern Africa securities markets.

Table 4. 13: Significance Test for Pre M&A and Post M&A Long run Return

	Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
	F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Equal variances assumed	3.65	0.06	0.8	248	0.43	0.04	0.05	-0.06	0.14
Equal variances not assumed			0.8	237	0.43	0.04	0.05	-0.06	0.14

Finally, long run average abnormal return (LAAR) and long run cumulative average abnormal return (CLAAR) for M&A firms listed in Eastern Africa Securities markets were estimated for the window period -5, +5 Years. This is presented in Figure 4.4. The graph shows that on average, shareholders do not earn significant returns post M&A. This is evidenced by the long run average abnormal return (LAAR) graph which decreases from the fifth year to one year prior to M&A; post M&A returns do not improve either. However, three years after M&A, long run average abnormal returns (LAAR) start increasing though by a small percentage.
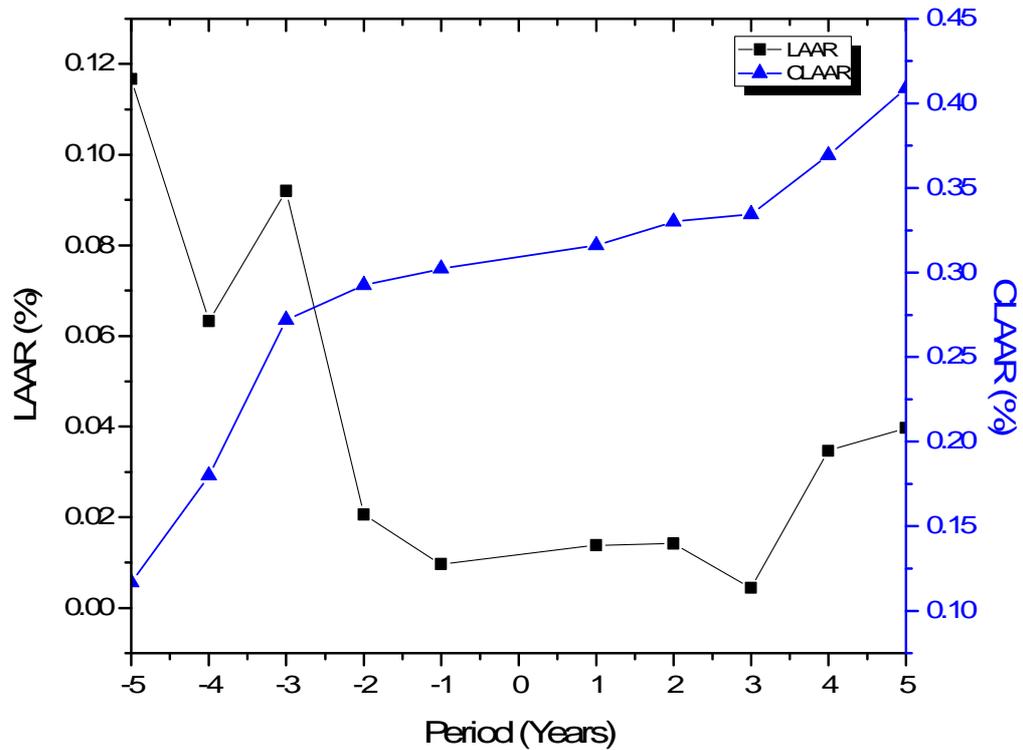
Figure 4. 4: Long run Average Abnormal Return (LAAR) and Cumulative Long run Average abnormal Return (CLAAR) for Listed Firms in Eastern Africa Securities Markets Involved in Mergers and Acquisitions for the Window Period [-5,+5] Years.

4.4 Descriptive Statistics for Short run Return Analysis

This section presents descriptive statistics of the collected data for the analysis of M&A stock market return in the short run and the drivers of the impact of M&A. Descriptive statistics employed included measures of central tendency such as mean and measures of dispersion such as minimum, maximum and standard deviation. In addition, measures of distributions (skewness and kurtosis) were also used. Table 4.14 shows the summary

statistics for the computed M&A short run return and secondary data collected for determinants of returns for the final sample of 30 firms over the period of analysis (1998- 2015).

The minimum M&A stock market return in the short run was -8% and a maximum of 11% considering $CAR[-1 + 1]$ that is, one day before and one day after the M&A. The average M&A stock market return in the short run was 2% while the dispersion was 5%. The data spread measured using both skewness and kurtosis coefficient showed the data was normally distributed. Tobin Q was used as the proxy for firm valuation. Moeller *et al.* (2005) noted that highly valued firms had a Tobin Q value of more than one (1). Our descriptive statistics shows that Tobin Q mean value for M&A firms in Eastern Africa securities markets was 0.58 signifying that in the short run firm valuation was average.

Firm size and free cash flow were large in the short run; this is depicted by their average values of 16.96 and 14.54 respectively. The average number of board members was nine (9) among the companies which had exercised M&A. Overall the board members fall within the range of optimal board size which is between seven (7) and nine (9) (Liu & Wang, 2013). It is important to manage board size in order to minimize the agency costs associated with a large board size. Moreover, the average number of board independence was 52% which depicts there were chances of benefiting from diversified pool of experts within the board. The average deal value was 11%. Although, both Tobin Q and FCF (free cash flow) had kurtosis greater than 1, their spread was almost normally distributed. Lastly, firm operating efficiency had an average of 0.06 and a standard deviation of 0.03.

Table 4. 14: Descriptive Analysis for Short Run Return

	Min	Max	Mean	Std. Deviation	Skewness		Kurtosis	
					Statistic	Std. Error	Statistic	Std. Error
CAR -1, +1	-0.08	0.11	0.02	0.05	-0.12	0.43	-0.79	0.83
Tobin Q	0.15	0.99	0.58	0.28	-0.03	0.43	-1.43	0.83
Firm size	15.24	19.67	16.96	1.09	0.42	0.43	0.05	0.83
FCF	13.32	15.97	14.64	0.86	0.30	0.43	-1.36	0.83
Deal value	0.01	0.29	0.11	0.09	0.79	0.43	-0.97	0.83
Board size	5.00	13.00	8.93	2.20	0.15	0.43	-0.51	0.83
Board independence	0.33	0.73	0.52	0.13	-0.16	0.43	-0.96	0.83
Operating efficiency	0.01	0.10	0.06	0.03	0.19	0.43	-0.83	0.83

Deal characteristics variables that were in nominal scale were analyzed using frequencies and percentages and summarized as shown in Table 4.15. These variables included method of payment, target status and relatedness. 66.7% of the companies which exercised M&A used cash as a method of payment in order to acquire the target company while the rest (about 33.3%) used share settlement.

The second deal characteristic in nominal scale was the target status. Of the total firms involved in M&A, 76.7% acquired private companies while 23.3% targeted public limited companies which show that private companies had good prospects for growth hence highly targeted for M&A. The last deal characteristic in nominal scale was relatedness.

This investigated whether M&A transaction was fully diversified or related. In the current study 73.3% of exercised M&A were related; that is the acquirer and target firm were in the same sector while 26.7% of M&A completed successfully were unrelated/diversified.

Table 4. 15: Descriptive Statistics for Deal Characteristics

Deal characteristics		Frequency	Percent
Method of Payment	Cash	20	66.7
	Share swap	10	33.3
	Total	**30**	**100**
Type of target firm	Private	23	76.7
	Public	7	23.3
	Total	**30**	**100**
Relatedness	Relatedness	22	73.3
	Diversification	8	26.7
	Total	**30**	**100**

It was observed that almost all listed firms involved in M&A in Eastern Africa Securities markets separated the positions of Chief Executive Officer and Chairman of the board of directors. 93.3% of the firms that exercised M&A in Eastern Africa had the two positions headed by different individuals. Further the study compared M&A stock market returns in the short run for different holding periods in relation to the deal characteristics in nominal scale.

Results in Table 4.16 shows that the companies which used cash payment had an average return of 2% in the event periods [-1, +1] and [-10, +10]; while [-20, +20] and [-5, +5] which had an average return of 4%. The highest standard deviation was achieved in the event period [-5, + 5], in addition a minimum of -15 and maximum of 65% was recorded in the same window period. Among those companies which paid using share swap, the highest return was registered within the period ranging between [-20, +20]. Within the period ranging between [-5, +5] the minimum return was -0.48 and the

maximum return was 0.17. Our findings in this sections show that share offers are associated with positive returns. This is consistent with Alexandridis *et al.* (2010) who found that equity offers are at least non-value destroying beyond competitive markets such as Canada, U.S and U.K.

Table 4. 16: Method of Payment Short Run Stock Return Comparative Analysis

Method/Payment	Return	Minimum	Maximum	Mean	Std. Deviation
Cash	CAR -1, +1	-0.06	0.09	0.02	0.05
	CAR -20, +20	-0.12	0.27	0.04	0.10
	CAR -10, +10	-0.11	0.13	0.02	0.06
	CAR -5, +5	-0.15	0.65	0.04	0.17
	CAR -2,+2	-0.09	0.10	0.01	0.05
Share swap	CAR -1, +1	-0.08	0.11	0.01	0.06
	CAR -20, +20	-0.05	0.85	0.10	0.27
	CAR -10, +10	-0.03	0.08	0.02	0.03
	CAR -5, +5	-0.48	0.17	0.00	0.17
	CAR -2,+2	-0.11	0.13	0.02	0.07

Results in Table 4.17 show the comparative analysis between M&A stock market return in the short run for various sub windows and target status. It was observed that acquisition of public targets resulted in an average loss of 0.01 while private target acquisition generated 3% positive return during the event period [-5, +5]. The average M&A stock market return two (2) days [-1, +1] window was 2% for private targets and 1% for public targets acquisitions.

Surprisingly, it was observed that in the entire event period [-20, +20], both private and public targets acquisitions had average returns of 6%, though returns differed more among the private companies. These results concur with the empirical evidence that shows acquisition of private firms generates positive returns (Draper & Payday, 2006). To some extent the study findings concurred with the findings of Alexandridis *et al.*

(2010) who documented that acquisition of public firms beyond competitive markets do not destroy value. This is supported by positive cumulative abnormal returns in three different holding periods; [1, +1], [-20, +20] and [-10, +10].

Table 4. 17: Target Status Short Run Stock Return Comparative Analysis

Target status	Return	Minimum	Maximum	Mean	Std. Deviation
Private	CAR -1, +1	-0.08	0.11	0.02	0.05
	CAR -20, +20	-0.12	0.85	0.06	0.19
	CAR -10, +10	-0.11	0.13	0.03	0.05
	CAR -5, +5	-0.48	0.65	0.03	0.19
	CAR -2,+2	-0.11	0.13	0.02	0.06
Public	CAR -1, +1	-0.06	0.08	0.01	0.06
	CAR -20, +20	-0.06	0.27	0.06	0.11
	CAR -10, +10	-0.04	0.10	0.02	0.05
	CAR -5, +5	-0.08	0.05	-0.01	0.05
	CAR -2,+2	-0.09	0.07	0.00	0.06

Finally, to examine benefits associated with portfolio diversification principle, the study performed a comparative analysis between M&A stock market return in the short run for various sub windows and diversification or relatedness. The statistics are presented in Table 4.18. On average it was observed that conglomerate M&A resulted in an average loss of 1% and 0% returns for the windows period [-2, +2] and [-1, +1] respectively, this is compared to an average return of 2% each for related acquisition during the same holding period. The highest deviation of 19% was recorded in the window period [-20, +20] within firms that acquired or merged with firms in the same sector or industry while diversified M&A transactions recorded a standard deviation of 24% in the event period

[-2, +2]. The findings suggest that M&A firms do not benefit from diversified acquisitions. These findings concur with documented empirical evidence (Megginson *et al*. 2003).

Table 4. 18: Relatedness Short Run Stock Return Comparative Analysis

Relatedness	Return	Minimum	Maximum	Mean	Std. Deviation
Focus	CAR -1, +1	-0.08	0.11	0.02	0.05
	CAR -20, +20	-0.12	0.85	0.06	0.19
	CAR -10, +10	-0.11	0.13	0.03	0.06
	CAR -5, +5	-0.48	0.17	0.01	0.13
	CAR -2,+2	-0.11	0.13	0.02	0.06
Diversification	CAR -1, +1	-0.06	0.07	0.00	0.04
	CAR -20, +20	-0.06	0.27	0.07	0.13
	CAR -10, +10	-0.02	0.03	0.01	0.02
	CAR -5, +5	-0.09	0.65	0.06	0.24
	CAR -2,+2	-0.09	0.06	-0.01	0.06

4.5 Diagnostic Tests

4.5.1 Normality Test for the Dependent Variable

Normality for the data was tested using both Kolmogorov Smirnova (K-S) test and Shapiro Wilk (1965). Both test the null hypothesis that the data is normally distributed against an alternative which assumes that the data is not normally distributed. Using the p-value, we ought to reject the null hypothesis if the p value is less than 0.05 and accept it if otherwise (Porter & Gujarat, 2009). Table 4.19 presents the numerical normality test. The results reveal that the normality test statistics computed for CAR (-1, +1) were insignificant. The p value when using the Kolmogorov Smirnova (K-S) test is 0.2 while Shapiro Wilk p value 0.67 both of which are greater than 0.05. This indicated that the

dependent variable was normally distributed (Shapiro & Wilk, 1965; Park, 2008; Shevlin & Miles, 2010).

Table 4. 19: KolmogorovSmirnova (K-S) and Shapiro Wilk Normality Test for the Dependent Variable

| | Kolmogorov-Smirnova | | | Shapiro-Wilk | | |
	Statistic	df	Sig.	Statistic	Df	Sig.
CAR -1, +1	0.093	30	0.200*	0.975	30	0.676

a. Lilliefors Significance Correction
*. This is a lower bound of the true significance.

4.5.2 Linearity Test

Graphic analysis was used to test for linearity between two bivariate variables. Results in Figure 4.5 show that there was a positive relationship between firm size and M&A stock market return in the short run. Moreover, 21.4% of the variations in M&A stock market return in the short run can be accounted for by firm size.
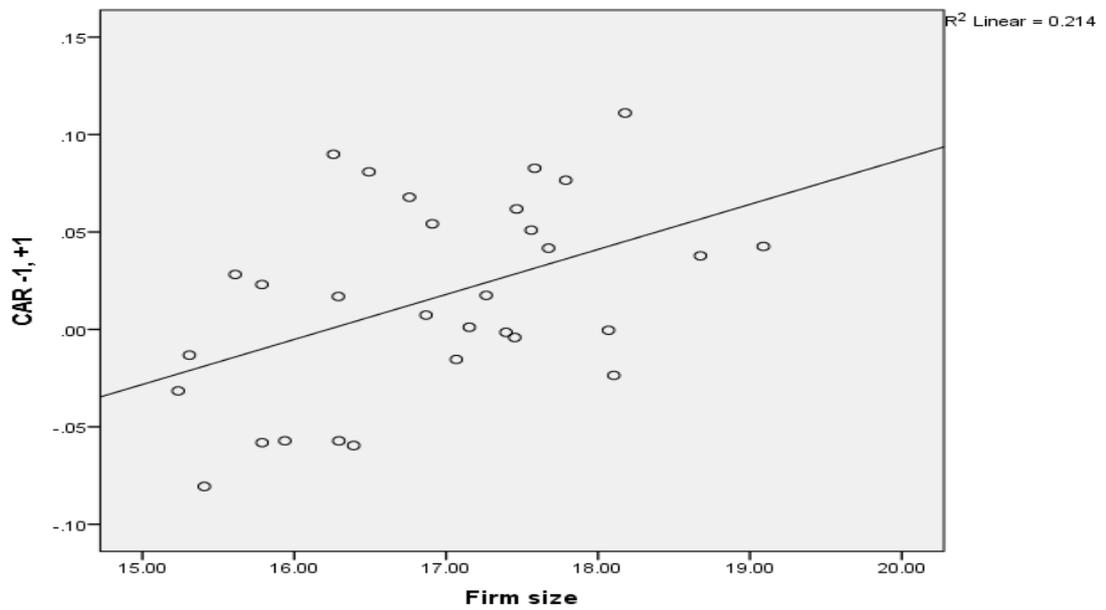
Figure4. 5: Relationship between Firm size and M&A Stock Market Return in the Short run

The pictorial presentation in figure 4.6 shows that there was a positive relationship between Tobin Q and M&A stock market return in the short run. Moreover, 18.9% of variations in M&A stock market return in the short run can be attributed to Tobin Q, our proxy for firm value.
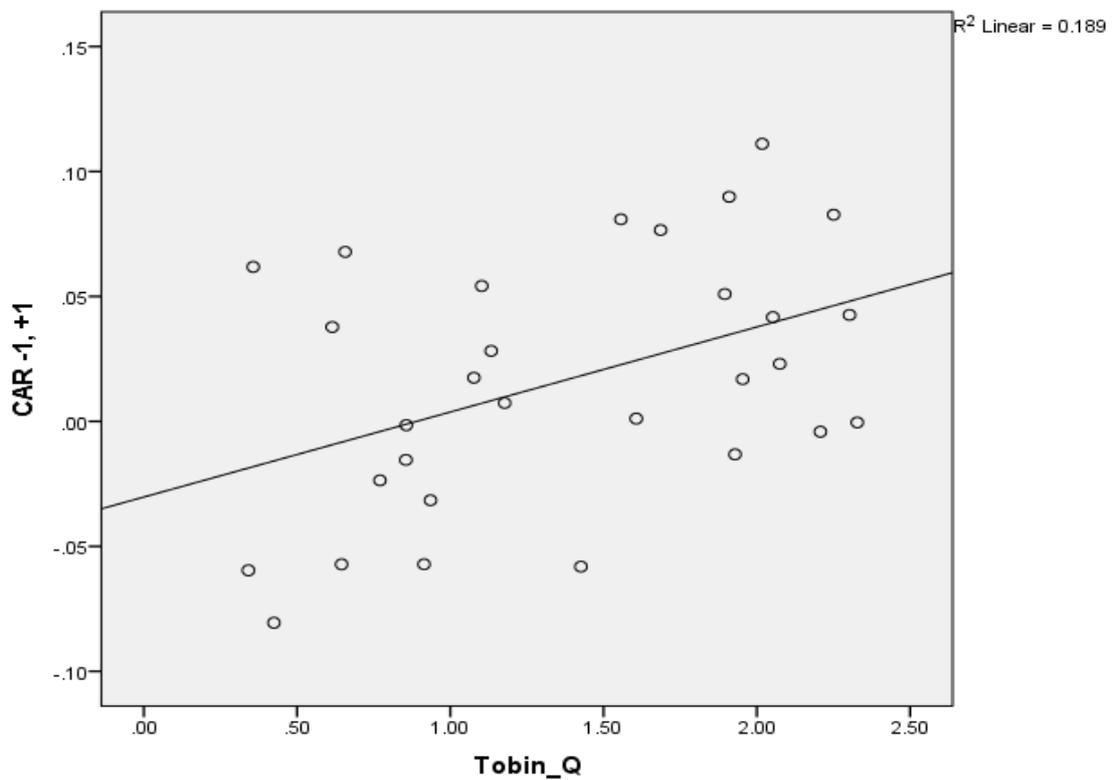
Figure 4. 6: Relationship between Tobin Q and M&A Stock Market Return in the Short run

