A TEST OF TURN OF THE MONTH EFFECT AT THE NAIROBI SECURITIES EXCHANGE

BY

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DECLARATION

I, Kipyegon Langat, hereby declare that this project is my own work and effort and that it has not been submitted anywhere for any award.

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DEDICATION

To my wife, Jackline Cherotich Langat

For the love and the faith she had in me.

To my mum and dad for their love of knowledge that inspired me.

To my children, Netty and Nicole, their presence all the time encouraged me.

To my brothers and sisters whose perspective in life has taught me resilience.

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I am heavily indebted to various people and organizations without whose material and non material support this research would not have succeeded. I take this opportunity to express my sincere thanks to each of these people and organizations.

The staff of the Jomo Kenyatta Library provided the opportunity to use the facilities especially in the MBA and the Electronic Library section. From these able staff I was able to access not only research reports from earlier MBA research findings but I was able to access scholarly publication from the wider academic sphere.

The data for analysis was got from NSE data base. I wish to thank the NSE staff for two reasons: First they kept the data I needed for the research and, secondly, they availed the data to me when I needed them to. With the data I was able to complete this project.

In my literature review I have cited quite a lot of scholarly publication. Some are from earlier research finding from project done by other MBA students. I have used scholarly papers from the wider academia. These are works without which I could not have had a scholarly insight into this research

Finally I would wish to thank my family that provided me with encouragement throughout the period I was conducting this research.

ABSTRACT

The turn of the month effect is a stock market anomaly in which the mean stock return is higher during the first half of the month and lower during the latter half of the same month. This is a critical departure from the Efficient Market which asserts that stock markets are efficient. One such stocks markets in the Nairobi Securities Exchange. This research was therefore conducted to ascertain whether the end of the month anomaly is present in stocks traded on the NSE. The objective of this research was establishing the existence of the turn of the month effect in the common stocks of companies listed on the Nairobi Securities Exchange. This research was time series analysis based on the firms listed on the NSE between January 2008 and December 2012. The research covered 58 firms listed firms. The raw secondary data for this research was collected from the electronic database of the NSE. Wednesday prices and the dividends were used to generate Wednesday returns across the period of study. Returns on Wednesdays at the end of the month made the dependent variable. The arithmetic mean of the remaining Wednesday returns of each month made the dependent variable. The research established that: first the returns at the end of the month did not adhere to the normal distribution; secondly, the returns of the rest of the month were not normally distributed; thirdly, the regression results showed that intercept term was positive and significantly different from zero; fourthly, the coefficient of regression was positive but not statistically significant. The whole regression was not statistically significant and the explanation of the variation in the end of the month was poorly explained by the variation in month average returns. The research found the turn of the month effect non-existent on the NSE. The study, therefore, makes the following recommendations: trading companies and the NSE should be careful about information reaching traders about the companies whose stocks they trade in; the turn of the month does not affect returns on the NSE; information efficiency should be made even better so that Kenyans get timely and material information about stocks they trade in.

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ABBREVIATIONS AND ACRONYMS

BOVESPA	-	Bolsa de Valores, Mercadorias & Futuros de São Paulo
BSE	-	Bombay Stock Exchange
CMA	-	Capital Market Authority
CRSP	-	Center for Research in Security Prices
DASS	-	Delivery and Settlement System
EMH	-	Efficient Market Hypothesis
GARCH	-	Generalized Autoregressive Conditional Heteroskedasticity
IPO	-	Initial Public Offer
KSE	-	Karachi Stock Exchange
MERVAL	-	MERcado de VALores
MSE	-	Malta Stock Exchange
NSE	-	Nairobi Securities Exchange
OLS	-	Ordinary Least square
TOM	-	Turn-Of-The-Month
UK	-	United Kingdom
USA	-	United States of America

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CHAPTER ONE

INTRODUCTION

1.1. Background of the Study

According to Ariel (1987) the turn of the month effect is a stock market anomaly in which the mean stock return is higher during the first half of the month and lower during the latter half of the same month. This is a critical departure from the Efficient Market Hypothesis by (EMH) formulated by Fama (1970) which posits that at any given time, prices fully reflect all available information on a particular stock and/or market. Thus, according to the EMH, no investor has an advantage in predicting the return on a stock price because no one has access to information not already available to everyone else (Fama, 1965). Changes in stock returns are simple random variations.

The term "stock market" is made up of two terms, namely, stock and market. A stock is simply a unit of ownership of a listed company that the owner is willing to sell. Stock comes in two types: common and preferred. If an investor buys common stock, he or she becomes part owner of a company. Such an investor participates in electing directors, who hire the people that manage the company on a day-to-day basis. Such an investor can vote on issues at a stockholders meeting and has right to dividends declared by the board of directors. Preferred stocks represent some degree of ownership in a company but usually do not necessarily come with the same voting rights as common stocks. A market is a collection of buyers and sellers, resulting in the possibility for exchange (Mears, 2001).

A stock market is the market in which ownership shares of publicly held companies is traded either through exchanges or over-the-counter markets. It is also known as the equity market. The stock market is a vital component of a free-market economy because it provides companies with access to capital in exchange for giving investors a slice of ownership in the company (Mears, 2001).

A stock market is a component of the capital market. In a capital market individuals and institutions trade financial securities. Organizations and institutions trade on the capital markets in order to raise funds. Thus, this type of market is composed of both the primary and secondary markets. A government or a corporation that requires funds to finance its operations and to engage in its own long-term investments raises the funds through the sale of securities. These securities can be stocks and bonds in the institution's name. These are bought and sold in the capital markets (Mears, 2001).

1.1.1. Securities Returns

According to Chandra (2006) a stock return refers to the income on a stock at the end of a given time period expressed as a percentage of the worth of the stock at the start of the same period. Stock returns are measured as the continuously compounded daily, weekly, monthly or annual percentage change in the share price of a stock. The usual sources of income for stocks include dividends, returns on capital and capital appreciation. For this study, the time interval is the week. Therefore, the return of a stock on the NSE will be expressing the dividends and price variations at the end of the week as a percentage of the price of the stock at the beginning of the given week.

1.1.2. Market Anomalies

Sanaullah et al (2012) acknowledge that there are some factors which may lead to inefficiencies in any capital market as observed in the behavior of investors. They predict anomalous patterns of stock markets that earn investors abnormal returns which are against the credibility and the reliability of market efficiency. This anomalous behavior can be judged in capital markets by analyzing day of the week effect, weekend effect, January effect, turn of the month effect, occurrence of unexpected events and intraday effect.

January effect in calendar anomalies is believed to be due to smaller capitalization stocks in very first week of the first month of the year. The turn of the month effect happens at the end of every month and the start of next month due to cash withdrawals on account of payments. The day of the week effect is a calendar anomaly in which anomalies occur according to the day of the week (Chandra, 2006).

1.1.3. Turn of the Month Effect

Kolahi (2006) defines turn of the month as the last two days of a month and the first three days of the next month. The turn of the month effect then becomes the tendency of stock prices to increase during these last two days and the first three days of each month while dropping the rest of the days. This definition is slightly different from the original one by Ariel (1987) but is more precise.

Though not in agreement on what causes this trend, there seems to be agreement among researchers like Camilleri (2008) that the phenomenon is a reality in stock markets. According to Camilleri (2008), the matter has not settled. This topic is recurrent in the

discipline finance since it is one way of assessing the volatility of asset prices given the closeness of the volatility to returns and to risks.

Such seasonalities have been observed on various developed stock markets like Denmark, France, Germany, Hong Kong, Italy, Japan, Norway, Sweden, UK, and USA as established by Hansen & Lunde (2003) and on emerging markets like the Bombay Stock Exchange as established by Pandey (2003). These occurrences have dealt challenge to the postulation of the Efficient Market Hypothesis.

According to Fama (1970) variations in the stock returns are purely random variations from expected returns. The EMH relates to how quickly and accurately the market reacts to new information. According to William (2002) new data are always entering the market place in form of economic reports, company announcements, political statements, or public surveys. In an informationally efficient market security prices adjust rapidly and accurately to the new information. In the EMH, security prices fully reflect all the available information in the market. Since all the information is already incorporated in prices, a trader is not able to make any excess returns.

1.1.4. The Nairobi Securities Exchange

This study will be conducted on common stocks of firms listed on the Nairobi Securities Exchange (NSE). The NSE was registered originally as a voluntary association of stockbrokers in 1954. It exclusively served the Kenyan white community until after the attainment of independence in 1963. In 1988 the first privatization through the NSE was realized. There was a successful sale of a 20% government stake in Kenya Commercial Bank (NSE, 2012). In February 18, 1994 there was a record high 20-Share Index (NSE,

2012). More improvements have been taking place on the NSE and now there is a computerized delivery and settlement system (DASS).

According to the NSE (2012), securities are divided into Agricultural investments market Segment made up of firms in the Agricultural sector, Commercial and Services sector, the Telecommunication and Technology Segment, Automobiles and Accessories, Banking, Insurance, Investment, Manufacturing and Allied, Construction and Allied, and Energy and Petroleum Segments. The other segment (not relevant to this study) deals with Fixed Income Securities like bonds (NSE, 2012). The NSE is subordinate to the Capital Market Authority (CMA). Among other things the Capital Market Authority is charged with the role of protecting investor interests (NSE, 2012). Trading on the NSE is done on a five-day basis with Saturday, Sunday and the holidays making the non-trading days.

1.2. Research Problem

The turn of the month effect as discussed by Ariel (1987) is a stock market anomaly in which the mean stock return is higher during the first half of the month as compared to the latter half of the same month. This was later redefined by Kolahi (2006) to mean the stock market anomaly in which returns of the last two days of a month and the first three days of the next month were higher than for the rest of the days in a month. The turn of the month phenomenon is departure from the Efficient Market Hypothesis by Fama (1970) which posits that at any given time, stock returns are simple random variations.

However, findings on the manifestation of the turn of the month effect in stock vary. Hansen & Lunde (2003) found turn of the month anomalies in developed markets like

Denmark, France, Germany, Hong Kong, Italy, Japan, Norway, Sweden, UK, and USA. Pandey (2003) also found similar results after analysis of stocks on Bombay Stock Exchange in India. The findings of Ramcharran (1997) confirmed no form of seasonality on the stock market in Jamaica. A study by Sharma & Narayan (2011) in the USA found that the effects of the turn of the month are different for different firms depending on the sectoral location and firm sizes. A study by Hansen & Lunde (2003) found the presence of the calendar effect to tend to diminish in the Denmark, France, Germany, Hong Kong, Italy, Japan, Norway, Sweden, UK, and USA stock exchanges.

On the Kenyan scene, the study done by Wangeci (2012) limited itself to, and indeed, establishing the presence of the weekend effect. Kosgey (2008) who conducted a time series study on the behaviour of the NSE 20-share index found the weekend effect present. This was a departure from the findings by Dickinson & Muragu (1994) based on 30 listed companies on the Nairobi Securities Exchange from 1979 to 1988 that the Nairobi Securities Exchange was an efficient market. This research takes the discussion on the turn of the month effect further by looking at an emerging market like Kenya and in a different time setting covering 2008 to 2012. This study will differ from the study by Dickinson & Muragu (1994) due to the differences in time period and while they looked at IPOs this study focuses on already trading stocks. This study answered the question: do the returns on common stocks on the NSE reflect the turn of the month effect?

1.3. Research Objectives

The objective of this research was to establish the existence of the turn of the month effect in the common stocks of companies listed on the Nairobi Securities Exchange

1.4. Value of the Study

The findings of this research will be of value to scholars, the management of the Capital Markets Authority and the Nairobi Securities Exchange, Investors in common stocks at the Nairobi Securities Exchange, and government policy makers. For scholars of finance interested in the behaviour of returns in a stock market, this study will provide a rich insight into this phenomenon especially in an emerging market like Kenya. The research gap of this research arises from the fact that there seems to be no research evidence that the turn of the month effect is a phenomenon present on the Nairobi Securities Exchange. Confirming the presence of this phenomenon on the Nairobi Securities Exchange will contribute to the scholarly discussion of whether the turn of the month effect is a global phenomenon.

To the Capital Markets Authority and the management of the NSE this study will provide current findings to test whether the NSE is now an efficient market or not. In an efficient market, the variation in common stocks' returns is a simple random variation that even the smartest speculators cannot consistently beat for profit. If the market is efficient, then there will be no turn of the month effect. However, presence of the turn of the month will indicate that the NSE has not yet achieved the efficiency that should be associated with stock markets. It will therefore require steps to be taken to make the market efficient for the benefit of the investors.

Investors will benefit from this study since it will provide information on whether, the NSE is efficient or not and whether the turn of the month affects commons stocks' returns or not. Investors can use the inefficiency of the market to make profit from the market. This can be done by way of utilizing the anomalies. If the turn of the month effect is

present then an investor can buy stocks when prices are generally low and sell the same shares at a premium when the turn of the month sets in. that is, sell the stocks within the two days before the end of the month and within the first three days of the next month. Same shares can be sold for a profit when they fall in price again.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter discusses the theories and the empirical literature review behind this study. There are three theories behind this research. These are the efficient market hypothesis, behavioural finance and the turn of the month effect. These theories are discussed in the first section of this chapter. The second chapter discusses findings of earlier empirical research works on this topic.

2.2 Review of Theories

2.2.1 The Efficient Market Hypothesis

The Efficient Market Hypothesis was a simple response to allegations from the professional investment community and critics of financial accounting before it was formally developed into the concept of market efficiency. According to Fama (1965) who formalized the hypothesis, a securities market is efficient with respect to information if and only if security prices act as if everyone knows and responds according to that information. Prices in this context are said to fully reflect the information system.

Fama (1965) proposed the EMH in which he defined an efficient market as "…a market where prices at every point in time represent best estimates of intrinsic values. This implies in turn that, when intrinsic value changes, the actual price will adjust 'instantaneously'…" This initial definition of the efficient market was to a market "…in which prices always 'fully reflect' available information" Fama (1970). The second definition allowed for gradual dissemination of information into the market.