Finally we test for linearity between free cash flow and M&A stock market return in the short run. The findings are presented in figure 4.7. The figure depicts an inverse relationship between free cash flow and M&A stock market return in the short run. Moreover, an R squared of 15% shows that FCF contributes 15% of the variations in M&A stock market return in the short run.
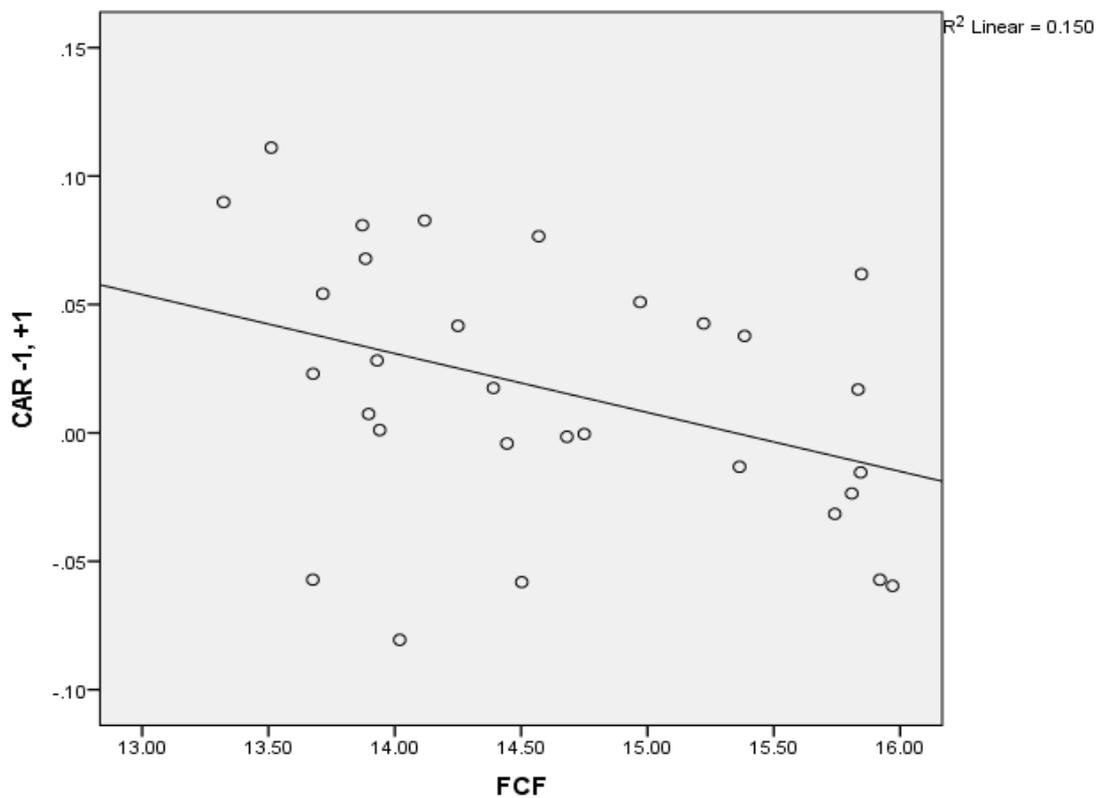
Figure 4. 7: Relationship between Free Cash Flow and M&A Stock Market Return in the Short run

The second objective of the study sought to examine the impact of deal characteristics on M&A stock market return in the short run. Deal characteristics were a mix of three qualitative variables: method of payment, target status and relatedness with one quantitative variable namely, deal value. Linearity test was done for the deal value variable. Figure 4.8 depicts a direct relationship between deal value and M&A stock market return in the short run. Moreover, 13.6% of the variation in M&A stock market return in the short run can be accounted for by deal value.
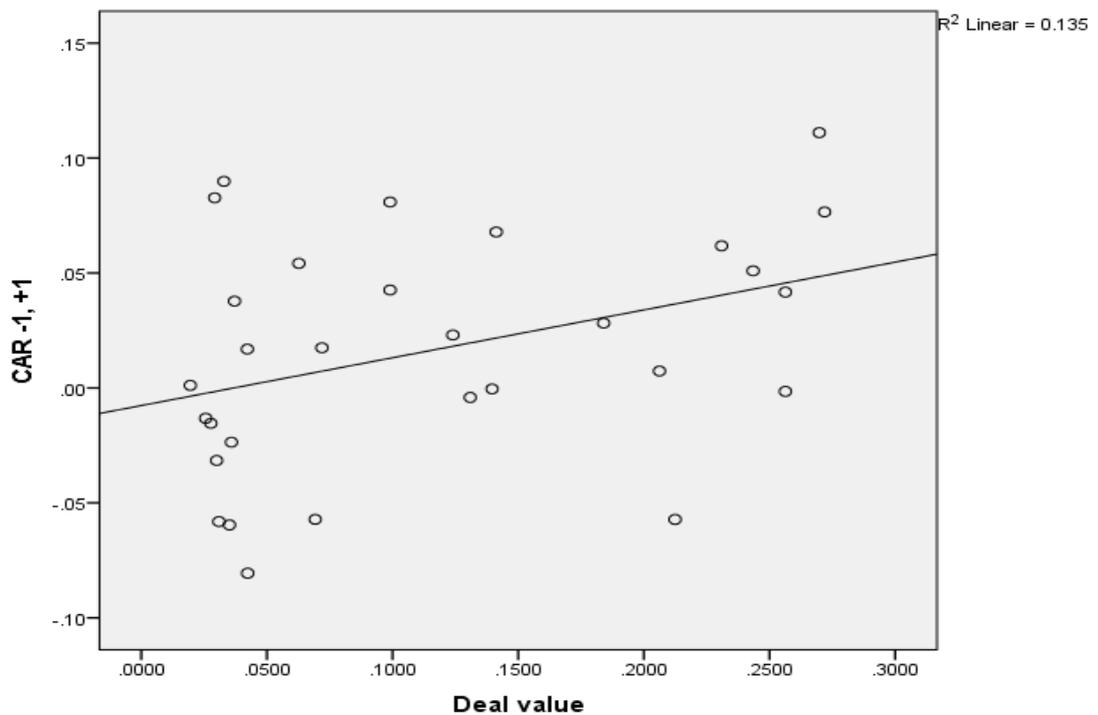
Figure 4. 8: Linearity the Test for Relationship between Deal Value and M&A Stock Market Return in the Short run

Third, linearity test was conducted between operating efficiency and M&A stock market return in the short run. The results are presented in Figure 4.9. The figure exhibits an inverse relationship between operating efficiency our proxy for management overconfidence and M&A stock market return in the short run. Moreover, 22.7% of the variation in M&A stock market return in the short run can be accounted for by operating efficiency**.**
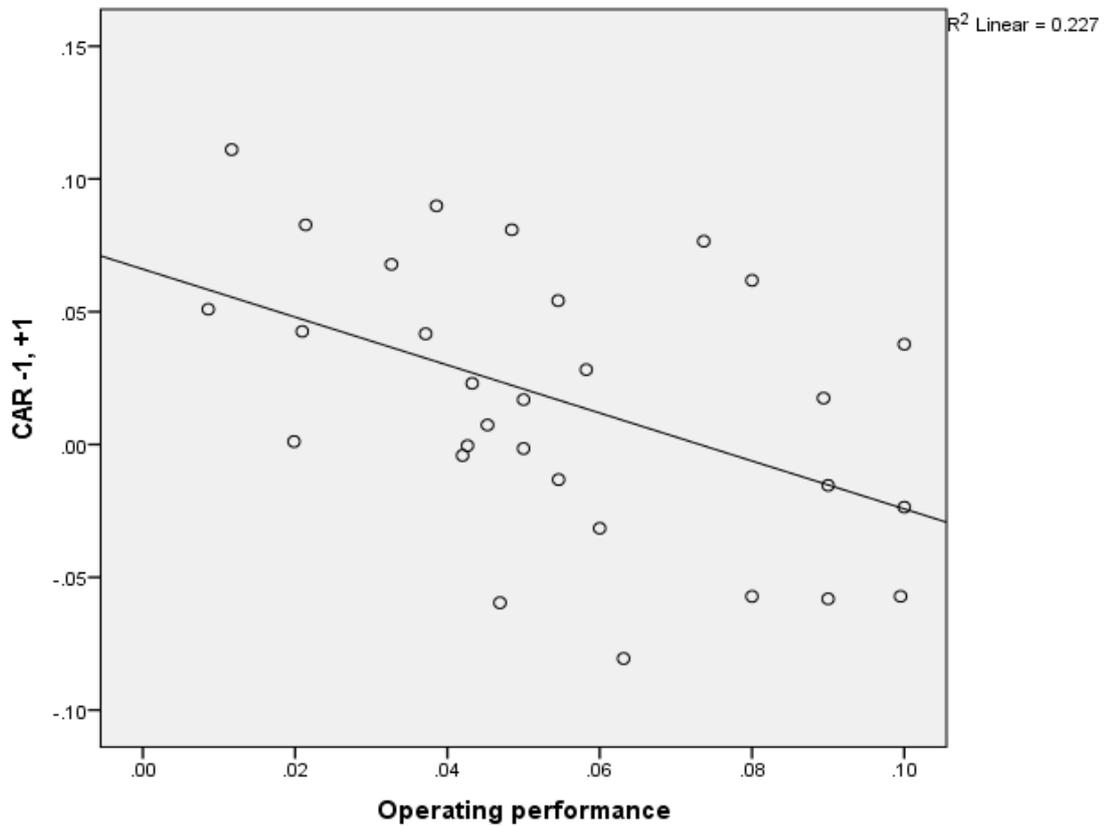
Figure 4. 9: Linearity Test between Operating Efficiency and M&A Stock Market Return in the Short run

The fourth objective of the study was to determine the impact of board characteristics on M&A stock market return in the short run. The variables under study included board size, CEO/ chairman duality and board independence. Linearity test was conducted on the two quantitative variables; that is, board size and board independence. The pictorial presentation in Figure 4.10 shows that there is a positive relationship between board size and M&A stock market return in the short run. Moreover, 22.6% of variation in M&A stock market return in the short run can be attributed to board size.
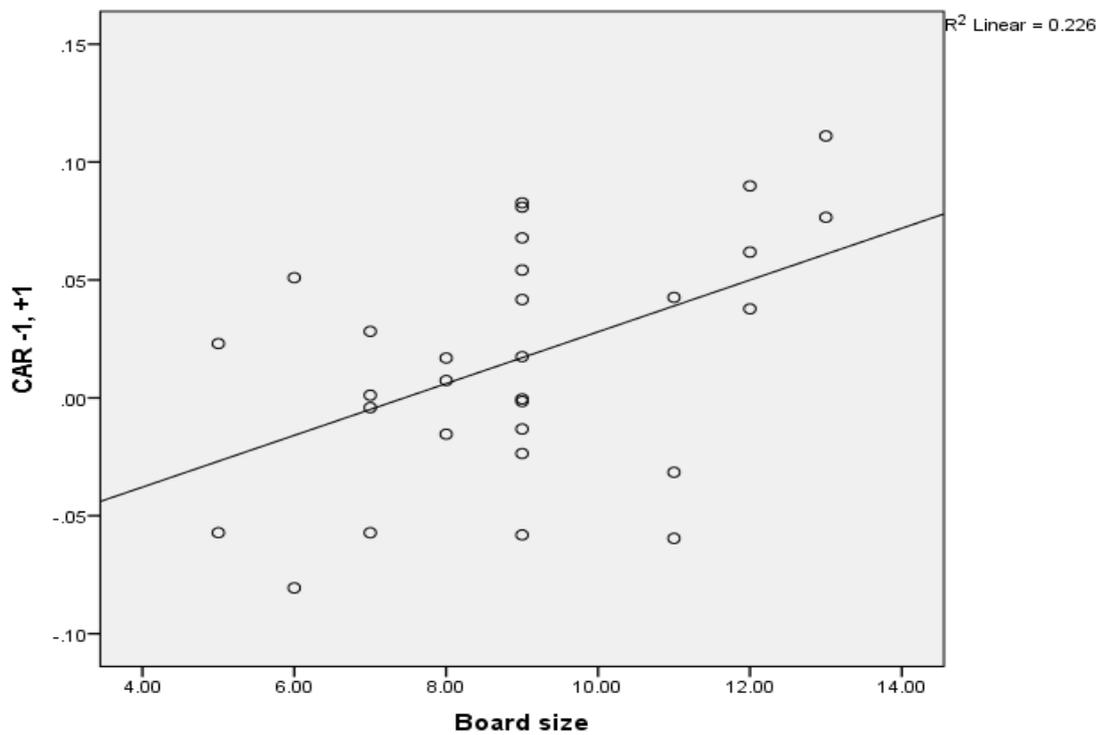
Figure 4. 10: Linearity Test between Board Size and M&A Stock Market Return in the Short run

Finally board independence was subjected to linearity test. The findings presented in Figure 4.11 indicate an inverse linear relationship between board independence and M&A stock market return in the short run. In addition, 6.3 % of variations in M&A stock market return in the short run can be attributed to board independence.
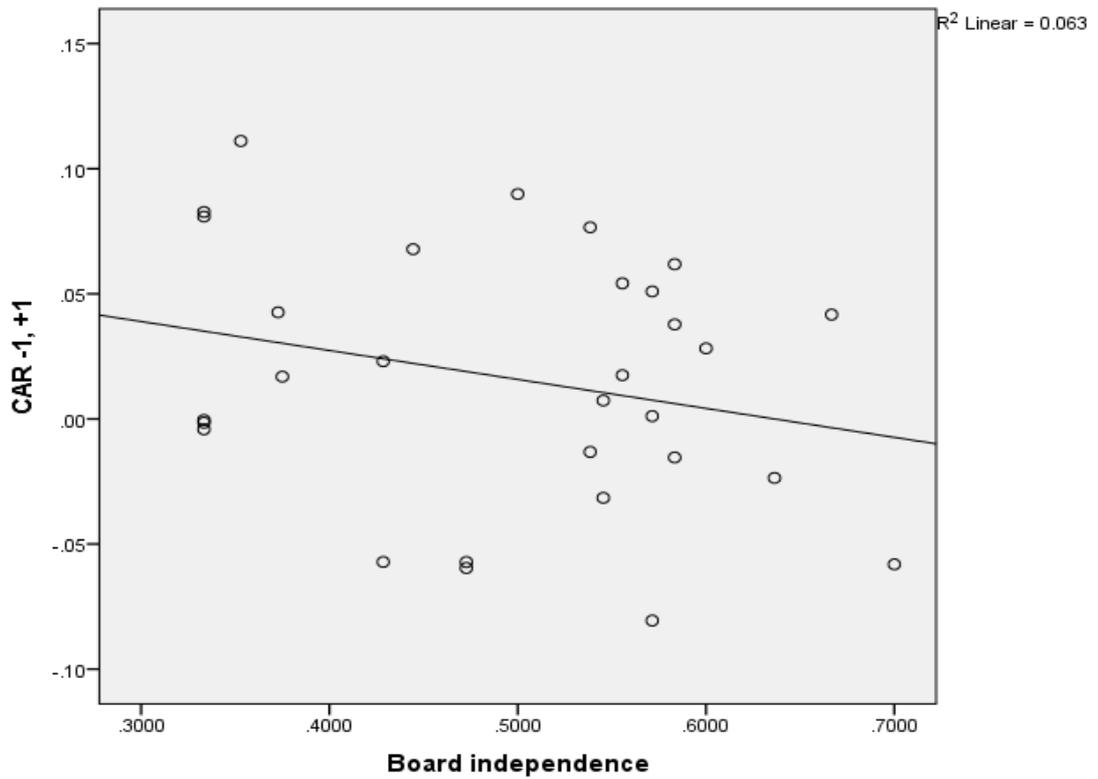
Figure 4. 11: Linearity Test between Board Independence and M&A Stock Market Return in the Short run.

4.5.3 Multi-collinearity Test

All independent variables are assumed not to be related with each other. In this study, variance inflation factor and tolerance limits were used to test for the presence of multi-collinearity. If the VIF is greater than 10 or tolerance is less than 0.1 then there is multi-collinearity (Gupta, 2007; Porter & Gujarat, 2009). The results are presented in Table 4.20. In the current study, the highest VIF was 2.74 for operating efficiency and 2.71 for the method of payment and the least was 1.28 for relatedness. Since none of the coefficients exceeded the acceptable threshold of 10 for VIF or were less than 0.1 for

tolerance as suggested by Hamilton (2006), it was concluded that there was no colinearity among the independent variables.

Table 4. 20: Multi-collinearity Test Using VIF and Tolerance for the Study Variables

Variable	VIF	1/VIF (Tolerance)
Operating efficiency	2.74	0.37
Method of payment	2.71	0.37
Duality	2.45	0.41
Tobin Q	2.41	0.42
Board independence	2.26	0.44
Deal value	1.68	0.59
Board size	1.65	0.61
Firm size	1.62	0.62
Target status	1.58	0.63
FCF	1.43	0.70
Relatedness	1.28	0.78

4.5.4 Heteroscedasticity Test

An important assumption in linear regression is that of constant error variance (homoscedasticity). Heteroscedasticity is a situation where the variance of the residual-term varies with changes in explanatory variables (Gujarat, 2009). Breusch-Pagan/ Cook-Weisberg test was used to test the null hypothesis of uniformity of variance of the error terms against the alternative that the error variances were not uniform. Using Breusch-Pagan test we ought to reject the null hypothesis that heteroskedasticity is not present if P-value is less than 0.05. Table 4.21 show results for heteroscedasticity test. Since the P-value was greater than 0.05, then there was not enough evidence to warrant

rejection of the null hypothesis. Thus we conclude that there was uniform variance among the error terms. Chi square value can be used to detect the presence of heteroscedasticity.

A Chi square value that is greater than 9.22 confirms problem of heteroscedasticity (Sazali, Hashida, Jegak & Raduan, 2009). In our study, chi square value was 0.03 confirming that heteroscedasticity was not a concern.

H0: Constant variance

Variables: Firm characteristics (FC), Deal characteristics (DC), Operating Efficiency

(OE) and Board characteristics (BC)

Table 4. 21: Breusch-Pagan Test for Heteroscedasticity

Ho	Variables	chi2(1)	Prob > chi2
Constant variance	FC,DC,OE & BC	0.03	0.860

4.5.5 Autocorrelation Test

Gujarat (2009) explains that autocorrelation occurs when the error terms are correlated with each other. To detect the presence of autocorrelation in our data Durbin Watson test statistics was used. The test assumes that the data has no autocorrelation if the DW coefficient ranges between 1.5 and 2.5 (Garson, 2012; Porter & Gujarat, 2009). Since none of the regression model coefficient was outside the recommended ranges then it was concluded that there was no autocorrelation. The results are presented in Table 4.22.

Table 4. 22: Durbin Watson Test Results

Independent Variable	DW (Durbin Watson)
Tobin Q	2.32
Firm size	1.65
FCF	2.02
Firm Characteristics	1.91
Deal value	2.45
Deal characteristics	2.14
Operating Efficiency	2.26
Board size	2.13
Board independence	2.19
Board characteristics	2.06

4.6 Correlation Analysis

Pearson's correlation analysis was carried out to examine the strength of the relationship between M&A stock market return in the short run CAR-1, +1] and independent variables. Table 4.23 presents the findings. Results of the study revealed that there was a positive and significant relationship between M&A stock market returns in the short run and Tobin Q (rho = 0.435, p value <0.05). This implies that a unit change in Tobin Q increases M&A stock market returns in the short run by 0.435 units. There was a positive and significant relationship between firm size and M&A stock market return in the short run (rho =0.463, p value <0.05) implying that a unit change in firm size increases M&A stock market returns in the short run by 0.463 units. There was a negative and significant relationship between FCF and M&A stock market returns in the short run, (rho = -0.387, p value <0.05). This implies that a unit change in FCF decreases M&A stock market returns in the short run by -0.387 units.

Regarding the deal characteristics, there was a negative and insignificant relationship between method of payment and M&A stock market returns in the short run. Secondly, there was a positive and significant relationship between deal value and M&A stock market returns in the short run (rho = 0.367, p value <0.05). This indicates that a unit change in deal value increase M&A stock market returns in the short run by 0.367 units. Thirdly there was a negative and insignificant relationship between target status and M&A stock market returns in the short run (rho = -0.109, p value >0.05). Finally, there was a negative and insignificant relationship between relatedness and M&A stock market returns in the short run (rho = -0.199, p value >0.05).