This theory is relevant to this study since it provides the basis for determining whether stock markets are efficient or not. This is in the sense that before determining whether the market is inefficient, it is necessary as a logical starting point to assume the market is efficient. The absence of the turn of the month can contribute significantly to the preposition that a market is efficient and devoid of behavioural biases that would result in the turn of the month anomaly (Huang & Litzenberger 1988).

2.2.2 Behavioral Finance Theory

The Behavioral Finance theory rivals the Efficient Market Hypothesis concerning explaining how investors make investment decisions based on their behavioural dispositions. This theory is concerned with the bounds of rationality of economic agents. Behavioral models use psychology and neo-classical economic theory in explaining investment behaviour. This theory argues that individuals make systematic mistakes in the way that they process information (Daniel & Titman, 2000).

The behavioral theory in finance was initialized by Kahneman & Tversky (1979). The model discusses issues like behavioral biases (excessive optimism, overconfidence, confirmation bias, illusion of control), heuristics (representativeness, availability, anchoring) and framing effects. This theory notes the irrationalities that make prices deviate from the expected.

This theory is relevant to this study since it provides a rival explanation of stock returns behavior. Whereas the EMH notes that stock markets are efficient, behavioural finance asserts that stock markets are inefficient (Kahneman & Tversky, 1979). One of the ways

in which the market inefficiency manifests itself is through turn of the month effect which is the matter of this research.

2.3 Other Securities Market anomalies

The turn of the month effect is not the only anomaly affecting the pattern of returns on the securities market. Dyl & Maberly (1988) presented the information flow hypothesis which stated that information flow over the weekend is the cause of Monday effect. The Monday effect is the tendency to have negative returns on Mondays. Negative information on weekend and the two non-trading days promotes investors to absorb the information before reacting with trading activity. And it is the cause of negative Monday return. However, Gibbons & Hess [5] attributed the anomaly to Settlement period. In their Settlement period hypothesis arising from studying Monday returns from 1962 to 1978 by using mean returns and returns of S&P 500, they noted that before 1968 there was higher negative Monday effect because before the 1968 settlement period was four days.

The January, or turn-of-the-year, effect is one other and better known calendar anomalies. It impacts on January returns which are higher as compared to other months. It was studied by Rozeff and Kinney (1976) and their work found that the NYSE average returns for the period 1904 to 1974 were 3.5% in January compared to 0.5% for other months. Most studies find that the returns are large in January and low in December.

Day of the Weak Effect is the postulation that stock market returns vary according to the day of the week. Gibbon and Hess [5] worked on day-of-the week effect for the first time in US and they used the indices of S&P and CRSP from 1962 to 1978. They found the

lowest return on Monday. The Monday effect is another anomaly which results in negative returns from Friday to Monday closing stock prices. They found largest stock return deviation on Monday and lowest stock return deviation on Friday.

Tax-loss selling hypothesis by Branch (1977) sought to explain the January effect. The January effect results in higher returns during the month of January. The hypothesis states that on the end of year tax-loss selling of shares is responsible for the lower returns in January. It implies that investors sell stocks at end of the year to escape from tax, which results in lower stock prices and thereby higher stock market returns in January.

Though not a calendar anomaly, the size of firms trading on a securities market tend to affect returns. Banz (1981) identified that small firms have higher risk- adjusted returns and to discover this he used the data of NYSE from 1936 to 1975. He stated that size effect is not linear function when he divided the ten years' data in sub-periods. Keim (1983) analyzed the negative relation between firm size measured in total market value of equity and abnormal risk-adjusted returns. He showed that smaller firm size leads to increase in returns. For this purpose he used the data of NYSE and AMEX from 1963-1979. Furthermore, his results showed that size effect is stronger for January than for the remaining months.

There are more other anomalies. Researchers have reported half- month effect in literature. Various studies have reported that daily stock returns in first half of month are relatively higher than last half of the month. Ariel (1987) conducted a study using US market indices from 1963 to 1981 to show this effect. Aggarwal & Tandon (1994) found

in their study such effect in other international markets. Ziemba (1991) found in their study that returns were consistently higher on first and last four days of the month.

The holiday effect refers to higher returns around holidays, mainly in the pre-holiday period as compared to returns of the normal trading days. Lakonishok & Smidt (1988) studied Dow Jones Industrial Average and reported that half of the positive returns occur during the 10 preholiday trading days in each year. Ariel (1990) showed using US stock market that more than one-third positive returns each year registered in the 8 trading days prior to a market-closed holiday. Similar conclusions were brought by Cadsby & Ratner (1992) which documented significant pre-holiday effects for a number of stock markets. .

2.4 Empirical Literature Review

Alagidede & Panagiotidis (2006) investigates two calendar anomalies in the Ghana Stock Exchange, which is an emerging African stock market. The market operated for only three days per week during the sample period. The research used daily closing prices from period 15 June 1994 to 28 April 2004 excluding holidays. The monthly observations ran from 30 June 1994 to 28 April 2004. Non-linear models from the GARCH were used in analysis. The market was found to be informationally inefficient with April effect and day of the week effect present. However, the study found that the seasonality disappeared when rolling regression techniques were employed.

Authors such as Chien, Lee and Wang (2002) suggested that higher January volatility may be a remnant of the fact that the fiscal years of most companies end in December, and earnings are announced in January. This explanation is corroborated by the findings of Camilleri and Green (2005) who analyzed volatility prevailing on the Indian stock

markets. One notable feature is that a large number of Indian companies terminate their accounting years in March, and the authors found higher volatility during the months of March and April. No evidence of a higher January volatility was found, and this provides confidence that the frequently observed January effect is mostly related to the end of financial year of companies, which usually occurs in December.

Kunkel, Compton and Beyer (2003) examined daily stock market data for 19 countries from 1998 to 2000, and found the presence of a turn of the Month effect in at least 15 of these markets. In particular, the turn of the Month period accounts for around 87% of monthly return in those markets where it is present. Booth, Kallunki, and Martikainen (2001) analysed Helsinki Stock Exchange data for the period 1991-1997 and found higher stock returns during the turn of the Month. The authors attributed this turn of the Month effect to higher trading activity and increased buy orders during the particular days, and they specified that the increased trading activity is mainly attributable to larger traders.

Kunkel et al (2003) sought to establish the presence of the turn-of-the-month effect in stocks in 19 country stock market indices from August 1, 1988 to July 31, 2000. The data were obtained from yahoo finance and the Wall Street Journal. Only countries with at least 6 years of data were included in the sample. There were eight European countries, six Far East countries (Australia, Hong Kong, Japan, Malaysia, New Zealand, and Singapore), two North American countries (Canada and United States), two Latin American countries (Brazil and Mexico), and South Africa. The turn-of-the-month (TOM) pattern in daily stock returns was analyzed using both parametric and nonparametric measures. The study found that the 4-day turn-of-the-month period

accounted for 87% of the monthly return across the stock markets of 15countries where the turn-of-the-month pattern existed.

The findings of Alya et al (2004) contrasted the findings of other studies. They conducted a study to find out the presence of stock market anomalies in the Egyptian Stock Market. The Egyptian Stock Market is an emerging capital market with a four-day trading week. The data used in the study consisted of daily closing values for the major Egyptian stock market index, the CMA Index, from April 26, 1998 to June 6, 2001. An intra-month return analysis provided no evidence of market anomalies.

McConnell & Xu (2006) conducted another study to find out the presence of the turn-of-the-month effect in stocks in the USA. The study used CRSP daily returns for the period 1987 to 2005. The study established that the turn-of-the-month effect persisted over the time interval of 1987-2005. There were positive excess market returns during the four-day turn-of-the-month interval. The study further found that the turn-of-the-month effect was present stock of all types of prices, during all months of the year, in stocks in the USA and out of USA, and was not due to risk.

Camilleri (2008) conducted a study to investigate whether monthly volatility patterns prevailing in a cross-section of stock markets are present on the Malta Stock Exchange (MSE). Being one of the smallest exchanges in European the MSE was characterized by modest trading activity with 14 equities with total market capitalization of about Euro 6,075 million in September 2005. The study used the Kruskal-Wallis test to test for variation in the daily returns of the stock. The study detected the Turn-Of-The-Month effect, since volatility tended to increase towards the end of the month.

Willey & Zumpano (2008) conducted a study that provided an empirical test that measures the impact of the level of institutional investment on the turn-of-the-month effect using a sample of REITs over the period 1980 to 2004. They found that a significant change in the turn-of-the-month effect occurred following the Omnibus Reconciliation Act of 1993 which relaxed the requirements on the level of institutional investment in REITs. The evidence suggests that the dramatic rise in institutional holdings can account for a good part of this change. However, the impact of institutional investment may not be large. There found no evidence to suggest that institutional investment impacts returns on the day when the turn-of-the-month effect is most pronounced, suggesting that this calendar anomaly is not caused exclusively by institutional investors in the market.

Zafar, Shah & Urooj, (2009). Anomalies in KSE have been found during the period of 1991- 2007. Study proved that Turn of the Month exists for some particular period i.e. 1991, 1993, 2002, 2005 and the whole period of 1991-2007 in Karachi Stock Exchange after studying the data for the period of November 1991-2007.Study revealed that due to the presence of anomalies capital investors have to behave in different manners which are against the principles of market efficiency. Selling of shares start at the end of month and therefore investors look for positive change in upcoming month. Anomalies will lead investors in a conscious position and the situations ask them to manage such behavior of market.

Mulumbi (2010) conducted a study to examine the existence of the turn of the month effect at the Nairobi stock Exchange. The study adopted a descriptive survey approach covering the period 2005 to 2009. According to the results the average return for stocks

listed at the Nairobi Securities Exchange was higher for the last day of the calendar month and the second day of the following calendar month. The study found that there exists the Turn-of-the-month effect at the Nairobi Securities Exchange.

Chandra (2010) conducted their study to determine the presence of the turn-of-the-month effect on the Bombay Stock Exchange (BSE) SENSEX. Data for the period for the period April 1998 to March 2008 were used for the study. Results from the study revealed a very anomalous behaviour towards returns in BSE 30. The Turn of the Month effect and the Time of the Month effect were found to exist. Analysis of returns during a month revealed that that early days of the month witnessed higher mean returns than later days of the same month.

Reschenhofer (2010) conducted a study to investigate the presence of the turn of the month effect in the S&P 500 index. The data for the study covered the period June 02, 1952 to June 30, 2010. On the overall, the results strongly confirmed the existence of the turn-of-the-month effect in the S&P 500 index.

A study conducted by Lishenga et al (2011) confirmed the existence of inefficiencies on the NSE. This study was done specifically to test the profitability of momentum strategies in Kenya, which is an emerging market. The data used for the study covered the period 1995 to 2007. The study used the relative strength strategies (RSS) and (weighted relative strength strategies (WRSS) in their analysis. The study evaluated the influence of transaction costs, calendar effects, risk factors and other momentum characteristics on momentum profitability. The study confirmed that momentum was an anomaly on the NSE providing further evidence that the NSE was a market with inefficiencies.

Stefanescu & Dumitriu (2011) did a research exploring the presence of the turn-of-the-month effect on Bucharest Stock Exchange. The study used daily values from 2002 to 2011 of the two main indices of the Romanian capital market, namely the BET-C and RAQ – C. Data was studied basing on the stationarity of the variables. They chose a constant as deterministic term of ADF tests. They also performed regression for BET-C and RAQ-C returns. The study found evidences of the turn-of- the-month effect only for the BET-C evolution.

Sanaullah et al (2012) conducted research attempted to find anomalous behavior in two different sets of data from the Karachi Stock Exchange (KSE). The first data set included period of thirteen years from 1997 to 2010 while the second set of data consisted of the 11 years excluding the years of market crash 2005 & 2008. The data set used contained daily stock market index data from 07/02/1997 to 31/12/2010 obtained from KSE 100 Index. Daily closing values of Karachi stock exchange (KSE 100 Index) was obtained from yahoo finance. The two sets of data were analyzed using the Augmented Dickey Fuller test. The first set of data revealed the anomalous turn of the month (TOM) effect while the second did not.

Prajapati et al (2013) conducted a study to find out the presence of day of the month effect on eleven stock markets located in different geographical areas of the world. The paper studied the anomaly and inefficiencies present in the markets. It also highlighted the profit potential available to individual investors and professional fund managers resulting from the anomaly. The statistical significance of daily returns was tested using the Z statistics. To test the equality of returns on all days of a month the research used the Kruskal-Wallis Test. The research was done on data from the SENSEX (India), S&P 500

(United States), MERVAL (Argentina), BOVESPA (Brazil), SCI (China), Nikkei (Japan), Straits Times (Singapore), CAC (France), DAX (Germany), FTSE (England) and TA 100 (Israel). The study found that the day of the month effect was present in all the stock markets tested. Some days in a month historically were found to have delivered significantly higher returns than others.

Iqbal et al (2013) conducted a study to investigate the conventional calendar and Islamic calendar anomalies in Karachi Stock Exchange. The study used the daily and weekly data for the period from 1992 to 2011.The Ordinary Least square (OLS) method was the method of analysis. The study found the Day of the week effect, Month of the year, End of the month, Half month and Islamic month effect. Our results revealed that there was a negative Monday and positive Friday effect, significant Half month effect, and significant turn of the month and the month of the year effect. They also found the significant Ramadan effect in Karachi stock exchange. The study concluded that Karachi stock exchange is informationally inefficient.

In Kenya a study to establish anomalies was done by Wangeci (2012). This study was a study to establish whether the weekend effect was prevalent among common stocks on the Nairobi Securities Exchange. The data used for the study was for the five years beginning January 2007 to December 2011 for all the listed firms during that period. This study used the regression analysis model of weekly average returns against Monday returns. The study established that Monday returns and the weekly average returns were less than one. This indicated that there was weekend effect among the firms on the Nairobi Securities Exchange.

The values of the returns showed that 56.4% of the weekends had negative returns which meant that during such weekends Monday stock prices were less that the Friday prices of stock. The returns that were positive and could not round to zero were 20%. This means to some extend some weeks experienced the weekend effect that produced negative returns irrespective of the average of the week while in other weeks the weekend effect manifested by having returns higher that the weeks average.