Board characteristics were operationalized to be measured with board size, duality and board independence. Correlation analysis revealed that there was a positive and significant relationship between board size and M&A stock market returns in the short run (rho = 0.475, p value <0.05). This implies that a unit change in board size increases M&A stock market returns in the short run by 0.475 units. Although, duality had a positive relationship with M&A stock market returns in the short run, it was not significant.

A negative and insignificant relationship between board independence and M&A stock market returns in the short run was reported. Correlation analysis revealed that there was a negative and significant relationship between operating efficiency and M&A stock market returns in the short run (rho = -0.48, p value <0.05). This implies that a unit change in operating efficiency decreases M&A stock market returns in the short run by 0.48 units. Since none of the independent variables had a correlation coefficient greater than 0.8, we concluded that none of variables was highly correlated with each other.

Table 4. 23: Correlation Analysis

	CAR [-1+1]	Tobinq	Firm Size	FCF	Payment Me	Deal Va	Target S	Relatednes	Board S	Duality	Board Ind	Operating E
CAR [-1 +1]	1											
Tobinq	0.435*	1										
	0.016											
Firmsize	0.463**	0.242	1									
	0.010	0.198										
FCF	-0.387*	-0.319	0.112	1								
	0.034	0.086	0.555									
Payment Me	-0.145	0.342	0.118	-0.258	1							
	0.445	0.064	0.535	0.168								
Deal Va	0.367*	0.103	0.315	-0.134	-0.013	1						
	0.046	0.589	0.090	0.480	0.945							
Target S	-0.109	-0.248	0.084	0.302	-0.390*	0.271	1					
	0.567	0.186	0.658	0.105	0.033	0.148						
Relatednes	-0.199	-0.147	-0.143	0.138	-0.426*	-0.063	0.202	1				
	0.292	0.437	0.45	0.467	0.019	0.740	0.284					
Board S	0.475**	-0.018	.422*	0.196	-0.338	0.110	0.309	0.088	1			
	0.008	0.925	0.020	0.298	0.067	0.562	0.097	0.642				
Duality	0.301	0.148	0.174	0.208	-.378*	0.256	0.147	0.161	0.301	1		
	0.106	0.435	0.359	0.27	0.039	0.172	0.437	0.395	0.106			
Board Ind	-0.252	-0.395*	-0.181	0.16	-.49**	-0.108	0.298	0.318	0.003	-0.190	1	
	0.180	0.031	0.337	0.398	0.006	0.572	0.109	0.087	0.987	0.321		
OperatingE	-0.480**	-0.610**	-0.170	0.360*	-0.290	-0.270	0.260	0.210	-0.005	0.138	0.444*	1
	0.008	0.000	0.379	0.049	0.125	0.171	0.189	0.266	0.978	0.467	0.014	

*(**)   significant   at   (10%)   5%

4.7 Regression Results for Objectives of the Study in the Short run

4.7.1 Impact of Firm Characteristics on Pre and Post M&A Stock Market Returns in the Short run

Model Summary for the Regression Analysis for the Impact of Firm Characteristics on Pre and Post M&A Stock Market Returns in the Short run

Table 4.24 presents the model summary for the impact of firm characteristics on pre and post M&A stock market returns in the short run. The findings show that the three variables; that is' firm size, Tobin Q and free cash flow together explain 79.6% of the changes in pre and post M&A stock market returns in the short run (CAR [-1, +1]) while the remaining percentage can be explained by other factors excluded in the model.

Table 4. 24: Model Summary for the Impact of Firm Characteristics on Pre and Post M&A Stock Market Returns in the Short run

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.892^a	0.796	0.770	0.060

Predictors: (Constant), Free cash flow, Tobin Q, Firm size

b. Dependent Variable: CAR -1+1

ANOVA Results for the Impact of Firm Characteristics on Pre and Post M&A Stock Market Returns in the Short run

Table 4.25 presents the analysis of variance results for the hypothesized relationship between firm characteristics; namely, firm size, firm value, free cash flow and pre and post M&A stock market returns in the short run. The results show that the regression

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relationship is significant; F statistic is 29.958 and is statistically significant since the p-value is 0.000. The results indicate that the overall model is significant in predicting pre and post M&A stock market returns in the short run in firms listed in Eastern Africa securities markets. This means that we rejected the null hypothesis and concluded that firm characteristics; that is, firm size, Tobin Q and free cash flow jointly have a significant impact on pre and post M&A stock market returns in the short run in firms listed in Eastern Africa securities markets.

Table 4. 25: ANOVA Results for the Impact of Firm Characteristics on Pre and Post M&A Stock Market Returns in the Short run

Model		Sum of Squares	Df	Mean Square	F	Sig.
	Regression	0.321	3	0.107	29.958	0.000[b]
1	Residual	0.082	23	0.004		
	Total	0.403	26			

a. Dependent Variable: CAR -1,+1
b. Predictors: (Constant), Free cash flow, Tobin Q, Firm size.

Coefficient for the Regression between Firm Characteristics and Pre and Post M&A Stock Market Returns in the Short run

Table 4.26 shows the regression coefficient for the impact of firm characteristics namely firm size, Tobin Q and free cash flow on pre and post M&A stock market returns in the short run. The findings show that coefficient for the constant is 0.046 which is significantly different from zero with a p value of 0.004 hence, it is significant. Further, the results show that the beta coefficients for firm size, Tobin Q and free cash flow are significant in explaining M&A stock market returns in the short run. There is a

significant positive relationship between firm size and M&A stock market returns in the short run (β_1= 0.059, t = 4.364, p-value = 0.000), Tobin Q and M&A stock market returns in the short run (β_2= 0.086, t = 7.919, p-value = 0.000).

However, there is an inverse relationship between free cash flow and M&A stock market returns in the short run, (β_3 = -0.079, t = -5.731, p-value = 0.000). The findings exhibited that pre and post M&A stock market returns in the short run is significantly explained by the three firm characteristics. Further, the findings imply that a unit increase in firm size and Tobin Q increases pre and post M&A stock market returns in the short run by 0.059 units and 0.086 units respectively while a unit increase in free cash flow decreases M&A stock market returns in the short run by 0.079 units.

Table 4. 26: Regression Coefficient Results for the Impact of Firm Characteristics on Pre and Post M&A Stock Market Returns in the Short run

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.046	0.014		3.195	0.004
	Firm size	0.059	0.014	0.507	4.364	0.000
	Tobin Q	0.086	0.011	0.752	7.919	0.000
	Free cash flow	-0.079	0.014	-0.669	-5.731	0.000

a.Dependent Variable: CAR -1+1

b.Predictors: firm size, firm value, and free cash flow

4.7.2 Impact of Deal Characteristics on Pre and Post M&A Stock Market Returns in the Short run

Model Summary for the Regression Analysis for the Impact of Deal Characteristics on Pre and Post M&A Stock Market Returns in the Short run

Table 4.27 shows the model summary for the impact of deal characteristics namely deal value, method of payment, target status and relatedness on pre and post M&A stock market returns in the short run. The results show that 63.4% of the variation in M&A stock market returns in the short run can be accounted for by deal characteristics namely deal value, method of payment, target status and relatedness jointly while the remaining percentage can be explained for by other factors excluded in the model.

Table 4. 27: Model Summary for the Impact of Deal Characteristics on Pre and Post M&A Stock Market Returns in the Short run

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.797a	0.634	0.561	0.03279	2.14

a. Predictors: (Constant), Method of payment, Target status, Deal value, Relatedness.
b. Dependent Variable: CAR -1, +1

ANOVA Results for Deal Characteristics and Pre and Post M&A Stock Market Returns in the Short run

Table 4.28 presents the analysis of variance results for the hypothesized relationship between deal characteristics and pre and post M&A stock market returns in the short run. The results show that the regression relationship is significant; F statistic of 8.677 is statistically significant at 5%, the p-value is 0.000, indicating that the model was a good fit. In addition, the results indicate that the overall model is significant in predicting

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M&A stock market returns in the short run in firms listed in Eastern Africa securities market. This means that the null hypothesis was rejected; hence the conclusion was made that deal characteristics; that is, method of payment, target status, deal value and relatedness jointly had a significant impact on M&A stock market returns in the short run return in firms listed in Eastern Africa securities markets.

Table 4. 28: ANOVA for the Impact of Deal Characteristics on Pre and Post M&A Stock Market Returns in the Short run

Model		Sum of Squares	Df	Mean Square	F	Sig.
	Regression	0.037	4	0.009	8.677	0.000[b]
1	Residual	0.022	20	0.001		
	Total	0.059	24			

a. Dependent Variable: CAR -1, +1
b. Predictors: (Constant), Method of payment, Target status, Deal value, Relatedness

Coefficient for the Regression between Deal Characteristics and Pre and Post M&A Stock Market Returns in the Short run

Table 4.29 presents regression model coefficients for the combined impact of deal characteristics; that is, deal value, method of payment, target status and relatedness on pre and post M&A stock market return in the short run. The findings show that coefficient for the constant $\propto$ was 0.002 and it is statistically insignificant; p-value equals to 0.903 which is greater than 0.05. Further the result shows that the beta coefficients for method of payment, target status and deal value were significant in explaining M&A stock market returns in the short run. However, relatedness was insignificant in explaining M&A stock market returns in the short run in listed firms in the Eastern Africa securities markets.

Since there were two modes of payment, a dummy variable was created where cash was denoted as 0 while share swap was 1. The findings of the study showed that $CAR - 1, +1 = 0.02 - 0.041\ (X)$ where x represents method of payment with a qualitative attribute; one (1) when payment was made through share offer and zero (0) for cash offer. There was a negative and significant relationship between share swap and CAR (β = -0.039, p-value >0.05). Moreover, there was a positive and significant relationship between cash payment and CAR (β = 0.02, p-value >0.05). Further, a beta value of -0.041 implies that a unit increase in method of payment decreases M&A stock market returns in the short run by -0.041 units.

Secondly, there was a positive and highly significant relationship between deal value and M&A stock market returns in the short run (β = 0.425, p-value <0.05). Moreover, a beta value of 0.425 implies that a unit change in deal value increased M&A stock market returns in the short run by 0.0.425 units. Thirdly, target status was either private or public; a dummy variable was created such that zero (0) denoted private target and one (1) denoted public target firm acquired. The results of the study showed that $CAR - 1, +1 = 0.02 - 0.044\ (X)$ where x represents target status with a qualitative attribute; one (1) when a listed firm acquired a listed (public) firm and zero (0) when a listed firm acquired an unlisted (private) firm.

Results of the study revealed that there was negative and significant impact of public target and M&A stock market returns in the short run (β = -0.042, p-value <0.05). Further, the beta value of -0.042 implies that a unit change in public company target decreased the company M&A stock market returns in the short run by 0.042 units. In contrast, there was a positive and significant impact between private company target company and CAR (β = 0.02, p-value <0.05). Further, the beta value of 0.02 implies that

a unit change in private company target increased M&A stock market returns in the short run by 0.02 units.

Finally, to study impact of diversification, a dummy variable was created where a diversifying transaction was denoted as one (1) while a related transaction was denoted as zero (0). The results of the study showed that $\text{CAR} - 1, +1 = 0.02 - 0.022\ (X)$ where x represents relatedness or diversification with a qualitative attribute; one (1) when a firm acquired another firm that operated outside its core business (diversification) and zero (0) when a listed firm acquired a firm that is within its core business of operation (relatedness). The results showed that a diversifying transaction had a negative insignificant impact on M&A stock market returns in the short run (β= -0.020, p value >0.05). Relatedness had a positive and insignificant impact on M&A stock market returns, (β= 0.02, p-value =0.205). In summary, the study findings indicate that M&A stock market returns in the short run is significantly explained by the method of payment, target status, and deal value; however, diversifying/relatedness is insignificant in explaining M&A stock market returns in the short run.

Table 4. 29: Regression Coefficients for the Impact of Deal Characteristics on Pre and Post M&A Stock Market Returns in the Short run

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	0.002	0.015		0.123	0.903		
	Method /Payment	-0.041	0.017	-0.397	-2.436	0.024	0.72	1.39
	Target status	-0.044	0.017	-0.384	-2.530	0.020	0.90	1.10
	Deal value	0.425	0.081	0.743	5.248	0.000	0.77	1.29
	Relatedness	-0.022	0.016	-0.200	-1.310	0.205	0.81	1.24

a. Dependent Variable: CAR -1, +1

4.7.3 Impact of Operating efficiency on Pre and Post M&A Stock Market Returns in the Short run

Model Summary for the Regression Analysis between Operating Efficiency and Pre and Post M&A Stock Market Returns in the Short run

The findings of the analysis are presented in Table 4.30 below. The results indicate that 23% of the variation on M&A stock market returns in the short run can be attributed to operating efficiency while the remaining percentage can be explained by other factors excluded from the model.

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Table 4. 30: Model Summary for the Impact of Operating Efficiency on Pre and Post M&A Stock Market Returns in the Short run

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.476a	0.23	0.20	0.05	2.26

a. Predictors: (Constant), Operating efficiency.
b. Dependent Variable: CAR -1, +1

ANOVA Results for Operating Performance and Pre and Post M&A Stock Market Returns in the Short run

Table 4.31 shows analysis of variance results for the impact of operating efficiency on M&A stock market returns in the short run. Regression analysis shows that the linear relationship between operating efficiency and M&A stock market returns in the short run has an F value of 8.207 which is statistically significant; p-value equals to 0.008 which is less than 0.05. This showed that the overall model is significant in predicting the M&A stock market returns in the short run of listed firms in Eastern Africa securities markets. Based on the study findings, the null hypothesis was rejected. Therefore, it was concluded that operating efficiency of the firm – the proxy for management overconfidence had a significant impact on M&A stock market returns in the short run of listed firms in Eastern Africa securities markets.

Table 4. 31: ANOVA for the Impact of Operating Efficiency on Pre and Post M&A Stock Market Returns in the Short run

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	0.017	1	0.017	8.207	0.008a
	Residual	0.058	28	0.002		
	Total	0.075	29			

a. Predictors: (Constant), Operating Efficiency
b. Dependent Variable: CAR -1, +1

Coefficient for the Regression between Operating Efficiency and Pre and Post M&A Stock Market Returns in the Short run

Table 4.32 present regression model coefficients results for the impact of operating efficiency on pre and post M&A stock market returns in the short run. The findings show that coefficient for the constant $\propto$ was 0.07 and it is significant; p-value = 0.000. The coefficient β = -0.90, is significantly different from zero with a p-value of 0.001 which is less than 0.05, hence significant. The t-values for the constant and operating efficiency are 3.43 and -2.87 respectively. The findings revealed that operating efficiency had a significant impact on M&A stock market returns in the short run of listed firms in Eastern Africa securities markets. Further, a beta value of negative 0.90 implies that a unit increase in operating efficiency decreases M&A stock market returns in the short run by 0.90 units.

Table 4. 32: Regression Coefficient for the Impact of Operating Efficiency on Pre and Post M&A Stock Market Returns in the Short run

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	**Std. Error**	**Beta**	**T**	**Sig.**
1	(Constant)	0.07	0.02		3.43	0.00
	Operating Performance	-0.90	0.32	-0.48	-2.87	0.01

a. Dependent Variable: CAR -1, +1

4.7.4 Impact of Board Characteristics on Pre and Post M&A Stock Market Returns in the Short run

Model Summary for the Regression Analysis between Board Characteristics and Pre and Post M&A Stock Market Returns in the Short run

Table 4.33 presents a model summary for the impact of board characteristics; that is, board size, board independence and CEO duality on pre and post M&A stock market returns in the short run. The results show that 30% of the variation in M&A stock market returns can be jointly accounted for by board size, CEO duality and board independence while the remaining percentage can be explained by other factors excluded from the model.

Table 4. 33: Model Summary for the Impact of Board Characteristics on Pre and Post M&A Stock Market Returns in the Short run

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.551 a	0.30	0.22	0.04	2.06

a. Predictors: (Constant), Board independence, Board size, Duality
b. Dependent Variable: CAR -1, +1

ANOVA Results for Board Characteristics and Pre and Post M&A Stock Market Returns in the Short run

Table 4.34 presents analysis of variance results for the hypothesized relationship between board characteristics and pre and post M&A stock market returns in the short run. Regression analysis shows that the linear relationship among the three variables namely board size, board independence, CEO/Chairman duality with M&A stock market returns in the short run have an F-value of 3.78 which is statistically significant since the p value equals 0.022. Thus at least one of the beta coefficients is not zero. This shows that the overall model is significant in predicting M&A stock market returns in the short run of listed firms in Eastern Africa securities markets. Thus, the null hypothesis was rejected and the conclusion was made that board characteristics: board size, CEO /Chairman duality and board independence jointly had a significant impact on M&A stock market return in the short run of listed firms in Eastern Africa securities markets.

Table 4. 34: ANOVA Results for the Impact of Board Characteristics on Pre and Post M&A Stock Market Returns in the Short run

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	0.023	3	0.008	3.784	.022a
	Residual	0.052	26	0.002		
	Total	0.075	29			

a. Predictors: (Constant), Board independence, Board size, Duality
b. Dependent Variable: CAR -1, +1

Coefficient for the Regression between Board Characteristics and M&As Stock Market Return

The results are presented in Table 4.35. The findings show that coefficient for the constant $\propto$ was -0.045 and insignificant at 5%; p-value = 0.448. Further, the results shows that of the three board characteristics it is only board size that was significant, the others; duality and board independence were insignificant. Board size coefficient that was significant; $\beta = 0.010$ with a p-value of 0.017. Further, the beta value of 0.01 implies that a unit change in board size increases M&A stock market returns in the short run by 0.01 units.

Secondly, a positive though insignificant relationship was reported between CEO duality and M&A stock market returns in the short run was found ($\beta = 0.025$, p-value =0.48) the p-value was greater than 0.05. Lastly, the findings indicate that board independence had an insignificant impact on M&A stock markets returns in the short run. This is evidenced by the beta coefficient value of -0.106 with a p-value of 0.181. The findings

of the study exhibited that M&A stock market returns in the short run were significantly explained by board size of the firm.

Table 4. 35: Regression Coefficient for the Impact of Board Characteristics on Pre and Post M&A Stock Market Returns in the Short run

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	**Std. Error**	**Beta**	**T**	**Sig.**
1	(Constant)	-0.045	0.059		-0.770	0.448
	Board size	0.010	0.004	0.438	2.550	0.017
	CEO Duality	0.025	0.035	0.126	0.717	0.480
	Board independence	-0.106	0.077	-0.229	-1.375	0.181

Dependent Variable: CAR -1, +1

4.7.5 Overall Results for the Drivers of Impact of M&A on Stock Market Returns in the Short run

The general objective of the study was to determine the drivers of impact of M&A on stock market returns in the short run. These drivers included firm characteristics, deal characteristics, operating performance and board characteristics. The joint impact of drivers of M&A on stock market returns in the short run and the statistical significance of the variables were analyzed using multiple regression analysis.

Model Summary of the Regression Analysis of Drivers of the Impact of M&A on Stock Market Returns in the Short run

Table 4.36 below presents overall model summary for the joint impact of firm characteristics, deal characteristics, operating performance and board characteristics on

pre and post M&A stock market returns in the short run. The results show that 79.4% of the variations in M&A stock market returns can be jointly accounted for by all the performance drivers under study while the remaining percentage 20.6% can be explained by other factors excluded from the model.