The study by Wabwire et al (2013) studied anomalies in stock markets but did not specifically look at the calendar effect. Their study sought to evaluate the effects that IPO announcements had on the market return of listed stocks at the NSE. Further, the study assessed the effects of the turnover and volume traded on the market return. The study covered IPOs at the NSE between January 2006 and March 2009. The study established that IPOs had an effect on stock market return.

Darrat et al (2013) examined seasonal anomalies in the Johannesburg daily stock returns from January 1973 to September 2012. This study focused on three seasonal effects, namely, day-of-the-week, beginning-of-the-month and month-of-the-year. The study found no evidence for either a January or December effect in the South African market. Instead, there was the presence of strong Monday and Tuesday effects in which the returns on Monday and Tuesday were significantly lower than the return on Wednesday. Further, the beginning-of-the-month effect was quite pronounced in which second and third trading day returns were significantly larger than returns in other trading days.

2.5 The Turn of the Month Effect

The Turn of month effect is about abnormal returns being observed around the turn of the month. First noted by Ariel (1987) found that mean daily returns on common stock for the last days of the month and the first nine days of following month were higher than the returns of days in the rest of month. This observation was made after analyzing stock portfolio returns from 1963 to 1981.

Later analysis by Lakonishok and Smidt (1988) revealed that Ariel (1988) had not defined turn of the month correctly. According to them the days defined by the Ariël exhibited high returns therefore they explain the first half of the month as first. They then emphasized that the second half had least priority than the first half. They analyzed daily closing prices of the Dow Jones Industrial Average from 1897 to 1986.

In their conclusion Lakonishok and Smidt (1988) assert that Ariel (1987) added the last trading day into the first half of following month this influencing the results. An analysis of the difference of returns between the two halves of a month and also the returns of trading days around the turn of the month revealed that return for the turn of the month was statistically higher. Kolahi (2006) provided the clearest definition of what the turn of the month is. In his definition, the turn of the month refers to the total of the last two days of a month and the first three days of the next month. They then defined the turn of the month effect as the tendency of stock prices to increase during these five days while dropping the rest of the days.

2.6 Conclusion

From the literature review, theories on the behaviour of common stocks' returns do not seem to agree since theories like the EMH posits that variations in the returns are simple random variations while the behavioural theory finds the variations systematic. Since human behaviour cannot be universalized, an anomaly like the turn of the month pattern in stock returns cannot be assumed to be present in all stock markets. Different market will have different manifestation of the turn of the month anomaly. This study wishes to establish whether this anomaly is evident on the NSE.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the methodology that will be used to conduct the study. It specifies the research design, target population, data collection method and how analysis of the data was be done.

3.2 Research Design

This was a time series analysis based on the firms listed on the NSE. This design was the most appropriate because it was also used by Iqbal, Kouser & Azeem (2007) to study the calendar effects in stocks on Karachi Stock Exchange. This research also required observation of patterns across a reasonable time length to be able to make conclusions. Further most of the Calendar effect researches have been conducted on a time series basis (Durán, 2010).

3.3 Target Population

This research was conducted on all the 58 firms listed on the NSE. According to the NSE (2012), securities are divided into Agricultural investments market Segment made up of 7 firms in the Agricultural sector; 8 in Commercial and Services sector; 2 in the Telecommunication and Technology Segment; 4 in the Automobiles and Accessories; 10 in the Banking; 5 in Insurance; 4 in Investment; 9 in Manufacturing and Allied; 5 in Construction and Allied, and 4 in Energy and Petroleum Segments. Trading on the NSE is done on a five-day basis with Saturday,

3.4 Sample

This research covered the period starting January 1, 2008 and ending December 31, 2012, a period covering a total of 60 months. Daily stock prices and the stock volumes for each firm were collected for the period of study. Only firms that consistently traded between January 1, 2008 and December 31, 2012 were analyzed.

3.5 Data Collection

The raw secondary data for this research was collected from the electronic database of the NSE. All the Wednesday stock prices of shares of the 58 companies listed on the NSE during the period January 1, 2008 and December 31, 2012 were considered. The numbers of shares sold on Wednesdays were collected from the NSE. The capture and analysis of data was done using MS EXCEL 07 and SPSS software.

3.6 Data Analysis

The raw data collected were used to generate the returns R_t. The returns of the Wednesday trading days were found by the model below

$$R_t = n\left(\frac{P_{t+1}}{P_t}\right) \times 100$$

Where R_t is the return on a Wednesday t ($t = 1, 2, 3, \ldots\ldots$), P_{t+1} is the stock price on the Wednesday$t + 1$, while P_t is the stock price on the Wednesday t. Wednesday was selected because it has a smaller degree of irrationalities like those in the Monday effect (Fama, 1965) and the weekend effect (French, 1980). Fama (1965) found a higher variation in returns on Mondays while French (1980) found same significantly different

variation in return on Fridays. Wednesday then represent normal behaviour of the stock exchange.

The weekly general weighted average return for all the firms were found by the model:

$$R_t = \sum_{i=1}^{n} (w_i \times R_{ti})$$

Where R_t is the return on Wednesday t $(t = 1, 2, 3, \ldots\ldots\ldots, 60)$, w_i is the proportion of the volumes of shares of company $i (i = 1, 2, 3, \ldots\ldots n.)$, to all stocks traded on that day. n is the number of companies whose data were used for the study, R_{ti} is the Wednesday return of company i.

The regression model for analyzing the returns was of the form

$$R_a = \beta R_M + e$$

Where R_a refers to the average of the returns preceding those of a Wednesday within the five days of the turn of the month. β is the coefficient of regression, while R_M is the return for the Wednesday within the five days of the turn of the month. e is the error term of the regression model. The $t - test$ was used to determine whether the coefficient β is significantly different from 1 and the $F - test$ used to determine the significance of the regression. If $\beta < 1$ then the turn of the month effect exists, if $\beta \geq 1$ then the turn of the month effect is non-existent.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 Introduction

This chapter discusses the findings of the research. The objective of this research was to find out whether or not the end of the month effect affects trading of stocks on the NSE. The research applied regression analysis in which the return in the Wednesday of the end of the month bracket was the dependent variable while the average of the other Wednesdays not in the end of the month bracket made the independent variable. The chapter therefore discusses how the two variables were operationalized and it provides a statistical description of the distribution of the data on the variables and their correlation. Further, the regression analysis findings are presented. An interpretation of the results is presented in the last subtitle of this chapter.

4.2 Data Presentation

4.2.1 Wednesday Returns

Weekly average returns were generated from the prices and the corresponding traded stocks of the analyzed listed firm. Data on the basis of the listed firms, the rates for a trading day per company were calculated. The average weekly returns were calculated as the weighted averages of the Wednesday returns of the firms. The weights were the volumes of shares traded on the particular Wednesday. The values are presented in Tables A, B and C in appendices II, III and IV respectively.

4.2.2 End of the Month Returns

The independent variable which was the Monday return was calculated in the same manner as the Wednesday average returns. However, it was made different from other Wednesday returns by being the Wednesday closest to the end of the month bracket. With the available data, this generated 79 data point for each month in the study period.

4.2.3 Average Month Returns

Month returns are the returns of the Wednesdays of the month that are not in the end of the month bracket. To generate a variable to be paired with the end of the month Wednesdays, the arithmetic mean of the Wednesdays were calculated to provide a variable for the month. Due to this process, there were 79 data points generated to be used in the regression analysis as the independent variable.

4.2.4 Descriptive Analysis

Descriptive statistics of the two variables were calculated to provide an insight into their nature. Specifically the mean, the median, the mode, the standard deviation, the range, the minimum and the Maximum values of each of the two variables were calculated and the findings tabulated in Table 4.1 below.

As shown in the table, the highest month's average return (R_M) was 0.0901in the month of June 2011 while the lowest month's average return was in the month of December 2011. The highest end of the month return was 0.0480 in November 2011 while the lowest was -0.0532 in July 2011. The monthly returns and the end of the month returns recorded a range of 0.1368 and 0.1012 respectively.

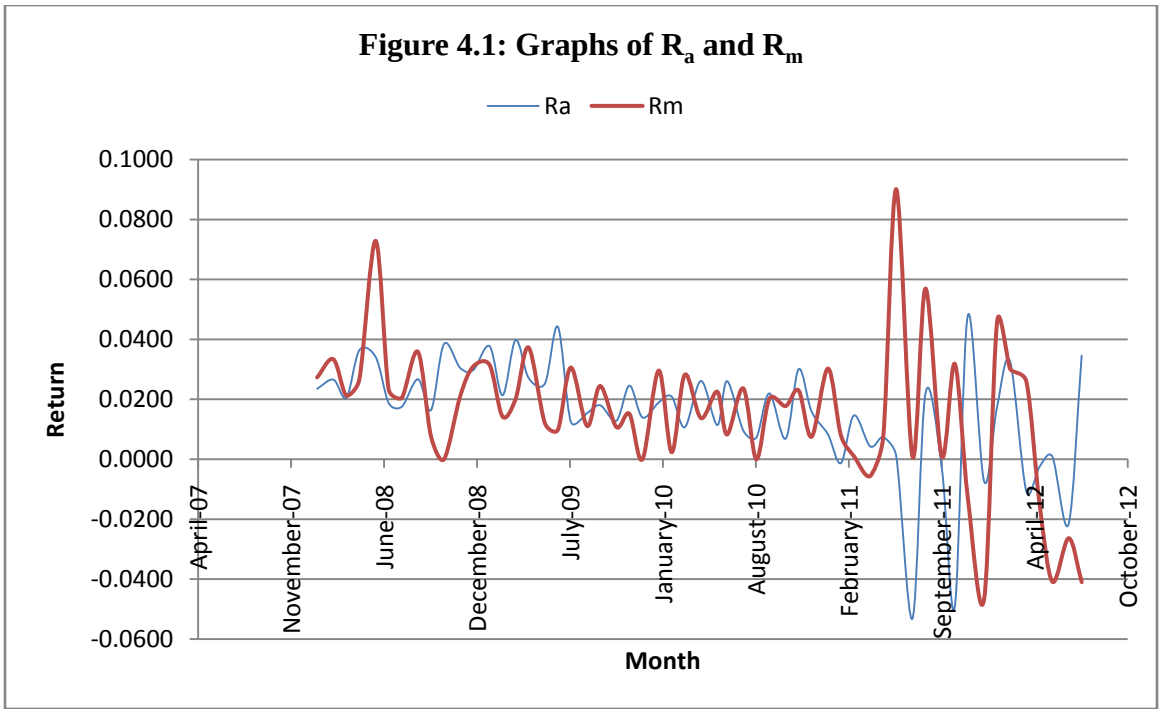
The volatility in the end of the month returns was 0.3405 which was higher than the average return of the return at the end of the moth which stood at 0.0246. on the highest number of occasions the investors registered zero returns. This is indicated by 0.000 returns being the mode of each of the two variables. However, on average, the end of the month netted a return of 0.0250 which was lower than 0.0662 earned in days not in the end of the month.

Table 4.2: Descriptive Statistics

Statistic	**R_a**	**R_m**
Mean	0.0250	0.0662
Median	0.0253	0.0230
Mode	0.0000	0.0000
Standard Deviation	0.0246	0.3405
Range	0.1012	0.1368
Minimum	-0.0532	-0.0467
Maximum	0.0480	0.0901

(Source: Research Data, 2014)

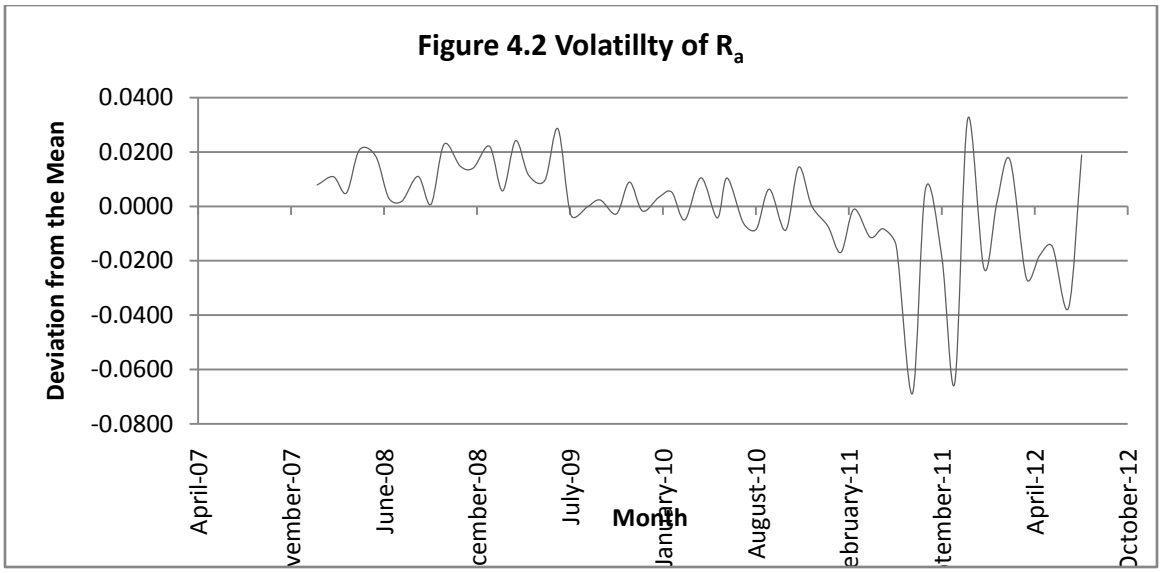
Figure 4.1 shows the graphs of R_a and R_M and indicated, the highest point on the R_a graph is 0.0901 while the lowest is -0.0467. On the R_M curve, the highest value is 0.0480 while the lowest is -0.0532. Larger variations for both R_a and R_M were recorded as from February 2011.