Table 4. 36: Model Summary for the Joint Impact of Drivers of Pre and Post M&A Stock Market Returns in the Short run

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.891[a]	0.794	0.668	0.029	1.636

a. Predictors: (Constant), firm size, Tobin Q, FCF, Deal value, Method of payment, Target status, Relatedness , Operating efficiency, Board size, Duality, Board independence.
b. Dependent Variable: CAR -1, +1

ANOVA Results for the Joint Impact of Drivers of Pre and Post M&A Stock Market Returns in the Short run

Table 4.37 presents analysis of variance results for the hypothesized relationship between drivers of impact of M&A and M&A stock market returns in the short run. Regression analysis shows that the linear relationship between drivers of impact of M&A and M&A stock market returns has an F-value of 6.299 which is significant since the p value is 0.000. This shows that the overall model is significant in predicting M&A stock market returns in the short run of listed firms in Eastern Africa securities markets. As a result, the null hypothesis was rejected; hence the conclusion was made that firm characteristics, deal characteristics, operating efficiency and board characteristics had a

joint significant impact on pre and post M&A stock market returns in the short run of listed firms in Eastern Africa securities markets.

Table 4. 37: ANOVA Results for the Joint Impact of Drivers of Pre and Post M&A Stock Market Returns in the Short run

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	0.059	11	0.005	6.299	0.000[b]
	Residual	0.015	18	0.001		
	Total	0.075	29			

a. Dependent Variable: CAR -1, +1
b. Predictors: (Constant), firm size, Tobin Q, FCF, Deal value, Method of payment, target status, Relatedness, Operating efficiency, board size, Duality , Board independence

Regression Coefficients for the joint Impact of Drivers of Pre and Post M&A Stock Market Returns in the Short run

The regression model coefficients for the overall impact of drivers of pre and post M&A stock market returns are presented in Table 4.38. The findings show that coefficient for the constant $\propto$ was -0.049 and it is insignificant since its p-value is greater than 0.05. Further the findings shows that firm size, Tobin Q and board size coefficients are positive and have a significant impact on M&A stock returns in the short run. The coefficients for firm size, Tobin Q and board size are 0.021, 0.011 and 0.014 respectively, hence different from zero. This means that a unit increases in firm size, Tobin Q and board size increases M&A stock market returns by 0.021, 0.011 and 0.014 units respectively.

On the other hand, method of payment, target status and operating performance had a negative and significant impact on M&A stock market returns. This is because their p-values were less than 0.05. The coefficients for method of payment, target status and operating performance were 0.038, 0.036 and 0.051 respectively. These beta values of method of payment, target status and operating performance imply that a unit increase in the respective variables decreases M&A stock market returns by 0.038, 0.036 and 0.051 units respectively. Interestingly, in the overall model, deal value was significant at 10%, the p value was 0.087.

The other variables namely; free cash flow, relatedness/ diversification, CEO/Chairman duality and board independence were insignificant. The variance inflation statistics for the independent variables show that collinearity among the independent variables was not a concern. The p-values for firm size, Tobin Q, board size, method of payment, target status and operating efficiency were 0.023, 0.037, 0.001, 0.03, 0.042 and 0.015 respectively. Therefore at 95% confidence interval, the null hypothesis that β (beta) = 0 was rejected and it was concluded that these variables had a significant impact of M&A stock market returns in the short run. In addition, the deal value had a p-value of 0.0807 in the overall model, thus at 95% confidence interval, we accepted the null hypothesis and conclude that deal value had an insignificant impact on M&A stock market returns in the short run. Finally, in the overall model the p-values for free cash flow relatedness/ diversification, CEO/Chairman duality and board independence were greater than the set significant value of 5%. We therefore failed to reject the null hypothesis that β (beta) = 0 and concluded that in the overall model free cash flow, relatedness, duality and board independence had no significant impact on M&A stock market returns.

Table 4. 38: Regression Coefficient Results for the joint Impact of Drivers of Pre and Post M&A Stock Market Returns in the Short run

Model	Coefficients[a]						
	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	0.049	0.038		1.277	0.218		
Firm size	0.021**	0.008	-0.410	2.623	0.023	0.423	2.363
Free cash flow	0.011	0.009	0.215	1.225	0.237	0.372	2.688
Tobin Q	0.019**	0.008	0.376	2.258	0.037	0.413	2.420
Deal value	0.134*	0.074	0.236	1.809	0.087	0.674	1.484
Target status	-0.036**	0.017	-0.309	-2.194	0.042	0.576	1.736
Relatedness	-0.018	0.014	-0.162	-1.298	0.211	0.733	1.364
Method/Payment	-0.038**	0.016	-0.355	-2.353	0.030	0.503	1.986
Operating E	-0.051**	0.0230	-0.269	-2.215	0.015	0.357	2.805
Board size	0.014***	0.003	0.604	4.219	0.001	0.559	1.789
Duality	0.009	0.028	0.046	0.333	0.743	0.589	1.698
Board independence	-0.006	0.004	-0.209	-1.402	0.178	0.516	1.937

a. Dependent Variable: CAR -1, +1

4.8 Hypotheses Testing in the Short run Analysis

Gujarati (2009) defined hypothesis testing as a process through which the researcher infers the results of sample data on the larger population based on a presupposition made prior to commencement of research. In the short run analysis, hypothesis testing was done by determining the statistical significance of explanatory variables' coefficients. This was done by using two tailed t-test statistic and the corresponding *p*-values at 1%, 5% and 10% levels. In all the four null hypotheses, the decision rule was that if the beta

coefficient of the explanatory variable was different from zero and the corresponding p value observed was less than the set significance level; the null hypothesis was to be rejected and otherwise not to reject the null hypothesis.

4.8. 1 Firm Characteristics and Pre and Post M&A Stock Market Returns in the Short run

$H0_1$: There is no significant impact of firm characteristics on pre and post M&A stock market returns of listed firms in Eastern Africa securities markets.

The analysis in Table 4.26 shows that firm characteristics namely firm size, Tobin Q and free cash flow had a significant impact on pre and post M&A stock market returns in the short run in listed firms in Eastern Africa securities market. The results show that firm size had a significant positive impact on M&A stock market returns in the short run (β_1 = 0.059, t = 4.364, p-value = 0.000), Tobin Q and M&A stock market returns in the short run (β_2= 0.086, t = 7.919, p-value = 0.000). However, there is an inverse relationship between free cash flow and M&A stock market returns in the short run, (β_3 = -0.079, t = -5.731, p-value = 0.000). Therefore, the null hypothesis was rejected and a conclusion made that the three firm characteristics; firm size, firm value and free cash flow had a significant impact on pre and post M&A stock market returns in the short run.

The study findings for the impact of size on M&A stock market returns in the short run disagree with the existing empirical literature. Several studies have reported a significant negative association between firm size and M&A stock market returns supporting managerialism / hubris hypothesis (Moeller, Schingemann & Stulz, 2005; Masulis, Wang & Xie, 2007; Bouzgarrou & Louhichi, 2014; Gulobov, Yawson & Zhang, 2015).

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On the contrary, our results indicate a positive impact of firm size on M&A stock market returns in the short run. We note that these studies have been conducted in the developed financial markets and therefore present new evidence that management in M&A firms in Eastern Africa securities markets, which is in the category of emerging markets, make mergers and acquisitions decisions with an aim of maximizing shareholders' returns and that excessive overconfidence or selfish reasons to acquisition do not influence their acquisition decisions. Our results therefore neither support existing empirical literature nor the management overconfidence or the managerialism hypothesis.

The results show that Tobin Q is positively and significantly correlated with M&A stock market returns in the short run. In the short run Tobin Q, the proxy for firm value, is average and therefore a positive relationship is postulated. Thus, the findings confirm our expectation and are moreover-, in tandem with the empirical findings of other studies (Delong, 2003; Jensen, 2003; Moeller *et al.,* 2005). Similar to other studies, the findings support overvaluation hypothesis. Finally, the results for the impact of free cash flow on M&A stock market returns in the short run indicated a significant negative association.

The findings concur with the research findings of Harford (1999), Moeller *et al.* (2004). However, study findings contradicted with the research findings of Fu, Lin and Officer (2013), Bouzgarrou and Louhichi (2014) and Gulobov *et al.* (2015) who found an insignificant inverse relationship. Moreover, the results of the study disagree with the findings of Masulis *et al.* (2007) who documented an insignificant positive relationship, who, while defending their findings urged that presence of free cash flow indicated better recent performance.

It is important to note that in the overall model, the significant impact of free cash flow disappears; thus, the study results confirm the recent findings of Fu, Lin and Officer (2013), Bouzgarrou and Louhichi (2014) and Gulobov *et al.* (2015) who also documented an insignificant inverse relationship in the overall model. We find evidence in support of free cash flow hypothesis advanced by Jensen (1986) who postulates that free cash flow is inversely related to M&A stock market returns and managers with unused large free cash flow at their disposal undertake low or even value-destroying M&A transactions.

4.8.2 Deal Characteristics and Pre and Post M&A Stock Market Returns in the short run

$H0_2$: **There is no significant impact of deal characteristics on pre and post M&A stock market returns of listed firms in Eastern Africa securities markets.**

The results in Table 4.29 show that deal characteristics namely method of payment, target status and deal value had a significant impact on M&A stock market returns in the short run. However, relatedness was insignificant. The results indicated that share swap had a negative and significant impact on M&A stock market returns in the short run (β = -0.039, p-value >0.05) while on the hand the firm that used cash as a method of payment reported a significant positive impact (β = 0.02, p-value >0.05). A positive and significant impact was reported between deal value and M&A stock market returns in the short run (β = 0.425, p-value <0.05).

Further the results showed a negative and significant impact between public acquisitions and M&A stock market returns in the short run (β = -0.042, p-value <0.05) while interaction between private target and M&A stock market returns in the short run was positive and significant (β = 0.02, p-value <0.05). The study findings led to the rejection

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of the null hypothesis and conclusion was made that deal characteristics namely method of payment, deal value and target status had a significant impact on pre and post M&A stock market returns of listed firms in Eastern Africa securities markets.

The coefficient for relatedness/ diversifying transaction was -0.022 with a p-value of 0.205 which was greater than 0.205 implying that related or diversified transaction did not have a significant impact on M&A stock market return in the short run. Therefore the null hypothesis that relatedness/ diversification significantly explained M&A stock market returns could not be rejected. On average, results for impact of deal characteristics on M&A stock market returns in the short run are in agreement with theories and existing empirical studies. Existing empirical evidence shows that deal value has a positive impact on M&A stock market returns in the short run in the individual and the overall analysis (Jensen & Ruback, 1983; Fuller *et al,*. 2002; Moeller *et al.,* 2004; Isa & Lee, 2011). Therefore, study findings are consistent with existing studies. With regard to the method of payment, it was found out that the findings of the study were in agreement with the existing hypothesis and documented empirical literature.

Overall research evidence shows that on average M&A transactions that use cash as a method of payment yield positive returns while those that exchange their stock experience losses (Martynova & Renneboog, 2008; Ismail, 2008; Alexandridis, Petmezas & Travlos, 2010; Fu, Lin & Officer, 2013). The study upholds these results and in line with other studies supports the study findings using the Signaling Model of Leland and Pyle (1977) and Myers and Majluf (1984). The findings on the impact of target status on M&A stock market returns show that the acquisitions of public firms destroy shareholders' wealth while private firm acquisition generates shareholders' wealth in the short run. These results are in tandem with the existing empirical literature

(Conn *et al.,* 2005; Facio *et al.,* 2006; Draper & Paudyal, 2006; Officer, 2007). Alexandridis, Petmezas and Travlos (2010) documented that acquirers of public firms in competitive markets like U.S., U.K., and Canada destroy value but beyond competitive markets, public target creates value.

Similarly, Isa and Lee (2011) documented that public acquisitions generate greater abnormal returns than private firm acquisitions. Though their study findings did not support proven hypothesis, they did not discount the Liquidity Hypothesis and Management Motive Hypothesis in the Malaysian context. Contrary to their findings, this study provides evidence in an emerging market context that acquisitions of private firms generate wealth for shareholders in the short run. Finally, the study document that diversification or relatedness had an insignificant impact on M&A stock market returns in the short run in the Eastern Africa context.

The results of the study are consistent with the findings of Triki and Chun (2011). To some extent, though insignificant, the findings are in line with the suggestions of Erdorf, Hartmann-Wendels, Heinrichs and Martz (2013) that indicated that related transactions outperform unrelated /diversified firm. Moreover, Doukas and Kan (2006) state that on average, global diversification results in 18% average shareholders' loss. Diversified M&A transactions should create more value compared to related M&A due to the diversification and portfolio principle. Akbulut and Matsusaka (2010) stated that huge loss was reported on diversified M&A.

4.8.3 Operating Efficiency and Pre and Post M&A Stock Market Returns in the Short run

$H0_3$: **There is no significant impact of operating efficiency on pre and post M&A stock market returns of listed firms in Eastern Africa securities markets.**

The findings in Table 4.32 show that the coefficient for operating efficiency was -0.90 which was different from zero with a p- value of 0.001 which is less than 0.05, hence significant. This implied that operating efficiency had a significant impact on M&A stock market returns in the short run. The study findings led to the rejection of the null hypothesis at 95% confidence level. It was therefore concluded that operating efficiency has a significant impact on M&A stock market returns in the short run in firms listed in Eastern Africa securities markets.

The research findings presented show that operating efficiency is negatively correlated to M&A stock market returns in the short run. Overall it was reported that the study findings are in tandem with existing empirical studies (Doukas & Petmezas, 2007; Malmendeir & Tate, 2008; Baker, Dutta, Saadi & Zhu, 2012). However, it was noted that very few studies have looked at the impact of operating efficiency on M&A stock market returns. In fact the existing studies have only been conducted in developed financial markets. Therefore, this study greatly contributed towards this debate by providing research evidence on the impact of operating efficiency on M&A stock market returns using listed firms in Eastern Africa securities markets involved in M&A thus presenting out-of-sample evidence.

The findings are consistent with hubris or excessive overconfidence articulated by Roll (1986). When pursuing M&A deals, managers will trust that their own valuation of a target firm is superior due to excessive overconfidence. Consequently, due to over-

optimism in evaluating target firm synergies, they end up overpaying (Heaton, 2002; Depamphilis, 2011). Similarly, overconfidence among managers may be induced by current or historical good operating efficiency; accordingly, such firms may make incorrect decisions, such as acquiring a poor target, and thereby destroying shareholder value.

4.8.4 Board Characteristics and Pre and Post M&A Stock Market Returns in the Short run

$H0_4$**: There is no significant impact of board characteristics on pre and post M&A stock market returns of listed firms in Eastern Africa securities markets.**

The results in Table 34.4 reveal that board size coefficient was 0.010 which was greater than zero with a p-value of 0.017. This implied that board size was a significant driver of M&A stock returns in the short run. The study therefore rejected the null hypothesis and concluded that board size had a significant impact on pre and post M&A stock market returns in the short run. CEO /chairman duality had a coefficient of 0.025 which was significantly different from zero, however, its p-value of 0.48 was greater than 5%, implying that separating the positions of CEO of the company and chairman of the board had a positive insignificant impact on M&A stock market returns in the short run. Therefore null hypothesis that CEO /chairman duality has no significant impact on M&A stock market returns in the short run could not be rejected. Therefore, it was concluded that CEO/Chairman duality had no significant impact on M&A stock market returns in the short run in listed firms in Eastern Africa securities markets.

Finally, the study findings show that the coefficient for board independence was -0.106 with a p-value of 0.181. The beta coefficient value was greater than zero; however, its corresponding p-value was greater than 5%. This implied that board independence did

not have a significant impact on M&A stock market returns in the short run. The study therefore failed to reject the null hypothesis and conclude that there was no significant impact between board independence and M&A stock market returns in the short run in firms listed in Eastern Africa securities markets.

The study findings show that board size had positive impact on M&A stock market returns in the short run, these findings resonate with the research findings of Haniffa and Hudaib (2006) and Garg (2007) who reported that a small board size had a positive impact on an acquirer's returns. It was reported that in the short run M&A firms in Eastern Africa had an average board size, therefore our expectation was confirmed. The findings support propositions that a small board size increases M&A stock market returns.

Bhagat and Black (1999) documented that there is no consensus as to whether board independence affects firm performance. The study findings are in tandem with the findings of Masulis *et al.* (2007) who reported an insignificant relationship between board independence and acquirer returns. Finally, an insignificant relationship between CEO/ chairman duality and M&A stock market returns in the short run was reported. These findings resonate with the findings of Saibaba (2013) who reported an insignificant relationship between duality and firm valuation in the Indian context. On the other hand, the findings contradict the work of Masulis *et al.,* (2007) and Liu and Wang (2013) reported that separating the two positions results in improved firm performance and shareholders' wealth creation.

4.9 Findings of the Descriptive Statistics of the Long Run Analysis

This section presents descriptive statistics of the collected data for the long run analysis for the entire sample. Summary statistics which encapsulate measures of central tendency such as mean; the measures of dispersion such as standard deviation, minimum, maximum observations as well as measures of distributions (skewness and kurtosis) were used. Table 4.39 shows panel variables summary statistics for the final sample of 25 firms observed for ten years. Pre and post M&A stock market return in the long run was computed using Four-Factor Asset Pricing Model. M&A stock market return in the long run recorded a minimum of -2.52 and a maximum of 0.48 day for the ten-year period under consideration. On average long run M&A stock market return had a mean of -0.6564 which indicated that in the long run period, returns from M&A activities deteriorated.

Operating efficiency had the lowest average value of 0.069 while firm size recorded average high value of 17.12. This indicated that firms undertaking M&A activities were large in size though their efficiency was a bit low. Tobin Q had an average of 1.6; this was high implying that M&A firms in East Africa in the long run were highly valued (Moeller *et al.,* 2005). Skewness and kurtosis coefficient showed that data was normally distributed. On average there were ten board members among the companies which had exercised M&A and the maximum board number was 17. The descriptive statistics for the board size showed that this number of board members was outside the range of optimal board size range which is between 7 and 9 (Liu & Wang, 2013).

Table 4. 39: Panel Variables Summary Statistics

Variables	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
Carhat Return	-2.52	0.48	-0.6564	0.4789	-0.968	1.672
Tobin Q	.1400	13.05	1.6466	1.6409	3.898	19.468
Operating efficiency	-.1923	.3406	.06959	.07631	1.385	2.377
Board Size	5	17	9.869	2.4520	.155	-.002
Board Ind	.2222	.7500	.5250	.13970	-.215	-.747
Firm_size	14.2381	20.1786	17.1221	1.3543	.096	-.809
Duality	0	1	0.90	0.301	-2.683	5.239
F_CF	7.8482	17.0721	14.0577	1.7691	-.492	.050

Balanced panel of 25 M&A firms observed for 10 years, size is in million, return was computed using Carhat Four Factor Asset Pricing Model, all the other variables are in ratio, duality variable measured in qualitative aspect.

4.10 Panel specification Test

To determine panel data suitability for statistical analysis, various panel diagnostic tests were carried out. The specification tests conducted were normality test, heteroscedasticity test, multicollinearity test and panel unit root test. The tests were done to ensure that panel data fulfilled the cardinal requirements of classical linear regression. This section therefore presents the findings of various specification tests carried out on the data.

4.10.1 Panel Normality Test

One-Sample Kolmogorov-Smirnov Test (KS) was carried out to test normality of the dependent variable: Carhart Return. The null hypothesis stated that data was normally

distributed against an alternative that data was not normally distributed. The results in Table 4.40 showed that Kolmogorov-Smirnov (KS) statistic of 1.2170 had a p-value of 0.1030. Since the P value was greater than 0.05 we accepted the null hypothesis and concluded that data was normally distributed.

Table 4. 40: One- Sample Kolmogorov Smirnova (K-S) Normality Test for Carhat Return

	Carhart Return
N	250
Kolmogorov-Smirnov Z	1.2170
Asymp. Sig. (2-tailed)	0.1030

4.10.2 Heteroscedasticity Test

Classical linear regression model assumes constant error variance (Gujarat, 2009). Breusch-Pagan/ Cook-Weisberg test was used to test the null hypothesis of uniformity of variance of the error term against the alternative that the error variances were not uniform. Table 4.41 presents Breusch-Pagan test results for heteroscedasticity. The result shows a p-value of 0.0329; this was less than 0.05 and therefore the null hypothesis was rejected. Moreover, Chi-square value was more than 9.22 confirming that heteroscedasticity was a serious concern (Sazali, Hashida, Jegak & Raduan, 2009). The test results showed that the panel data violated the assumption classical linear regression; therefore the study employed Feasible Generalised Least Square (FGLS) (Muigai, Nasieku & Muhanji, 2006).