(Source: Research Data, 2014)

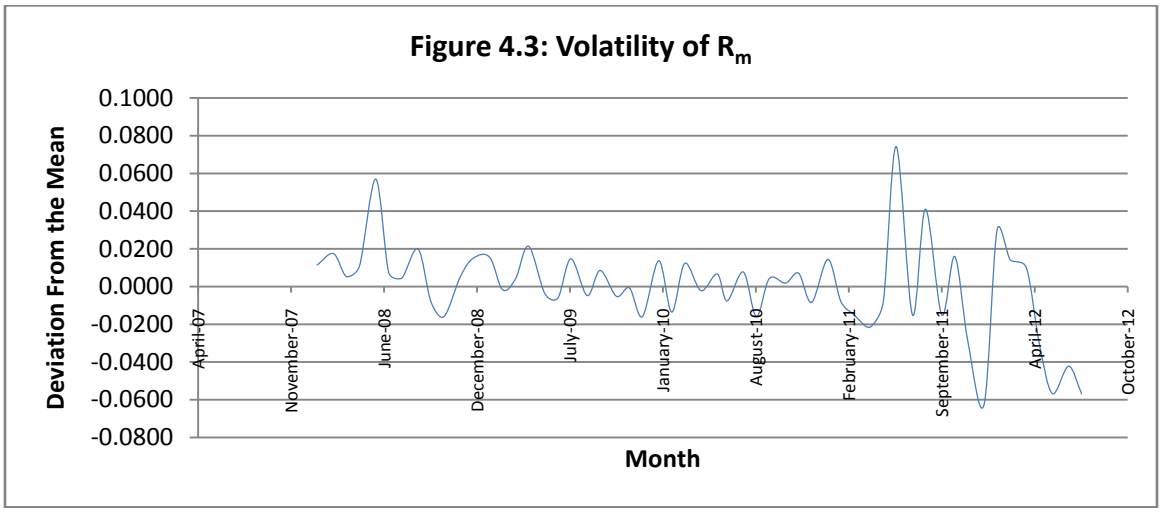
4.2.5 Volatility Analysis

Figure 4.2 shows the volatility of R_a by showing how the returns at the end of the month deviated from their mean 0.0250. The part of the curve above the zero line sows the returns were more than the average as opposed to the sections below the line. The sections below the line show the returns were less than the mean. Before February 2011, the deviations were low and mainly positive as indicated by the graph being above the zero point. However, deviation changed and became greater after February 2011 when volatility was higher and significantly below zero.



(Source: Research Data, 2014)

Figure 4.3 shows the deviation of the monthly average returns, R_M from their mean 0.0662. As shown, there was low volatility in monthly average return before February 2011. However, the period after February 2011 was highly volatile as shown by the wider oscillations of the lines across the zero line.

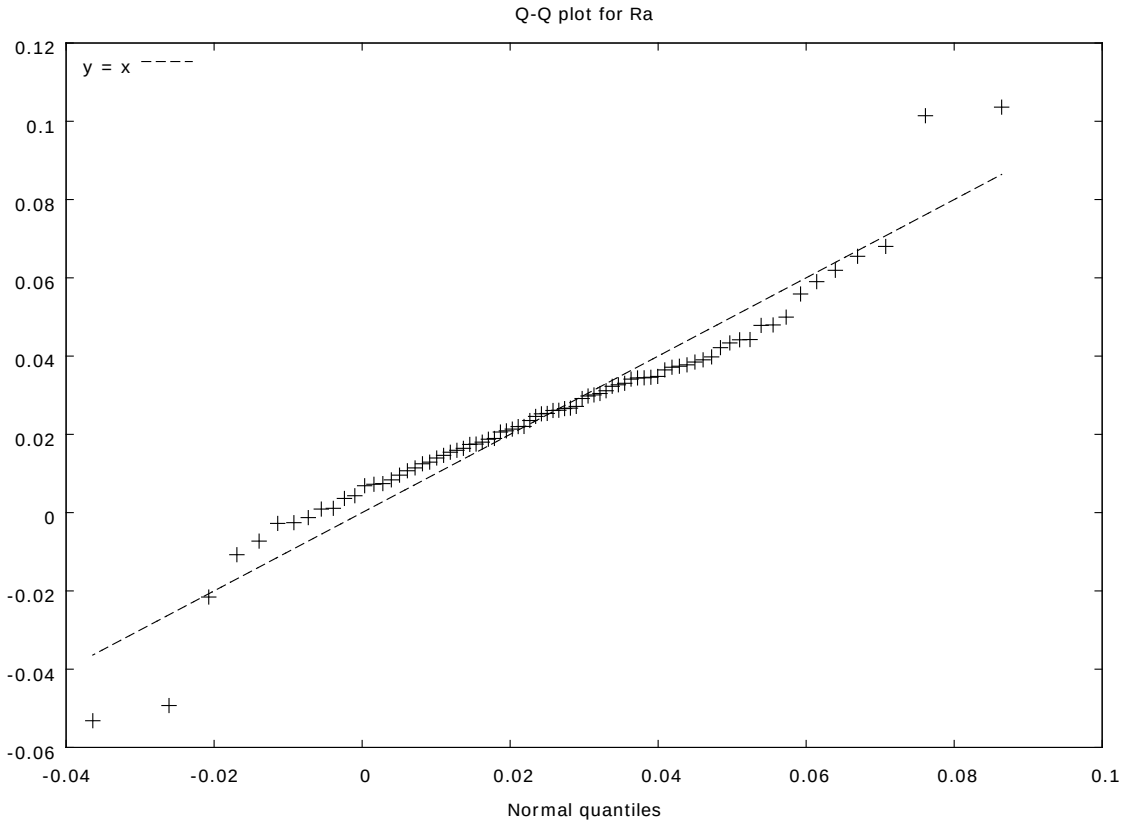


(Source: Research Data, 2014)

4.2.6 Normality Analysis

In this normality analysis, the goal is to establish whether the distribution of the variables adheres to the normal bell-shaped curve. The Q-Q plot shown in Figure 4.4 assesses the normality of the distribution of R_a. This is a thin tailed distribution and therefore cannot be termed normal. The distribution is slightly negatively skewed and leptokurtic. Outliers can be seen in the upper right corner and the lower left corner.