H0: Constant variance

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Variables: Firm characteristics (FC), Operating Efficiency (OE) and

Board characteristics (BC

Table 4. 41: Breusch- Pagan Test for Heteroscedasticity

Ho	Variables	chi2(1)	Prob > chi2
Constant variances	FC,OE& BC	12.4037	0.0329

4.10.3 Panel Multi-collinearity Test

Pairwise correlation matrix was used to check for multi-collinearity between the explanatory variables used in the study. Table 4.42 shows results of the correlation coefficient between the explanatory variables. Free cash flow and firm size had the highest correlation coefficient value of 78.6%. Generally, correlation coefficient between explanatory variables were low (none of the correlation coefficients reached or exceeded the threshold of 80%), it was concluded that multi-collinearity was not a serious concern in our data (Gujarat, 2009).

Table 4. 42: Pair-wise Correlations Matrix for the Regression Variables

		Tobin Q	Operating	Board Size	Firm size	F_CF	Board Ind	Duality
Tobin Q	Pearson Correlation	1						
	Sig. (2-tailed)							
Operating efficiency	Pearson Correlation	.458**	1					
	Sig. (2-tailed)	0						
Board Size	Pearson Correlation	0.031	.164**	1				
	Sig. (2-tailed)	0.624	0.009					
Firm_size	Pearson Correlation	0.014	0.101	.525**	1			
	Sig. (2-tailed)	0.828	0.11	0				
F_CF	Pearson Correlation	.265**	.435**	.383**	.786**	1		
	Sig. (2-tailed)	0	0	0	0			
Board Independence	Pearson Correlation	.236**	.241**	0.077	0.061	0.069	1	
	Sig. (2-tailed)	0	0	0.227	0.34	0.274		
Duality	Pearson Correlation	-.253**	-0.055	.385**	.197**	0.092	0.017	1
	Sig. (2-tailed)	0	0.39	0	0.002	0.148	0.785	

**. Correlation is significant at the 0.01 level (2-tailed).

4.10.4 Panel Unit Root Test

Inorder to determine whether panel data was stationary or not,unit test was applied on all the study variables.This involved solving for the value of φ in the general equation;

$$y_{i,t} = \alpha + \varphi y_{i,t-1} + \mu_{it} \qquad\qquad (4.1)$$

where $t = 1 \dots .10\text{yrs}$ and $i = 25$ firms.

If $\varphi = 1$ it means that the observation $y_{i,t}$ was dependent on its lag value $y_{i,t-1}$ hence data was non-stationary. Table 4.43 presents the panel unit root test for Carhart return, firm characteristics, operating efficiency and board characteristics. The results presented are based on the Fisher-type Augumented Dickey Fuller (ADF) and Fisher-type Phillips and Peroni (PP) test. Both tests were employed for comparison purposes. Madala and Wu (1999) pointed out that the PP test is parametric hence it is robust mostly in the presence of serial correlation in error terms. The null hypothesis was that data was not stationary that is $[(HO): \varphi = 1]$ against an alternative hypothesis that panel data was stationary $[(HA): \varphi < 1]$. The results indicate in all the study variables that the respective test statistics had p values that were less than 0.05. This meant that panel data was stationary and therefore the null hypothesis was rejected.

Table 4. 43: Panel Unit Root Test Results

Variable	Test	Statistics	P-value
Carhart Return	Fisher type- ADF	-5.3683	0.01
	Fisher type-PP	-251.5126	0.01
Firm characteristics	Fisher type- ADF	-4.2642	0.01
	Fisher type-PP	-49.802	0.01
Operating efficiency	Fisher type- ADF	-4.2406	0.01
	Fisher type-PP	-76.0138	0.01
Board characteristics	Fisher Type –ADF	-4.1774	0.01
	Fisher type-PP	-34.5107	0.01

The *p*-values for the Fisher tests were based on asymptotic Chi-square distribution.

4.10.5 Hausman Test for the Model Effects Estimation

To determine the suitable estimation effect for the study, Hausman test was carried on the panel regression model. The estimation effects were random and fixed effect (Gujarat, 2009). The test was conducted on a null hypothesis that stated that random effect model was appropriate.

The decision criteria behind the test is to reject the null hypothesis if the corresponding p value for the chi square statistics is less than 0.05, if p value is more then we fail to reject the null hypothesis. Table 4.44 presents the Hausman specification test results. The test results show that chi square for the model was insignificant at 5% level; p values = 0.1376, this was greater than 5%. The study therefore failed to reject the null hypothesis and concluded that random effect model was appropriate for the study. Accordingly, Random Panel Effect Model was estimated.

Table 4. 44: Hausman Test Results

Model	Chi –Square statistics	Degrees of freedom	P value
5	3.9676	2	0.1376

H0: Random effect model is appopriate;

Significance: 5%

4.11 Panel Regression Analysis

The second overall objective of the study was to determine the drivers of impact of M&A on stock market returns in the long run. The drivers of impact of M&A in the long run analysis included firm characteristics, operating performance and board characteristics. The M&A stock market return in long run was computed using Carhat Four-Factor Asset Pricing Model. To achieve this objective the study estimated panel regression equation 10 for random effects as shown by Hausman's test results in Table 4.44 above. In light of the presence of heteroscedasticity problem in our panel data, Feasible Generalised Least Square (FGLS) estimation technique was employed by the study, this is because the estimation technique provided consistent estimators (Torres-Reyna, 2007).

4.11.1 FGLS Random- Effects Panel Regression Results for the Drivers of Impact of M&A Stock Market Returns in the Long run

Table 4.45 presents panel regression results for the relationship between the explanatory variable and impact of M&A on stock markets returns in the long run. The explanatory variables were firm characteristis (firm size, Tobin Q and free cash flow), operating

efficiency and board characteristics including board size, board independence and CEO/ chairman duality.

The results show that explanatory variables explained only 29% of the variations in M&A stock market return in the long run. This is based on the coefficient of determination (R squared) value of 29 %. This shows the overall fit of the model was fair. The results implied that in the long run, the drivers of M&A activities explained only 29% of M&A stock market returns. It was pointed out that the reported R squared compared well with similar studies such as Deng and Litgterink (2012) and Uygur, Meric and Meric (2014) who reported an R squared of 25.11% and 25.2% respectively. Further F statistics of 2.6701 with its corresponding p-value equal to 0.040 indicate that the coefficients of the seven variables are significantly different from zero at 1%, 5% and 10% levels.

The results further show that constant coefficient was significant at 5%. Tobin Q was negative and significant at 1% level; this is because the corresponding p-value was less than 0.01. Firm size was positive and significant at 5% while operating performance was negative and significant at 5% level , the p-values were 0.045, 0.029 and 0.039 respectively. Lastly the corresponding p-value board size was 0.0843 hence significant at 10% level. However, coefficents for free cash flow, CEO/Chairman duality and board independence were insignificant implying that they did not significantly impact M&A stock market return in the long run.

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Table 4. 45: FGLS Random- Effects Panel Regression Results

Dependent Variable:	Carhat Return			
Variable	**Coefficient Estimate**	**Standard Errors**	**T values**	**Pr(>/t/)**
Constant	0.668**	0.331	2.016	0.045
firm size	0.740**	0.333	2.222	0.029
Tobin Q	-0.129***	0.016	-7.963	0.001
Free- cash flow	-0.018	0.384	-0.068	0.346
Operating efficiency	-0.56**	0.257	-2.179	0.039
Board size	-0.020*	0.012	-1.718	0.084
Duality	0.002	0.084	0.0230	0.430
Board Independence	-0.133	0.167	-0.794	0.582
Statistics				
Multiple R- Squared	0.290			
Adjusted R- Squared	0.236			
F Statistic	2.670			
P value	0.040			

The asterisk ***, **,* represent significance at 1%, 5% and 10% levels respectively

4.12 Hypotheses Testing in the Long run Analysis

In the long run analysis, hypothesis testing was done by determining the statistical significance of explanatory variables coefficients. This was done by using two tailed t-test statistics and the corresponding *p*-values at 1%, 5% and 10% levels. The test was employed because the alternative hypothesis of the study is composite rather than directional (Gujarati, 2003). In all the three null hypotheses, the decision rule was that if the p-value observed is less than the set significance level ; then reject the null hypothesis otherwise do no reject the null hypothesis.

$H0_1$: **There is no significant impact of firm characteristics on pre and post M&A stock market returns in the long run in firms listed in Eastern Africa securities markets.**

Firm characteristics included firm size, firm value and free cash flow. The analysis in Table 4.45 shows that firm size had a significant positive impact on pre and post M&A stock market returns in the long run in listed firms in Eastern African security markets at 5% significance level. The corresponding p-value for the firm size coefficient is equal to 0.029. Therefore at 95% confidence interval, the null hypothesis was rejected and the study concluded that firm size had a significant impact on long run M&A stock market returns of listed firms in East African securities markets. Tobin Q (firm value proxy) had a negative and significant impact on M&A stock market returns in the long run. At 1% significance level, the coefficient had a p-value of 0.001 signifying that at 99% confidence interval the null hypothesis was rejected. It was therefore concluded that Tobin Q had a significant impact on M&A stock market returns in the long run in listed firms in East African securities markets.

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Lastly free cash flow had no significant impact on M&A stock market returns in listed firms in East African security markets, p-value of 0.346 was higher that the set alpha values and therefore null hypothesis could not be rejected. Therefore, it was concluded that there was no significant impact between free cash flow and M&A stock market returns in the long run in listed firms in Eastern African securities markets. From the study findings it was confirmed that the long run results for the impact of firm size and Tobin Q on M&A stock market returns compared very well with short run findings. Moreover, Tobin Q's findings are in agreement with existing empirical studies (Moeller *et al.,* 2005). The findings for the Tobin Q support the overvaluation hypothesis which suggests that in the long run M&A firms in Eastern Africa were highly valued and made acquisitions that exhibited negative returns. In the long run firm size findings fail to support managerialism/ hubris hypothesis for firm size.

$H0_2$: There is no significant impact of operating efficiency on pre and post M&A stock market returns in the long run in listed firms in Eastern Africa securities markets

Panel analysis results in Table 4.45 shows that operating efficiency had a significant negative impact on pre and post M&A stock market returns in long run in listed firms in East African securities markets at 5% significance level. This is evidenced by the p-value of 0.023 which is less than 0.05. These findings led to rejection of the null hypothesis at 95% confidence interval. By rejecting the null hypothesis, it was concluded that operating efficiency had a significant impact on M&A stock market returns in the long run in firms listed firms in East African securities markets. The panel regression results for operating efficiency findings compared very well with the findings in the short run. Moreover,the findings of the study concur with the few empirical studies and supports the excessive overconfidence hypothesis of Roll (1986).

*H*0$_3$: **There is no significant impact of board characteristics on pre and Post M&A stock market returns in the long run in listed firms in Eastern Africa securities markets.**

Board characteristics included board size, CEO/ chairman duality and board independence. Panel analysis results in Table 4.45 show that of the three board characteristics indicators, it is only board size that had a significant and negative impact on M&A stock market returns in the long run in firms listed in Eastern Africa securities markets at 10% significance level. The rest; duality and board independence were insignificant. The corresponding p-value for the board size coefficient is equal to 0.084. Therefore at 90% confidence interval the null hypothesis was rejected and the study concluded that board size had a significant impact on M&A stock market returns in the long run.

The results further showed that CEO/ chairman duality p-value was 0.43; this was greater than 5%. The study findings led to the rejection of the null hypothesis. Therefore, it was concluded that CEO/ chairman duality had no significant impact on M&A stock market returns in the long run. Finally the board independence had a p-value of 0.582. The study findings led to the rejection of null hypothesis and concluded that there was a significant impact of board independence on M&A stock market returns in the long run of listed firms in Eastern Africa securities markets.The long run results compared very well with the short run findings. While in the short run board size was optimal and positively related with M&A stock market returns, in the long run, average board size was high, this explained the negative impact of board size on M&A stock market return in the long run. The findings agree with the existing empirical studies of Liu and Wang (2013) and Triki and Chun (2011) who reported that a large board size

had a negative and significant impact on Chinese acquirer returns and long term performance of Africa M&A firms respectively.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the study findings, conclusions and the relevant policy recommendations. The general objective of the study was to establish drivers of the impact of M&A on stock market returns of listed firms in Eastern Africa securities markets. Impact of M&A on stock market returns were computed in the short run and in long run period. The summary of the findings and the conclusions are organized around the specific objectives and study hypotheses stated in section 1.3 and 1.4 of chapter one. Finally, the recommendations relating to the specific objectives as well as suggestions for further research are highlighted.

5.2 Summary of the Findings

The study sought to investigate the drivers of the impact of M&A on stock market returns of listed firms in Eastern Africa securities markets. This involved investigating the impact of firm characteristics, deal characteristics, operating efficiency and board characteristics on pre and post M&A stock market returns of listed firms Eastern Africa securities markets. Following M&A we computed stock market returns in the short run period and over the long run period. Therefore, the study employed cross-sectional regression analysis in the short run period and panel data analysis in the long run period.

5.2.1 Impact of Firm Characteristics on Pre and Post M&A Stock Market Returns

The first specific objective of the study was to investigate the impact of firm characteristics on pre and post M&A stock market returns of listed firms in Eastern Africa securities markets. The variable firm characteristics were measured by three constructs; firm size, free cash flow and firm value. The analysis was carried out both in the short run and in the long run. The analysis results showed that in the short run, firm size had a positive and significant impact on M&A stock market returns of listed firms in Eastern Africa securities markets. Further the results showed that Tobin Q had a positive and significant impact on M&A stock market returns in the short run while in the long run a negative and significant impact was depicted. Finally, free cash flow had a negative and insignificant impact on M&A stock market returns of listed firms in Eastern Africa securities markets.

5.2.2 Impact of Deal Characteristics on Pre and Post M&A Stock Market Returns

The second objective of the study was to investigate the impact of deal characteristics on pre and post M&A stock market returns of listed firms in Eastern Africa securities markets. The variable had four constructs; namely, method of payment, target status, deal value and transaction relatedness. The analysis was carried out in the short run period only due to the nature of data. Deal characteristics data is available only once when a merger or an acquisition occurs. The analysis results indicated that method of payment had a negative and significant impact on M&A stock market returns in the short run in firms listed in Eastern Africa securities markets.

The findings also showed that target status had a negative and significant impact on M&A stock market returns in the short run of listed firms in Eastern Africa securities markets. A positive and significant impact was reported between deal value and M&A

stock market returns in the short run in firms listed in Eastern Africa securities markets. Finally relatedness/ diversification had an insignificant impact on M&A stock market returns in the short run of listed firms in Eastern Africa securities markets.

5.2.3 Impact of Operating Efficiency on Pre and Post M&A Stock Market Returns

The third objective of the study was to investigate impact of operating efficiency on pre and post M&A stock market returns of listed firms in Eastern Africa securities markets. This study employed operating firm efficiency as the proxy for management overconfidence. Operating efficiency of the firm was operationalized using a ratio of cash flow to total asset of the acquiring firm. The analysis results showed that in the short run and in the long run period operating efficiency had a negative and significant impact on M&A stock market returns of listed firms in Eastern Africa securities markets.

5.2.4 Impact of Board Characteristics on Pre and Post M&A Stock Market Returns

The fourth objective of the study was to investigate impact of board characteristics on pre and post M&A stock market returns of listed firms in Eastern Africa securities markets. The variable had three constructs; namely, board size, CEO/ Chairman duality and board independence. The analysis was conducted both in the short run and long run periods. The analysis of the results show that board size had a positive and significant impact on M&A stock market returns in the short run of listed firms in Eastern Africa securities markets. On the other hand, long run analysis results revealed that board size had a negative and significant impact on M&A returns of listed firms in Eastern Africa securities markets. Finally, the research findings indicated that neither CEO/ Chairman duality nor board independence had a significant impact on M&As returns of listed firms in Eastern Africa securities markets in the short run and long run analysis.

5.3 Conclusion

5.3.1 Firm characteristics and Pre and Post M&A Stock Market Returns

The study concludes that firm characteristics play an important role in explaining pre and post M&A stock market returns of listed firms in Eastern Africa securities markets. These firm characteristics include firm size, free cash flow and Tobin Q; the proxy for firm value. It was observed that firms that engaged in M&A activities in East African securities market are large and the results indicated that firm size was positively correlated with pre and post M&A stock market returns both in the short run and in the long run there by discounting managerialism and hubris hypotheses.

Secondly, the study concluded that Tobin Q, the proxy by firm value was positively correlated with pre and post M&A stock market returns in the short run but in the long run the variable had a negative impact on long run returns. This is explained by the Overvaluation Hypothesis that postulates that overvalued firms make poor acquisitions decisions that exhibit worse abnormal returns. The descriptive statistics shows that M&A firms in Eastern Africa are overvalued in the long run; hence the negative relationship exhibited. Finally, the study concluded that free cash flow decreases pre and post M&A stock market returns of listed firms in Eastern Africa security markets. It was noted that management of large firms hold large amounts of free cash flows at their discretion; consequently, they engage in empire building hypothesis.

5.3.2 Deal Characteristics and Pre and Post M&A Stock Market Returns

The study concludes that deal characteristics that included payment method, target status, deal value and relatedness play an important role in explaining pre and post M&A stock market returns of listed firms in Eastern Africa securities markets. The study

concludes that acquisitions of private firms are associated with positive M&A stock market returns while public company acquisitions are associated with negative M&A stock market returns. This is explained by the Liquidity and Managerial Motive Hypothesis. Further, the analysis concluded that the relative size of the deal value increases M&A stock market returns; thus large deal value translates to high M&A stock market returns.

In addition, the study concludes that cash offers are associated with positive M&A stock market returns while equity offers are associated with negative M&A stock market returns, which is explained by the fact that the method of payment acts as a signaling device about the acquiring firm's stocks value. Finally, the study concludes that unrelated transactions are wealth destroying; surprisingly, the evidence contradicts diversification principle.

5.3.3 Operating Efficiency and Pre and Post M&A Stock Market Returns

The study concludes that operating efficiency, the proxy management overconfidence, had a negative impact on pre and post M&A stock market returns. This shows that M&As firm with high operating efficiency react negatively to M&A announcements. The findings are in agreement with management overconfidence hypothesis. This shows that due to overconfidence nature of management, when pursuing M&A deals, managers will trust that their own valuation of a target firm is superior and as a consequence they end up overpaying for target firms thereby destroying shareholder wealth.

5.3.4 Board Characteristics and Pre and Post M&A Stock Market Returns

The study concludes that board size is an important determinant of pre and post M&A stock market returns. In the short run, the M&A firms in Eastern Africa securities

markets are characterised by optimal board size and hence the positive impact of board size on M&A stock market returns. However, an inverse relationship between board size and M&A stock market returns returns in the longrun was reported. This was attributed to the large board sizes reported by M&A firms listed in Eastern Africa securities markets in the the long run. Finally the study concluded that CEO/ chairman duality and board independence was could not significantly explain M&A stock market returns of listed firms in Eastern Africa securities markets.

5.4 Recommendations

Following the study findings and conclusions, several recommendations regarding short run and long run evaluation of pre and post M&A stock market returns and the possible drivers of M&A stock market returns are made. First, the study emphasize that caution should be exercised when interpreting short run event studies. Event studies assume that markets are effcient and the events are unanticipated; however, in practice the assumptions may not hold especially in emerging markets. In order to conclusively evaluate the impact of M&A on stock market returns, event studies should be supplemented with long run market-based measures. The study acknowlegdes that long run evaluation of M&A stock market returns can be a problematic undertaking and may be susceptible to confounding effect. The study therefore suggests use of large samples and adequate control in computation of long run return to reduce noise effects.

Secondly, most of M&A activities are driven by managerialism where managers make acquisitions to build their own spheres of influence, the study note that managers operating in listed firms in Eastern Africa securities markets which is in the category of emerging markets are exceptional. This study present new evidence that firm size has a positive impact on M&A stock market returns. This indicates that the management of

these firms make acquisition decisions to maximise shareholders' returns. The study recommends that firm management should endevour to maximise shareholders' wealth when making M&A decisions. Further, firms should utilise their borrowing power to capacity in order to reduce free cash flow at the discretion of the management. In regard to firm valuation, study concluded that acquisitions made by overvalued firms results to negative abnormal return. The study therefore recommend that when scounting for mergers and acquisitions targets, due diligence on the firm valuation should be conducted satisfactoriry for the investment decision to create shareholders wealth. The study recommends should that two or more valuation models should be employed for comparison purposes.

Most importantly if scrutiny reveals that the firm is overvalued then the target firm M&A team should demand for cash as a method of payment. Further the study acknowledge that M&A stock market returns are influenced by the method of payment and target status. The study therefore recommends that firms should endevour to use cash offers as the method of payment when engaging in M&A due to Signalling Hypothesis. In addition, when making M&A decisions, firms should endevour to acquire private (unlisted) firms as opposed to public (listed) firms as explained by Liquidity Hypothesis.

Evidence shows that listed firms in Eastern Africa securities markets do not benefit from unrelated acquisitions thus discounting the diversification principle. The study therefore recommend that when making M&A investment decisions conglomerate M&A activities should be avoided in the region. Moreover, the study recommends that when corporate managers in firms with superior operating efficiency are evaluating target firm synergies for acquisition purposes, they should not be overconfident about their valuation; rather they should seek comparison with market valuation. Incidents of target firm

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overpayment will be minimised and accordingly, acquisition decisions made by corporate managers will maximise the shareholders' return. Finally, the study recommends that M&A firms should endevour to maintain an optimum board size, this is because small board sizes are associated with higher financial returns.

5.5 Areas for Further Research

This study sought to provide empirical understanding of short run and long run impact of M&A on stock market returns and drivers of the impact of M&A on stock market returns of listed firms in Eastern Africa securities markets. Short run evaluation of pre and post M&A stock market returns was done using the Market Model while in the long run, Four Factor Asset Pricng Model was used to compute returns. Since the abnormal return computed is dependent on a model, it is therefore paramount that a researcher uses atleast two models for benchmarking purposes. This however, does not belittle the results of this study. Future studies on pre and post M&A stock market returns of firms listed Eastern Africa securities markets can be done using the Market-Adjusted Return Method in the short run while in the long run, abnormal return can be modelled using the Fama and French Three-Factor Asset Pricing Model, Buy and Hold Return Method and in addition to this the researchers may seek to test the reliability of the recent Five-Factor Model in determining the long term abnormal returns following M&A stock market returns.

This study considered listed firms in Eastern Africa securities markets involved in M&A activities. This respresented M&A activities in emerging markets therefore providing an out-of-sample data. In total, 30 M&A firms were studied; these could be considered few and hence less representative in wider jurisdictions. The choice of this geographical scope was informed by budgetary constraints facing the researcher. Therefore the

applicability of the study findings should be restrictive given the small size of the sample. An extended study could therefore be carried out within a larger jurisdiction such as Sub-Saharan Africa or Africa as whole to reduce potential sampling bias that may have impacted this study.

Finally, this study restricted itself to the impact of M&A on stock market returns, similar studies should be undertaken to find out the impact of M&A on risk and value creation. It would be interesting to find out how firm risk behaves following M&A in M&A firms in Eastern Africa Securities markets. Further, one would be eager to find out if M&A activities in Eastern Africa Securities markets destroy value or create value.

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APPENDICES

Appendix I. Study Population

a). Listed Financial and Non Financial Institutions involved in Mergers

	Institution	Merged with	Current name	Date
1	Stanbic Bank (K) Ltd	Stanbic Finance (K) Ltd	Stanbic Bank of Kenya Ltd	1996
2	National Industrial Credit Bank Ltd	African Mercantile Bank Corp	NIC Bank	1997
3	Standard Chartered Bank of Kenya	Standard Chartered Financial Services	Standard Chartered Bank of Kenya	1999
4	Diamond Trust Bank (K) ltd	Premier Saving and Finance ltd	Diamond Trust (K) Bank	1999
5	Barclays Bank of Kenya Ltd	Barclays Merchant Finance Ltd	Barclays Bank of Kenya Ltd	1999
6	Kenya Commercial Bank	Kenya Commercial Finance Co	Kenya Commercial Bank Ltd	1999
7	Cooperative Bank Ltd	Cooperative Merchant Bank Ltd	Cooperative Bank of Kenya	2002
8	CFC Bank Ltd	Stanbic Bank Ltd	CFC Stanbic Bank Ltd	2008
9	Saving and Loan (K) Ltd	Kenya Commercial Bank Ltd	Kenya Commercial Bank Ltd	2010
10	Biashara Bank Ltd	Investment & Mortgage Bank Ltd	I&M Ltd	2002
11	Pan African Insurance	Apollo Insurance Co Ltd	APA Insurance	2003
12	Kobil Kenya	Kenya Oil	Kenol Kobin	2014
13	Safaricom Ltd	Essar Telecommunacation	Safaricom ltd	2014

Source: Competition Authority of Kenya, 2015; Central Bank of Kenya 2015

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b) Listed Financial and Non Financial Institutions Acquisition Firms in Eastern Africa Securities Market

S/n	Acquisition Companies	Year
14	Kenya oil Acquisition of kobil oil	2007
15	Acquisition of Uganda Telecom by Lap Green company	2006
16	Equity Bank of Kenya Acquires Housing Finance	2007
17	Equity Bank of Kenya Acquires Microfinance Institution (MFI) of Uganda	2008
18	Safaricom Kenya Acquires One Com (Kenya IT Firm).	2008
19	Total Kenya acquistion of Chevron Kenya	2009
20	East African Breweries Acquistion of Serengeti Breweris of Tanzania	2010
21	East African Breweries Acquisition of Kenya Breweries	2011
22	TPS Serena group of Hotels acquires Hotel Movenpick Dareesalam	2012
23	Acquistion of Crown Berger (Crown Paint Kenya Acquisition of Crown Paint Tanzania)	2012
24	Tps Eastern Africa (Serena) Acquistion of TPS Uganda	2012
25	I&M Bank Acquisition by City Trust	2012
26	Pan African Insurance Acquisition by Hubris Holding Ltd	2012
27	Centum Inestment acquisition of Genesis Kenya Investment Management	2013
28	Scan group and Cavendish Squareholdings	2013
29	Acquisition of Getaway Insurance Company by Pan Africa Insurance Holding ltd	2014
30	Britam Acquisition of Real Insurance	2014
31	British American Investment (Britam) Kenya Acquisition of Housing Finance	2014
32	Acquistion of Phoenix Uganda by Kenol Kobil	2014
33	Barclays Bank acquires First Assurance Company	2015
34	Equity Investment Bank acquires 250,000of Thuo and Partners Brokerage Firm	2013
35	Standard Chartered private Equity (SCPE) and ETC group.	2013
36	I&M Bank Acquisition of Giro Bank	2015
37	Equity Bank of Kenya Acquires Pro-credit Bank of Congo	2015
38	Unga Group Ltd Acquisition of Enns Valley Bakery Ltd	2014

Source: Competition Authority of Kenya,

Appendix II: Secondary Data Collection Sheet

		Amount, Figures, Ratios for a ten (10) period (M&A from 1998-2015)									
Period		-5	-4	-3	-2	-1	1	2	3	4	5
Variables	Description										
Firm size	Total asset										
Tobin Q	Market value of equity										
	Book value of equity										
	Book value of asset										
Free cash flow	Earnings before interest and tax										
	Dividends										
	Depreciation										
Method of payment	Equity=1										
	All cash =0										
Target status of the firm acquired	Public firm=1										
	Private firm =0										
Relatedness /Diversification	Diversifying =1										
	Related M&A=0										
Relative size of M&A	Total amount paid for M&A										
Operating Efficiency	Cash flows										
	Total asset										
Board size	No of board of directors										
CEO/Chairman duality	Different individual=1										
	One individual =0										

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Board independence	Percentage of independent directors on board against total board										
Short run return (Market model variables)	Daily securities prices Daily index (NSE 20 Share)										
Long run return (Carhat variabes)	Annual securities closing prices Annual NSE 20 share average index 91-days Government of Kenya treasury bill Annual market capitalization Annual book value of equity Annual market value of equity Earnings after tax										

Appendix III: Summary of Beta Values Analysis Before and After the M&A in the Short run.

S/N	Company	Beta Factor Before (CAR –1,+1)	Details	After (CAR –1,+1	Details
1	C01	-0.859	D	-1.888	D
2	C02	0.061	D	0.768	D
3	C03	-0.044	D	0.040	D
4	C04	2.699	A	0.666	D
5	C05	1.815	A	1.270	A
6	C06	1.941	A	1.074	A
7	C07	-3.555	D	0.809	D
8	C08	-0.299	D	0.813	D
9	C09	-0.289	D	0.450	D
10	C10	0.816	D	-2.019	D
11	C11	3.203	A	0.069	D
12	C12	-0.551	D	1.22	A
13	C13	0.461	D	0.904	D
14	C14	-1.271	D	-1.181	D
15	C15	1.134	A	-2.890	D
16	C16	-0.776	D	-0.927	D
17	C17	0.558	D	0.212	D
18	C18	0.568	D	0.594	D
19	C19	1.776	A	-0.735	D
20	C20	1.408	A	3.732	A
21	C21	0.628	D	0.577	D
22	C22	-0.076	D	-0.101	D
23	C23	2.316	A	-0.797	D
24	C24	2.621	A	-0.514	D
25	C25	0.670	D	-1.326	D
26	C26	-1.342	D	1.1490	A

27	C27	1.098	A	2.592	A
28	C28	1.098	A	2.592	A
29	C29	1.232	A	0.807	D
30	C30	-1.853	D	-0.396	D

D = defensive security, A= aggressive security.

Appendix 1V: Cumulative Abnormal Returns for Different Holding Periods in the Short run

S/N	Company Code	CAR -20, +20	CAR -10, +10	CAR -5, +5	CAR -2,+2	CAR -1, +1
1	C01	0.074	0.071	0.047	0.078	0.023
2	C02	0.018	-0.010	0.024	0.031	-0.004
3	C03	0.020	0.017	0.010	0.047	-0.001
4	C04	0.853	0.395	0.169	0.036	0.111
5	C05	0.009	0.029	0.076	0.019	0.083
6	C06	0.045	0.076	0.049	0.043	0.043
7	C07	0.208	0.325	0.158	0.104	0.081
8	C08	0.130	0.010	0.016	-0.091	-0.058
9	C09	-0.049	-0.914	-0.475	-0.872	-0.482
10	C10	-0.027	0.102	-0.059	0.045	0.077
11	C11	-0.050	-0.020	-0.091	-0.022	-0.024
12	C12	0.039	0.071	-0.079	-0.032	-0.015
13	C13	0.025	-0.028	0.009	0.065	0.0618
14	C14	0.045	0.076	0.077	0.028	0.028
15	C15	-0.116	-0.109	-0.155	-0.012	0.090
16	C16	0.024	-0.042	0.035	-0.043	-0.060
17	C17	0.021	0.007	0.044	0.134	-0.057
18	C18	-0.038	0.006	-0.023	-0.107	-0.057
19	C19	-0.010	-0.016	-0.017	0.021	0.017
20	C20	0.010	0.021	0.0158	0.017	-0.013
21	C21	0.034	-0.051	-0.030	0.027	0.017
22	C22	0.011	-0.028	0.037	0.0041	0.001
23	C23	0.050	-0.008	-0.042	0.003	0.038
24	C24	0.016	-0.004	-0.081	-0.089	0.068
25	C25	-0.053	0.132	0.152	-0.020	0.054
26	C26	0.013	0.070	0.060	-0.002	0.007
27	C27	-0.062	0.028	-0.028	0.008	-0.001
28	C28	0.270	-0.558	0.048	0.057	0.042
29	C29	0.233	2.116	0.650	1.605	-0.032
30	C30	0.050	0.051	0.087	0.054	0.051

Appendix V: Average Abnormal Return (AAR) and Cumulative Average Abnormal Return (CAAR) for holding Period -20, +20(Short run)

Event Period	Average Abnormal Return (AAR)	Cumulative Average Abnormal Return (CAAR)
-20	0.01	0.00
-19	-0.02	-0.02
-18	-0.02	-0.05
-17	0.02	-0.03
-16	-0.02	-0.05
-15	0.03	-0.02
-14	-0.02	-0.04
-13	-0.01	-0.05
-12	0.02	-0.04
-11	-0.02	-0.05
-10	0.03	-0.02
-9	-0.03	-0.05
-8	0.03	-0.03
-7	-0.02	-0.04
-6	0.03	-0.02
-5	-0.02	-0.04
-4	0.03	-0.01
-3	-0.02	-0.03
-2	0.02	-0.01
-1	0.00	-0.01
1	0.01	0.00
2	0.05	0.05
3	0.05	0.11
4	0.02	0.13
5	0.02	0.15
6	0.00	0.15
7	-0.02	0.13
8	-0.01	0.12
9	-0.01	0.11
10	-0.01	0.10
11	-0.02	0.08
12	-0.01	0.07
13	-0.02	0.05
14	-0.02	0.03
15	-0.01	0.02
16	-0.03	-0.01

17	-0.03	-0.03
18	-0.01	-0.05
19	-0.01	-0.06
20	0.00	-0.06

Appendix VI: Carhart Four Factors Variables for the Computation of Long run Return

Company Code	Year	Stock_ return	Market_ return	Rf	Rm-rf	SMB	HML	WML
C01	-5	0.03	0.21	0.13	0.07	1.02	0.26	2.74
C01	-4	0.03	1.23	0.11	1.13	-0.49	0.68	3.41
C01	-3	-0.11	0.12	0.10	0.03	-0.97	-1.29	-4.03
C01	-2	-0.18	0.02	0.14	-0.12	0.19	-0.33	-1.89
C01	-1	0.25	0.05	0.10	-0.05	-0.34	-0.52	3.38
C01	1	-0.26	-0.17	0.20	-0.37	-0.36	-0.76	2.84
C01	2	-0.31	-0.09	0.20	-0.29	0.28	-0.21	1.49
C01	3	-0.40	-0.16	0.13	-0.29	0.24	0.03	3.97
C01	4	-0.03	-0.29	0.11	-0.40	0.90	1.43	4.31
C01	5	0.27	0.01	0.08	-0.08	-0.16	0.95	3.63
C02	-5	0.02	1.23	0.11	1.13	1.02	0.26	2.74
C02	-4	-0.41	0.12	0.10	0.03	-0.49	0.68	3.41
C02	-3	0.08	0.02	0.14	-0.12	-0.97	-1.29	-4.03
C02	-2	-0.02	0.05	0.10	-0.05	0.19	-0.33	-1.89
C02	-1	0.12	-0.17	0.20	-0.37	-0.34	-0.52	3.38
C02	1	0.08	-0.09	0.20	-0.29	-0.36	-0.76	2.84
C02	2	-0.13	-0.16	0.13	-0.29	0.28	-0.21	1.49
C02	3	-0.03	-0.29	0.11	-0.40	0.24	0.03	3.97
C02	4	0.25	0.01	0.08	-0.08	0.90	1.43	4.31
C02	5	2.15	1.01	0.01	0.99	-0.16	0.95	3.63
C03	-5	0.01	1.23	0.11	1.13	1.02	0.26	2.74
C03	-4	-0.36	0.12	0.10	0.03	-0.49	0.68	3.41
C03	-3	-0.38	0.02	0.14	-0.12	-0.97	-1.29	-4.03
C03	-2	-0.30	0.05	0.10	-0.05	0.19	-0.33	-1.89
C03	-1	-0.03	-0.17	0.20	-0.37	-0.34	-0.52	3.38
C03	1	0.21	-0.09	0.20	-0.29	-0.36	-0.76	2.84
C03	2	-0.43	-0.16	0.13	-0.29	0.28	-0.21	1.49

C03	3	-0.37	-0.29	0.11	-0.40	0.24	0.03	3.97
C03	4	0.16	0.01	0.08	-0.08	0.90	1.43	4.31
C03	5	1.65	1.01	0.01	0.99	-0.16	0.95	3.63
C04	-5	-0.02	1.23	0.11	1.13	1.02	0.26	2.74
C04	-4	-0.06	0.12	0.10	0.03	-0.49	0.68	3.41
C04	-3	-0.13	0.02	0.14	-0.12	-0.97	-1.29	-4.03
C04	-2	0.16	0.05	0.10	-0.05	0.19	-0.33	-1.89
C04	-1	0.04	-0.17	0.20	-0.37	-0.34	-0.52	3.38
C04	1	-0.13	-0.08	0.20	-0.28	-0.36	-0.76	2.84
C04	2	-0.27	-0.17	0.13	-0.30	0.28	-0.21	1.49
C04	3	-0.03	-0.29	0.11	-0.40	0.24	0.03	3.97
C04	4	0.37	0.01	0.08	-0.08	0.90	1.43	4.31
C04	5	1.81	1.01	0.01	0.99	-0.16	0.95	3.63
C05	-5	-0.10	1.23	0.11	1.13	1.02	0.26	2.74
C05	-4	0.15	0.12	0.10	0.03	-0.49	0.68	3.41
C05	-3	-0.09	0.02	0.14	-0.12	-0.97	-1.29	-4.03
C05	-2	0.01	0.05	0.10	-0.05	0.19	-0.33	-1.89
C05	-1	-0.21	-0.17	0.20	-0.37	-0.34	-0.52	3.38
C05	1	-0.49	-0.08	0.20	-0.28	-0.36	-0.76	2.84
C05	2	-0.24	-0.17	0.13	-0.30	0.28	-0.21	1.49
C05	3	-0.33	-0.29	0.11	-0.40	0.24	0.03	3.97
C05	4	0.15	0.01	0.08	-0.08	0.90	1.43	4.31
C05	5	2.03	1.01	0.01	0.99	-0.16	0.95	3.63
C06	-5	0.44	-0.08	0.20	-0.28	1.02	0.26	2.74
C06	-4	-0.31	-0.23	0.13	-0.36	-0.49	0.68	3.41
C06	-3	0.08	0.11	0.11	0.00	-0.97	-1.29	-4.03
C06	-2	-0.59	-0.17	0.08	-0.25	0.19	-0.33	-1.89
C06	-1	1.16	-0.29	0.01	-0.30	-0.34	-0.52	3.38
C06	1	-0.12	1.01	0.08	0.93	-0.36	-0.76	2.84
C06	2	0.90	0.44	0.08	0.36	0.28	-0.21	1.49
C06	3	1.28	0.43	0.06	0.37	0.24	0.03	3.97
C06	4	0.07	-0.03	0.07	-0.10	0.90	1.43	4.31
C06	5	-0.36	-0.35	0.08	-0.44	-0.16	0.95	3.63
C07	-5	1.98	0.81	0.01	0.80	1.02	0.26	2.74

C07	-4	-0.83	0.08	0.08	0.00	-0.49	0.68	3.41
C07	-3	1.12	0.34	0.08	0.26	-0.97	-1.29	-4.03
C07	-2	-0.19	0.43	0.06	0.37	0.19	-0.33	-1.89
C07	-1	0.07	-0.03	0.07	-0.10	-0.34	-0.52	3.38
C07	1	-0.43	-0.35	0.08	-0.44	-0.36	-0.76	2.84
C07	2	-0.24	-0.08	0.07	-0.15	0.28	-0.21	1.49
C07	3	0.30	0.36	0.02	0.34	0.24	0.03	3.97
C07	4	0.00	-0.28	0.18	-0.46	0.90	1.43	4.31
C07	5	0.13	0.29	0.08	0.21	-0.16	0.95	3.63
C08	-5	2.19	1.09	0.08	1.01	1.02	0.26	2.74
C08	-4	0.72	-0.02	0.08	-0.10	-0.49	0.68	3.41
C08	-3	0.32	0.35	0.06	0.29	-0.97	-1.29	-4.03
C08	-2	0.14	0.29	0.07	0.22	0.19	-0.33	-1.89
C08	-1	0.51	-0.13	0.08	-0.21	-0.34	-0.52	3.38
C08	1	-0.54	-0.25	0.07	-0.33	-0.36	-0.76	2.84
C08	2	-0.25	-0.08	0.02	-0.10	0.28	-0.21	1.49
C08	3	0.68	0.36	0.18	0.18	0.24	0.03	3.97
C08	4	-0.46	-0.28	0.08	-0.36	0.90	1.43	4.31
C08	5	0.02	0.29	0.10	0.19	-0.16	0.95	3.63
C09	-5	1.32	1.01	0.01	0.99	1.02	0.26	2.74
C09	-4	-0.29	0.08	0.08	0.00	-0.49	0.68	3.41
C09	-3	0.61	0.34	0.08	0.26	-0.97	-1.29	-4.03
C09	-2	2.38	0.43	0.06	0.37	0.19	-0.33	-1.89
C09	-1	-0.07	-0.03	0.07	-0.10	-0.34	-0.52	3.38
C09	1	-0.56	-0.35	0.08	-0.44	-0.36	-0.76	2.84
C09	2	-0.05	-0.08	0.07	-0.15	0.28	-0.21	1.49
C09	3	0.48	0.36	0.02	0.34	0.24	0.03	3.97
C09	4	-0.53	-0.28	0.18	-0.46	0.90	1.43	4.31
C09	5	0.24	0.29	0.08	0.21	-0.16	0.95	3.63
C10	-5	-0.17	1.01	0.08	0.93	1.02	0.26	2.74
C10	-4	0.13	0.08	0.08	-0.01	-0.49	0.68	3.41
C10	-3	0.06	0.34	0.06	0.28	-0.97	-1.29	-4.03
C10	-2	0.06	0.43	0.07	0.36	0.19	-0.33	-1.89
C10	-1	0.95	-0.03	0.08	-0.12	-0.34	-0.52	3.38

C10	1	-0.52	-0.35	0.07	-0.43	-0.36	-0.76	2.84
C10	2	0.25	-0.08	0.02	-0.10	0.28	-0.21	1.49
C10	3	0.05	0.36	0.18	0.18	0.24	0.03	3.97
C10	4	-0.36	-0.28	0.08	-0.36	0.90	1.43	4.31
C10	5	0.69	0.29	0.10	0.19	-0.16	0.95	3.63
C11	-5	-0.02	1.01	0.08	0.93	1.02	0.26	2.74
C11	-4	-0.01	0.08	0.08	-0.01	-0.49	0.68	3.41
C11	-3	-0.17	0.34	0.06	0.28	-0.97	-1.29	-4.03
C11	-2	0.30	0.43	0.07	0.36	0.19	-0.33	-1.89
C11	-1	0.08	-0.03	0.08	-0.12	-0.34	-0.52	3.38
C11	1	0.16	-0.35	0.07	-0.43	-0.36	-0.76	2.84
C11	2	-0.92	-0.08	0.02	-0.10	0.28	-0.21	1.49
C11	3	0.89	0.36	0.18	0.18	0.24	0.03	3.97
C11	4	-0.39	-0.28	0.08	-0.36	0.90	1.43	4.31
C11	5	0.52	0.29	0.10	0.19	-0.16	0.95	3.63
C12	-5	-0.02	0.00	0.08	-0.08	1.02	0.26	2.74
C12	-4	-0.33	-0.07	0.06	-0.12	-0.49	0.68	3.41
C12	-3	0.09	0.34	0.07	0.27	-0.97	-1.29	-4.03
C12	-2	-0.28	0.33	0.08	0.24	0.19	-0.33	-1.89
C12	-1	0.08	0.04	0.07	-0.03	-0.34	-0.52	3.38
C12	1	0.00	-0.35	0.02	-0.38	-0.36	-0.76	2.84
C12	2	-0.07	-0.08	0.18	-0.26	0.28	-0.21	1.49
C12	3	-0.01	0.36	0.08	0.28	0.24	0.03	3.97
C12	4	-0.50	-0.28	0.10	-0.37	0.90	1.43	4.31
C12	5	-0.06	0.29	0.09	0.20	-0.16	0.95	3.63
C13	-5	0.69	0.28	0.08	0.19	1.02	0.26	2.74
C13	-4	1.08	0.43	0.06	0.37	-0.49	0.68	3.41
C13	-3	-0.89	-0.03	0.07	-0.10	-0.97	-1.29	-4.03
C13	-2	-0.20	-0.35	0.08	-0.44	0.19	-0.33	-1.89
C13	-1	0.05	-0.08	0.07	-0.15	-0.34	-0.52	3.38
C13	1	0.01	0.36	0.02	0.34	-0.36	-0.76	2.84
C13	2	-0.07	-0.28	0.18	-0.46	0.28	-0.21	1.49
C13	3	0.45	0.29	0.08	0.21	0.24	0.03	3.97
C13	4	0.64	0.19	0.10	0.10	0.90	1.43	4.31

C13	5	0.22	0.04	0.09	-0.05	-0.16	0.95	3.63
C14	-5	0.27	0.28	0.08	0.19	1.02	0.26	2.74
C14	-4	0.03	0.43	0.06	0.37	-0.49	0.68	3.41
C14	-3	0.19	-0.03	0.07	-0.10	-0.97	-1.29	-4.03
C14	-2	-0.17	-0.35	0.08	-0.44	0.19	-0.33	-1.89
C14	-1	0.03	-0.08	0.07	-0.15	-0.34	-0.52	3.38
C14	1	0.40	0.36	0.02	0.34	-0.36	-0.76	2.84
C14	2	-0.12	-0.28	0.18	-0.46	0.28	-0.21	1.49
C14	3	0.52	0.29	0.08	0.21	0.24	0.03	3.97
C14	4	0.11	0.19	0.10	0.10	0.90	1.43	4.31
C14	5	0.02	0.04	0.09	-0.05	-0.16	0.95	3.63
C15	-5	0.03	0.35	0.06	0.29	1.02	0.26	2.74
C15	-4	0.19	-0.03	0.07	-0.10	-0.49	0.68	3.41
C15	-3	-0.17	-0.35	0.08	-0.44	-0.97	-1.29	-4.03
C15	-2	0.03	-0.08	0.07	-0.15	0.19	-0.33	-1.89
C15	-1	0.40	0.36	0.02	0.34	-0.34	-0.52	3.38
C15	1	-0.12	-0.28	0.18	-0.46	-0.36	-0.76	2.84
C15	2	0.52	0.29	0.08	0.21	0.28	-0.21	1.49
C15	3	0.11	0.19	0.10	0.10	0.24	0.03	3.97
C15	4	0.02	0.04	0.09	-0.05	0.90	1.43	4.31
C15	5	-0.09	-0.23	0.10	-0.34	-0.16	0.95	3.63
C16	-5	0.14	-0.06	0.07	-0.13	1.02	0.26	2.74
C16	-4	-0.38	-0.35	0.08	-0.44	-0.49	0.68	3.41
C16	-3	-0.27	-0.08	0.07	-0.15	-0.97	-1.29	-4.03
C16	-2	0.46	0.36	0.02	0.34	0.19	-0.33	-1.89
C16	-1	-0.67	-0.28	0.18	-0.46	-0.34	-0.52	3.38
C16	1	0.86	0.29	0.08	0.21	-0.36	-0.76	2.84
C16	2	1.24	0.19	0.10	0.10	0.28	-0.21	1.49
C16	3	0.34	0.04	0.09	-0.05	0.24	0.03	3.97
C16	4	-0.51	-0.23	0.10	-0.34	0.90	1.43	4.31
C16	5	1.24	0.00	0.08	-0.08	-0.16	0.95	3.63
C17	-5	-0.07	-0.06	0.07	-0.13	1.02	0.26	2.74
C17	-4	-0.36	-0.35	0.08	-0.44	-0.49	0.68	3.41
C17	-3	-0.11	-0.08	0.07	-0.15	-0.97	-1.29	-4.03

C17	-2	0.46	0.36	0.02	0.34	0.19	-0.33	-1.89
C17	-1	-0.23	-0.28	0.18	-0.46	-0.34	-0.52	3.38
C17	1	-0.23	0.29	0.08	0.21	-0.36	-0.76	2.84
C17	2	0.14	0.19	0.10	0.10	0.28	-0.21	1.49
C17	3	-0.16	0.04	0.09	-0.05	0.24	0.03	3.97
C17	4	-0.08	-0.23	0.10	-0.34	0.90	1.43	4.31
C17	5	0.15	0.00	0.08	-0.08	-0.16	0.95	3.63
C18	-5	0.22	0.02	0.07	-0.05	1.02	0.26	2.74
C18	-4	0.21	-0.06	0.08	-0.14	-0.49	0.68	3.41
C18	-3	-0.50	-0.35	0.07	-0.43	-0.97	-1.29	-4.03
C18	-2	-0.06	-0.08	0.02	-0.10	0.19	-0.33	-1.89
C18	-1	0.50	0.36	0.18	0.18	-0.34	-0.52	3.38
C18	1	-0.43	-0.28	0.08	-0.36	-0.36	-0.76	2.84
C18	2	1.07	0.29	0.10	0.19	0.28	-0.21	1.49
C18	3	0.76	0.19	0.09	0.11	0.24	0.03	3.97
C18	4	0.53	0.04	0.10	-0.07	0.90	1.43	4.31
C18	5	-0.45	-0.23	0.08	-0.32	-0.16	0.95	3.63
C19	-5	-0.19	-0.25	0.08	-0.34	1.02	0.26	2.74
C19	-4	-0.04	-0.08	0.07	-0.15	-0.49	0.68	3.41
C19	-3	0.66	0.36	0.02	0.34	-0.97	-1.29	-4.03
C19	-2	-0.38	-0.28	0.18	-0.46	0.19	-0.33	-1.89
C19	-1	0.42	0.29	0.08	0.21	-0.34	-0.52	3.38
C19	1	0.26	0.19	0.10	0.10	-0.36	-0.76	2.84
C19	2	0.14	0.04	0.09	-0.05	0.28	-0.21	1.49
C19	3	-0.40	-0.23	0.10	-0.34	0.24	0.03	3.97
C19	4	0.34	0.03	0.08	-0.06	0.90	1.43	4.31
C19	5	-0.05	0.03	0.10	-0.07	-0.16	0.95	3.63
C20	-5	0.34	-0.25	0.08	-0.34	1.02	0.26	2.74
C20	-4	-0.92	-0.08	0.07	-0.15	-0.49	0.68	3.41
C20	-3	0.89	0.36	0.02	0.34	-0.97	-1.29	-4.03
C20	-2	-0.38	-0.28	0.18	-0.46	0.19	-0.33	-1.89
C20	-1	0.44	0.29	0.08	0.21	-0.34	-0.52	3.38
C20	1	0.30	0.19	0.10	0.10	-0.36	-0.76	2.84
C20	2	0.65	0.04	0.09	-0.05	0.28	-0.21	1.49

C20	3	-0.22	-0.23	0.10	-0.34	0.24	0.03	3.97
C20	4	-0.01	0.03	0.08	-0.06	0.90	1.43	4.31
C20	5	0.06	0.03	0.10	-0.07	-0.16	0.95	3.63
C21	-5	-0.04	-0.25	0.08	-0.34	1.02	0.26	2.74
C21	-4	0.00	-0.08	0.07	-0.15	-0.49	0.68	3.41
C21	-3	1.35	0.36	0.02	0.34	-0.97	-1.29	-4.03
C21	-2	-0.36	-0.28	0.18	-0.46	0.19	-0.33	-1.89
C21	-1	0.70	0.29	0.08	0.21	-0.34	-0.52	3.38
C21	1	-0.28	0.19	0.10	0.10	-0.36	-0.76	2.84
C21	2	-0.09	0.04	0.09	-0.05	0.28	-0.21	1.49
C21	3	-0.35	-0.23	0.10	-0.34	0.24	0.03	3.97
C21	4	0.65	0.03	0.08	-0.06	0.90	1.43	4.31
C21	5	0.04	0.03	0.10	-0.07	-0.16	0.95	3.63
C22	-5	-0.22	-0.25	0.08	-0.34	1.02	0.26	2.74
C22	-4	-0.40	-0.08	0.07	-0.15	-0.49	0.68	3.41
C22	-3	0.98	0.36	0.02	0.34	-0.97	-1.29	-4.03
C22	-2	-0.41	-0.28	0.18	-0.46	0.19	-0.33	-1.89
C22	-1	-0.10	0.29	0.08	0.21	-0.34	-0.52	3.38
C22	1	1.67	0.19	0.10	0.10	-0.36	-0.76	2.84
C22	2	0.88	0.04	0.09	-0.05	0.28	-0.21	1.49
C22	3	-0.22	-0.23	0.10	-0.34	0.24	0.03	3.97
C22	4	0.09	0.03	0.08	-0.06	0.90	1.43	4.31
C22	5	0.03	0.03	0.10	-0.07	-0.16	0.95	3.63
C23	-5	0.08	0.02	0.07	-0.06	1.02	0.26	2.74
C23	-4	0.09	0.36	0.02	0.34	-0.49	0.68	3.41
C23	-3	-0.14	-0.28	0.18	-0.46	-0.97	-1.29	-4.03
C23	-2	0.45	0.29	0.08	0.21	0.19	-0.33	-1.89
C23	-1	0.38	0.19	0.10	0.10	-0.34	-0.52	3.38
C23	1	1.19	0.04	0.09	-0.05	-0.36	-0.76	2.84
C23	2	-0.15	-0.23	0.10	-0.34	0.28	-0.21	1.49
C23	3	0.16	0.03	0.08	-0.06	0.24	0.03	3.97
C23	4	0.03	0.03	0.10	-0.07	0.90	1.43	4.31
C23	5	0.05	0.02	0.11	-0.09	-0.16	0.95	3.63
C24	-5	-0.11	0.02	0.07	-0.06	1.02	0.26	2.74

C24	-4	0.41	0.36	0.02	0.34	-0.49	0.68	3.41
C24	-3	0.05	-0.28	0.18	-0.46	-0.97	-1.29	-4.03
C24	-2	-0.36	0.29	0.08	0.21	0.19	-0.33	-1.89
C24	-1	0.69	0.19	0.10	0.10	-0.34	-0.52	3.38
C24	1	1.03	0.04	0.09	-0.05	-0.36	-0.76	2.84
C24	2	0.36	-0.23	0.10	-0.34	0.28	-0.21	1.49
C24	3	0.16	0.03	0.08	-0.06	0.24	0.03	3.97
C24	4	0.10	0.03	0.10	-0.07	0.90	1.43	4.31
C24	5	0.06	0.02	0.11	-0.09	-0.16	0.95	3.63
C25	-5	-0.09	0.02	0.07	-0.06	1.02	0.26	2.74
C25	-4	-0.81	0.36	0.02	0.34	-0.49	0.68	3.41
C25	-3	0.02	-0.28	0.18	-0.46	-0.97	-1.29	-4.03
C25	-2	0.37	0.29	0.08	0.21	0.19	-0.33	-1.89
C25	-1	-0.29	0.19	0.10	0.10	-0.34	-0.52	3.38
C25	1	-0.11	0.04	0.09	-0.05	-0.36	-0.76	2.84
C25	2	0.11	-0.23	0.10	-0.34	0.28	-0.21	1.49
C25	3	0.05	0.03	0.08	-0.06	0.24	0.03	3.97
C25	4	0.09	0.03	0.10	-0.07	0.90	1.43	4.31
C25	5	0.08	0.02	0.11	-0.09	-0.16	0.95	3.63

Appendix VII: Panel Data

Company code	Year	Carhart Return	Tobin Q	Firm size	F_CF	Operating efficiency	Board Size	Duality	Board Ind
				Firm characteristics				**Board characteristics**	
C01	-5	-0.16	1.25	15.19	12.54	0.04	7	1	0.43
C01	-4	0.17	1.33	15.25	13.01	0.08	7	1	0.43
C01	-3	-0.14	1.27	15.30	13.08	0.08	7	1	0.43
C01	-2	-0.16	1.17	15.62	13.04	0.07	7	1	0.43
C01	-1	-0.10	0.86	15.79	12.68	0.04	7	1	0.43
C01	1	-0.15	1.21	15.89	13.04	0.01	8	1	0.43
C01	2	-0.16	1.08	15.80	12.68	0.00	8	1	0.43
C01	3	-0.11	1.98	15.12	12.68	-0.02	8	1	0.43
C01	4	-0.01	0.89	15.82	12.81	0.02	8	1	0.43
C01	5	0.08	0.86	15.94	12.59	0.00	8	1	0.43
C02	-5	0.58	1.41	17.07	14.11	0.04	12	1	0.44
C02	-4	0.67	1.24	17.12	14.15	0.04	12	1	0.44
C02	-3	0.10	1.17	17.24	14.30	0.04	12	1	0.44
C02	-2	-0.14	1.13	17.30	14.39	0.03	12	1	0.44
C02	-1	-0.02	0.89	17.45	14.44	0.04	12	1	0.44
C02	1	-0.03	1.09	17.57	14.76	0.04	9	1	0.44
C02	2	-0.25	1.06	17.71	14.23	0.04	9	1	0.44
C02	3	-0.18	1.12	17.81	14.60	0.04	9	1	0.44
C02	4	0.09	1.10	17.94	14.63	0.04	9	1	0.44
C02	5	1.29	1.11	17.98	14.91	0.04	9	1	0.44
C03	-5	0.44	1.49	15.78	12.64	0.04	12	1	0.67
C03	-4	0.44	1.13	15.89	12.65	0.04	12	1	0.67
C03	-3	-0.32	1.15	15.92	10.57	0.02	12	1	0.67
C03	-2	-0.48	1.16	15.77	12.52	-0.05	12	1	0.67
C03	-1	-0.11	0.88	15.65	11.88	0.03	12	1	0.67
C03	1	-0.13	1.15	15.61	11.95	0.02	11	1	0.73
C03	2	-0.42	0.97	15.46	11.94	0.03	11	1	0.73
C03	3	-0.26	0.91	15.52	9.88	0.01	11	1	0.73

C03	4	-0.08	0.92	15.65	11.08	0.01	11	1	0.73
C03	5	1.05	1.17	15.98	11.81	0.02	10	1	0.73
C04	-5	0.40	1.31	17.57	14.71	0.04	9	1	0.22
C04	-4	0.69	1.18	17.65	14.57	0.05	9	1	0.22
C04	-3	-0.02	1.17	17.78	14.67	0.04	9	1	0.22
C04	-2	-0.10	1.22	17.92	14.70	0.04	9	1	0.22
C04	-1	-0.13	0.88	18.07	14.75	0.04	9	1	0.22
C04	1	-0.18	0.99	18.05	15.03	0.03	12	1	0.22
C04	2	-0.24	0.87	18.07	14.31	0.03	12	1	0.22
C04	3	-0.18	0.85	18.11	14.58	0.04	12	1	0.22
C04	4	0.31	0.89	18.27	14.18	0.02	12	1	0.22
C04	5	1.18	1.48	18.39	14.97	0.03	9	1	0.22
C05	-5	0.29	1.06	17.90	14.74	0.03	17	1	0.35
C05	-4	0.79	1.05	17.86	15.00	0.04	17	1	0.35
C05	-3	0.04	1.07	17.98	15.00	0.04	17	1	0.35
C05	-2	-0.18	0.96	18.11	14.98	0.03	17	1	0.35
C05	-1	-0.36	0.87	18.18	13.51	0.01	17	1	0.35
C05	1	-0.42	0.93	18.14	14.62	-0.02	12	1	0.42
C05	2	-0.47	0.93	18.11	13.55	-0.01	12	1	0.42
C05	3	-0.45	0.91	17.99	12.12	0.00	12	1	0.42
C05	4	0.21	0.95	17.91	15.25	-0.05	12	1	0.42
C05	5	1.42	1.04	17.92	13.31	0.01	11	1	0.42
C06	-5	0.76	0.75	14.57	11.55	0.06	8	1	0.38
C06	-4	-0.16	0.59	14.78	10.71	0.02	8	1	0.38
C06	-3	-0.29	0.68	14.93	10.91	-0.02	8	1	0.38
C06	-2	-0.09	0.36	15.17	11.97	0.04	8	1	0.38
C06	-1	0.99	0.40	14.80	8.77	0.00	8	1	0.38
C06	1	0.65	1.19	14.82	11.14	-0.03	8	0	0.38
C06	2	0.35	1.06	15.03	10.67	0.03	8	0	0.38
C06	3	0.64	0.99	15.37	11.68	0.04	8	0	0.38
C06	4	-0.11	1.32	15.59	10.13	0.02	8	0	0.38
C06	5	-0.19	1.52	15.62	12.22	0.03	8	0	0.38
C07	-5	1.48	0.83	15.34	13.34	0.10	7	0	0.57
C07	-4	-0.38	13.05	15.34	12.97	0.10	7	0	0.57
C07	-3	0.35	11.82	15.65	13.79	0.13	7	0	0.57
C07	-2	0.76	9.40	15.94	13.95	0.11	7	0	0.57

C07	-1	-0.08	6.06	16.41	14.02	0.06	7	0	0.57
C07	1	-0.42	1.37	16.40	13.68	0.04	7	0	0.57
C07	2	0.10	0.96	17.14	14.13	0.04	6	0	0.57
C07	3	0.59	3.22	15.94	14.19	0.15	6	0	0.57
C07	4	-0.47	2.54	16.41	14.54	0.14	6	0	0.57
C07	5	-0.04	3.69	16.40	15.27	0.25	6	0	0.57
C08	-5	3.05	1.32	16.61	12.92	0.03	9	1	0.33
C08	-4	-0.57	1.20	17.21	13.69	0.02	9	1	0.33
C08	-3	-1.01	1.30	17.32	13.67	0.02	9	1	0.33
C08	-2	0.16	1.36	17.51	14.13	0.02	9	1	0.33
C08	-1	-0.47	0.86	17.58	14.12	0.02	9	1	0.33
C08	1	-0.75	0.97	18.53	14.09	0.01	10	1	0.40
C08	2	0.06	1.00	18.67	13.47	0.00	10	1	0.40
C08	3	0.87	0.90	18.76	14.51	0.01	10	1	0.40
C08	4	0.33	0.94	18.83	14.84	0.01	10	1	0.40
C08	5	0.32	0.92	18.78	15.33	0.02	10	1	0.40
C09	-5	1.68	1.03	16.16	11.49	0.00	10	1	0.60
C09	-4	-0.24	0.99	16.19	11.38	0.00	10	1	0.60
C09	-3	1.19	1.05	16.06	11.41	0.01	10	1	0.60
C09	-2	1.45	1.43	16.10	11.86	0.01	10	1	0.60
C09	-1	-0.32	0.85	16.03	11.64	0.01	10	1	0.60
C09	1	-0.62	1.37	16.15	15.09	0.01	9	1	0.60
C09	2	0.25	1.06	16.48	15.48	0.01	7	1	0.60
C09	3	0.35	1.00	16.72	12.77	0.01	7	1	0.60
C09	4	-0.31	1.06	17.19	13.24	0.01	7	1	0.60
C09	5	0.11	0.94	17.28	13.79	0.02	7	1	0.60
C10	-5	0.06	0.29	20.18	16.50	0.02	11	1	0.64
C10	-4	0.44	2.61	17.98	16.55	0.17	11	1	0.64
C10	-3	0.22	2.48	18.03	16.65	0.17	11	1	0.64
C10	-2	-0.10	2.35	18.08	16.76	0.18	11	1	0.64
C10	-1	0.24	0.33	18.10	16.81	0.19	11	1	0.64
C10	1	0.08	2.04	18.12	16.70	0.19	11	1	0.64
C10	2	-0.13	2.86	18.33	16.24	0.11	11	1	0.64
C10	3	0.17	1.86	18.46	16.38	0.15	11	1	0.64
C10	4	-0.25	1.53	18.55	16.15	0.12	11	1	0.64
C10	5	0.40	2.38	18.62	15.96	0.10	11	1	0.64

C11	-5	0.30	0.94	17.29	14.01	0.02	10	1	0.70
C11	-4	0.31	0.92	17.31	13.91	0.02	10	1	0.70
C11	-3	-0.03	1.52	16.81	13.91	0.04	10	1	0.70
C11	-2	-0.24	1.51	17.68	13.91	0.04	10	1	0.70
C11	-1	0.22	0.72	17.79	14.57	0.07	13	1	0.70
C11	1	-0.03	1.58	18.18	15.18	0.05	14	1	0.50
C11	2	-0.23	1.30	18.43	15.15	0.04	14	1	0.50
C11	3	0.24	1.50	18.78	15.62	0.05	14	1	0.50
C11	4	-0.42	1.13	19.10	16.03	0.05	14	1	0.50
C11	5	0.33	1.19	19.31	16.36	0.05	14	1	0.50
C12	-5	-0.14	1.56	16.17	13.11	0.05	9	1	0.33
C12	-4	-0.25	1.12	16.19	13.59	0.05	9	1	0.33
C12	-3	0.01	1.06	16.55	13.43	0.03	9	1	0.33
C12	-2	-0.12	1.03	16.34	11.77	0.04	9	1	0.33
C12	-1	0.09	0.65	16.49	12.87	0.05	9	1	0.33
C12	1	0.03	0.82	17.27	13.51	0.02	9	1	0.33
C12	2	-0.14	1.05	17.23	14.14	0.03	9	1	0.33
C12	3	0.08	1.06	17.38	10.97	0.00	9	1	0.33
C12	4	-0.45	0.60	17.31	11.07	-0.01	9	1	0.33
C12	5	-0.21	0.35	17.50	14.55	0.03	9	1	0.33
C13	-5	0.56	1.49	18.18	13.95	0.02	11	1	0.73
C13	-4	0.62	1.49	18.34	14.97	0.03	11	1	0.73
C13	-3	-0.70	1.32	18.61	14.86	0.02	11	1	0.73
C13	-2	-0.38	1.13	19.07	15.15	0.02	11	1	0.73
C13	-1	-0.02	0.88	19.09	15.22	0.02	11	1	0.73
C13	1	0.20	1.10	19.34	16.10	0.03	11	1	0.73
C13	2	-0.16	1.02	19.62	16.53	0.03	11	1	0.73
C13	3	0.47	1.10	19.72	16.66	0.03	11	1	0.73
C13	4	0.89	1.20	19.78	16.69	0.03	11	1	0.73
C13	5	0.48	1.20	20.01	16.92	0.03	11	1	0.73
C14	-5	0.34	4.21	16.94	15.71	0.25	12	1	0.58
C14	-4	0.19	4.27	17.03	15.58	0.26	12	1	0.58
C14	-3	0.10	5.32	17.25	15.65	0.24	12	1	0.58
C14	-2	-0.11	3.71	17.32	15.88	0.28	12	1	0.58
C14	-1	0.10	0.37	17.07	15.84	0.33	12	1	0.58
C14	1	0.44	4.10	17.46	15.85	0.23	12	1	0.75

C14	2	-0.09	3.77	17.72	15.81	0.18	12	1	0.75
C14	3	0.30	4.10	17.81	16.54	0.21	12	1	0.75
C14	4	0.07	5.25	17.87	16.22	0.11	12	1	0.75
C14	5	-0.08	4.49	17.96	16.15	0.11	12	1	0.75
C15	-5	0.21	4.57	17.03	15.58	0.26	12	1	0.58
C15	-4	0.17	5.19	17.25	15.65	0.24	12	1	0.58
C15	-3	-0.08	3.58	17.32	15.88	0.28	12	1	0.58
C15	-2	-0.02	5.86	17.07	15.84	0.33	12	1	0.58
C15	-1	0.45	0.23	17.46	15.85	0.23	12	1	0.58
C15	1	-0.17	3.77	17.72	15.81	0.18	12	1	0.75
C15	2	0.25	4.10	17.81	16.54	0.21	12	1	0.75
C15	3	0.18	5.25	17.87	16.22	0.11	12	1	0.75
C15	4	0.00	4.49	17.96	16.15	0.11	12	1	0.75
C15	5	-0.06	10.55	18.14	16.22	0.10	12	1	0.75
C16	-5	-0.08	1.34	15.59	12.22	0.03	12	1	0.50
C16	-4	-0.18	1.38	15.62	9.70	-0.02	12	1	0.50
C16	-3	-0.41	1.24	15.84	12.06	0.02	12	1	0.50
C16	-2	0.93	1.01	16.18	13.41	0.06	12	1	0.50
C16	-1	-0.59	0.82	16.26	13.22	0.04	12	1	0.50
C16	1	1.12	1.09	16.62	13.63	0.17	12	1	0.50
C16	2	0.58	1.25	16.87	14.23	0.13	12	1	0.50
C16	3	0.50	1.31	17.02	13.96	0.13	12	1	0.50
C16	4	-0.18	1.16	17.15	14.23	0.15	12	1	0.50
C16	5	0.75	1.09	17.30	14.48	0.15	12	1	0.50
C17	-5	0.00	1.02	15.73	13.12	0.06	11	1	0.73
C17	-4	-0.24	0.85	15.73	13.55	0.03	11	1	0.73
C17	-3	-0.03	1.71	15.69	12.87	0.06	11	1	0.73
C17	-2	0.36	1.40	15.76	13.14	0.07	11	1	0.73
C17	-1	-0.44	0.14	16.29	13.40	0.05	11	1	0.73
C17	1	-0.09	0.85	16.41	13.18	0.04	11	1	0.73
C17	2	0.07	0.86	16.60	13.14	0.03	11	1	0.73
C17	3	-0.12	0.76	16.58	10.22	0.01	11	1	0.73
C17	4	-0.02	0.58	16.58	9.23	0.08	11	1	0.73
C17	5	0.01	0.53	17.03	7.85	0.01	11	1	0.73
C18	-5	0.33	0.78	14.24	11.67	0.05	5	1	0.60
C18	-4	0.12	0.82	14.48	10.90	0.02	5	1	0.60

C18	-3	-0.64	0.96	14.44	11.61	0.05	5	1	0.60
C18	-2	0.18	0.75	14.49	11.85	0.05	5	1	0.60
C18	-1	0.76	0.48	14.61	12.21	0.06	5	1	0.60
C18	1	-0.50	0.66	14.97	12.32	0.04	5	1	0.60
C18	2	0.84	1.14	14.90	12.72	0.07	5	1	0.60
C18	3	0.64	1.74	15.16	11.93	0.05	5	1	0.60
C18	4	0.37	1.49	15.39	11.74	0.01	5	1	0.60
C18	5	-0.25	1.33	15.61	11.54	0.03	5	1	0.60
C19	-5	-0.17	1.33	18.41	15.00	0.03	10	1	0.30
C19	-4	-0.13	1.49	18.63	15.37	0.04	8	1	0.30
C19	-3	0.68	1.33	18.78	15.46	0.04	8	1	0.30
C19	-2	-0.41	1.32	18.92	15.41	0.04	8	1	0.30
C19	-1	0.40	0.84	19.09	15.83	0.04	8	1	0.30
C19	1	0.22	1.26	19.21	15.98	0.04	8	1	0.38
C19	2	0.17	1.28	19.22	16.09	0.05	8	1	0.38
C19	3	-0.36	1.26	19.27	16.18	0.05	8	1	0.38
C19	4	0.27	1.27	19.29	16.27	0.06	8	1	0.38
C19	5	0.07	1.25	19.34	16.37	0.07	8	1	0.38
C20	-5	0.24	2.01	18.18	15.18	0.05	13	1	0.50
C20	-4	-0.68	1.38	18.43	15.15	0.34	13	1	0.50
C20	-3	0.85	1.42	18.78	15.62	0.07	13	1	0.50
C20	-2	-0.25	1.41	19.10	16.03	0.06	13	1	0.50
C20	-1	0.53	0.82	19.31	16.36	0.05	13	1	0.50
C20	1	0.41	1.22	19.44	15.11	0.05	13	1	0.50
C20	2	0.46	1.35	19.66	16.57	0.05	13	1	0.50
C20	3	-0.30	1.16	19.87	16.76	0.04	13	1	0.50
C20	4	0.24	0.99	20.09	16.93	0.04	13	1	0.50
C20	5	-0.37	1.00	20.13	17.07	0.05	13	1	0.50
C21	-5	-0.19	1.94	15.14	12.51	0.11	8	1	0.43
C21	-4	-0.08	4.06	15.18	12.98	0.16	7	1	0.43
C21	-3	1.18	2.01	15.90	13.42	0.11	7	1	0.43
C21	-2	-0.29	3.50	15.95	13.89	0.09	7	1	0.43
C21	-1	0.38	0.39	15.94	13.68	0.10	7	1	0.43
C21	1	0.12	1.80	16.36	13.78	0.07	6	1	0.67
C21	2	0.28	1.66	16.40	13.72	0.05	6	1	0.67
C21	3	-0.60	1.67	16.44	13.78	0.04	6	1	0.67

C21	4	0.59	1.68	16.48	13.79	0.05	6	1	0.67
C21	5	0.25	1.69	16.52	13.80	0.05	6	1	0.67
C22	-5	0.02	0.70	15.91	13.23	0.04	8	1	0.63
C22	-4	-0.30	1.93	15.67	13.07	0.17	8	1	0.63
C22	-3	1.06	1.00	15.93	13.89	0.28	9	1	0.63
C22	-2	-0.32	0.93	16.33	14.65	0.10	9	1	0.63
C22	-1	0.87	0.46	16.26	14.13	0.09	9	1	0.63
C22	1	0.76	0.97	16.76	13.88	0.05	9	1	0.56
C22	2	0.45	1.14	17.20	13.91	0.04	9	1	0.56
C22	3	-0.11	0.88	17.51	13.94	0.03	9	1	0.56
C22	4	0.02	0.77	17.68	14.03	0.03	9	1	0.56
C22	5	-0.15	0.66	17.87	14.12	0.03	9	1	0.56
C23	-5	0.22	0.54	15.53	12.47	0.03	8	1	0.50
C23	-4	0.32	0.40	15.44	12.61	0.05	9	1	0.50
C23	-3	-0.06	1.21	15.56	13.28	0.08	9	1	0.50
C23	-2	0.29	0.78	15.67	13.06	0.05	9	1	0.50
C23	-1	0.64	0.47	15.91	12.72	0.03	9	1	0.50
C23	1	0.58	0.93	15.90	13.09	0.05	9	1	0.44
C23	2	0.06	0.94	15.95	12.59	0.05	9	1	0.44
C23	3	0.36	1.06	16.00	12.92	0.06	9	1	0.44
C23	4	-0.18	1.13	16.05	12.87	0.07	9	1	0.44
C23	5	-0.10	1.05	16.13	13.40	0.06	9	1	0.44
C24	-5	-0.01	2.84	18.33	16.24	0.17	12	1	0.56
C24	-4	0.33	1.81	18.46	16.38	0.13	12	1	0.56
C24	-3	0.09	1.45	18.55	16.15	0.11	12	1	0.56
C24	-2	-0.34	2.25	18.62	15.96	0.10	12	1	0.56
C24	-1	0.73	0.26	18.67	16.38	0.14	12	1	0.56
C24	1	0.76	2.06	18.72	16.60	0.17	12	1	0.56
C24	2	0.21	3.75	18.76	16.70	0.21	12	1	0.56
C24	3	0.49	3.88	18.81	16.74	0.24	12	1	0.56
C24	4	-0.12	4.03	18.86	16.80	0.25	12	1	0.56
C24	5	0.24	4.19	18.89	16.59	0.27	12	1	0.56
C25	-5	0.21	1.20	17.20	14.19	0.04	7	0	0.57
C25	-4	-0.46	1.32	17.23	14.54	0.06	7	0	0.57
C25	-3	0.15	1.15	17.64	15.27	0.07	7	0	0.57
C25	-2	0.10	1.00	17.30	16.01	-0.19	7	0	0.57

C25	-1	-0.30	0.69	17.15	12.94	0.02	7	0	0.57
C25	1	-0.21	1.48	16.99	14.02	0.05	7	0	0.57
C25	2	0.17	1.35	16.90	14.08	0.10	7	0	0.57
C25	3	-0.10	1.45	16.85	14.14	0.15	7	0	0.57
C25	4	0.07	1.70	16.75	14.18	0.22	7	0	0.57
C25	5	-0.20	1.89	16.67	14.20	0.30	7	0	0.57

Appendix VIII: Carhart Return Variable Data Plota

a).Data Plot by Firm

Graphs by serial
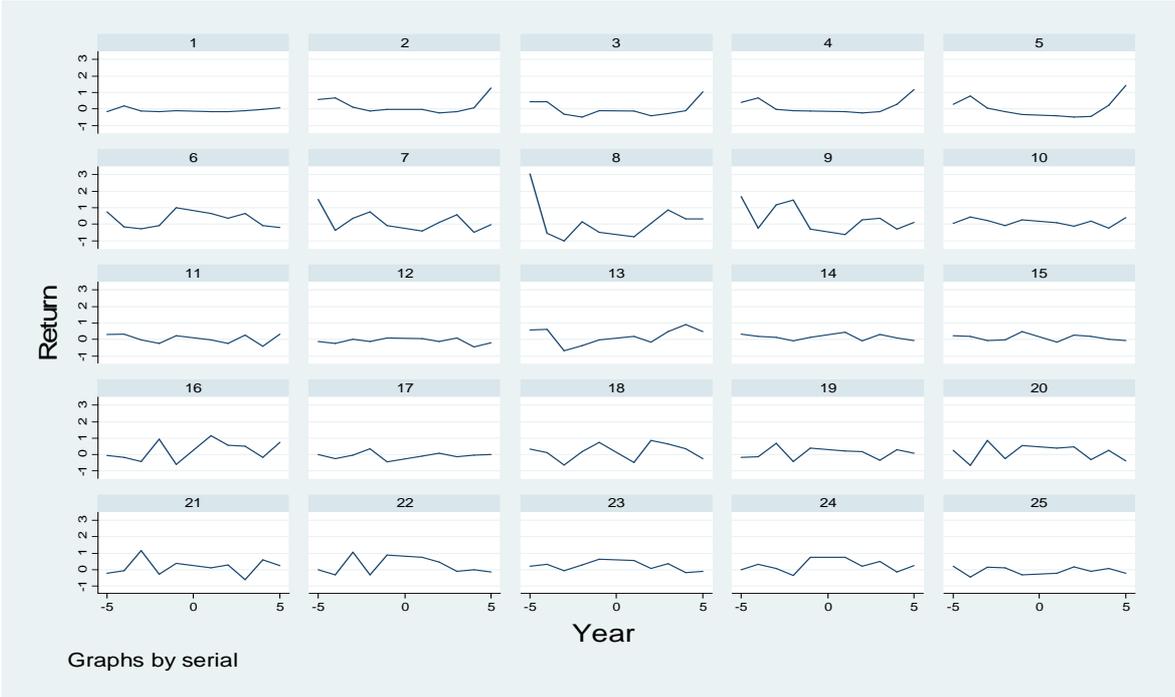
b) Data Plot by Firm- Overlay Graph