Figure 4.4: Normality Test for R_a

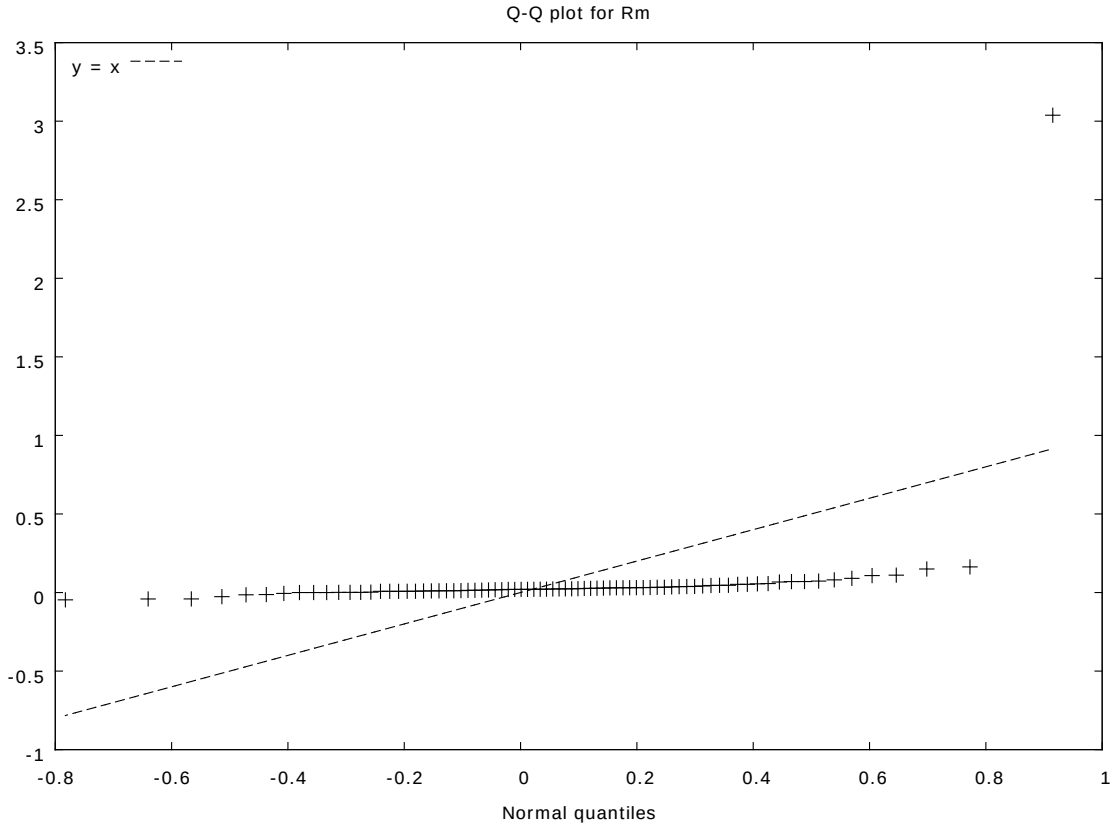


(Source: Research Data, 2014)

Figure 4.5 is the Q-Q plot for the distribution of $R_{M.}$ The distribution is again not normal. As can be seen the plots are flatter than the normal line. Though symmetric, with a

skewness of -0.0489, the distribution is thick tailed both on the right and on the left. An outlier can be seen in the top right corner of Fig. 4.5.

Figure 4.5: Normality Test for R_m



(Source: Research Data, 2014)

4.2.7 Correlation Analysis

This sub section provides the correlation analysis of R_a and $R_{M.}$ the Pearson correlation coefficient is a common tool used to show how two variables co-move. As shown by the correlation matrix in Table 4.4, there was weak correlation between the end of the month returns, R_a, and the mean of the returns of the rest of the month, $R_{M.}$ the correlation between R_a and R_M, $r(55) = 0.0857, p < 0.05$ as shown in Table 4.4.

Table 4.2: Correlation Matrix

	R_a	R_m
R_a	1.0000	0.0857
R_m		1.0000

(Source: Research Data, 2014)

4.2.8 Regression Analysis

Table 4.5 provides the regression analysis results and the regression statistics concerning the relationship between R_a and R_M. the constant term of the correlation was 0.0134 which was significantly different from zero, $t_{(53)} = 4.3259, \mathrm{p} < 0.05$. The coefficient of R_M was 0.1420 which was not significant, $t_{(53)} = 1.3160, \mathrm{p} > 0.05$. The regression was not statistically significant, $F_{(1,\ 53)} = 1.7319, p > 0.05$. The variation in R_a was poorly explained by the variation in R_M, $R^2 = 0.0316$.

Table 4.3: Regression Model and Regression Statistics

	Coefficient	*Std. Error*	*t-ratio*	*p-value*
Constant	0.0134	0.0031	4.3259	0.00007
R_m	0.1420	0.1079	1.3160	0.1938
F(1, 53)	1.7319			0.1938
R-squared	0.0316			
Adjusted R-squared	0.0133			

(Source: Research Data, 2014)

The model for the relationship between end of the month returns and the average of the other returns of the month is, therefore,

$$R_a = 0.0134 + 0.1420R_M.$$

4.3 Summary and Interpretation of Findings

The end of the month effect is a financial market anomaly in which the returns on stocks tend to be higher than the returns of the other days that are not considered an appearing at the end of the month. This research sought to establish whether the returns on the Nairobi Securities exchange also follow the end of the month pattern. The findings are follows: first the returns at the end of the month do not adhere to the normal distribution; secondly, the returns of the rest of the month are not normally distributed; thirdly, the regression results show that constant term was positive and significantly different from zero; fourthly, the coefficient of regression was positive but not statistically significant. The whole regression was not statistically significant and the explanation of the variation in the end of the month was poorly explained by the variation in month average returns.

As indicated, the returns at the end of the month are not normally distributed. In normal distributions, the symmetry about the mean is a key characteristic. The normality of a distribution indicated variations are purely random. Finding that end of the month returns are not normally distributed indicated that they are not mere random distributions as proposed by the EMH suggested by Fama (1965) and Fama (1970).

The returns of the other days of the month were equally not normally distributed. This is so as demonstrated by the normality tests and the skewness of the distribution. Again

these returns are not bell-shaped and therefore not random. Random distribution of returns is an indicator that there are no emotions in the market that control the behavior of buyers and sellers of stocks.

The constant of regression was positive and significantly different from zero. This indicates that the returns of the end of the month were consistently less than those of the rest of the month during the study period. In an efficient market, the coefficient should have been zero showing no difference. However, the findings here show difference. A significant variation in the returns at the end of the month is not explained by the variation in the returns of the rest of the month.

The coefficient term was positive, but not statistically significant. A coefficient that is less than one would mean the returns at the end of the month are more that those of the rest of the month. The coefficient, on the converse is positive showing that returns of the end of the month are less than those of the rest of the month. These do not agree with the definition and the proposals of Ariel (1987). Ariel (1987) argued that in the end of the month effect, returns are higher than those of the rest of the month in financial markets. The findings of this research seem to agree with those of Ramcharran (1997) who confirmed no form of seasonality on the stock market in Jamaica.

The findings are also similar to those of Dickinson & Muragu (1994) who, between 1979 and 1988, basing on 30 listed companies on the Nairobi Securities Exchange at that time found the Nairobi Securities Exchange to be an efficient market. This was because there was no significant difference between returns during the month and those at the end of

the month. The variations were mere random variations that characterize an efficient financial market.

The findings seem to agree with those of Mulumbi (2010) who showed that the average return for stocks at the Nairobi Securities Exchange was higher for the last day of the calendar month and the second day of the following calendar month. Mulumbi declares the presence of the turn of the month basing on the results he found. In this study the returns at the end of the month are less than those of the rest of the month, in effect showing that the turn of the month is not existent on the NSE.

The findings are also at variance with those of Hansen & Lunde (2003) who found turn of the month anomalies present in developed markets like Denmark, France, Germany, Hong Kong, Italy, Japan, Norway, Sweden, UK, and USA. The findings also differ from those of Pandey (2003) who also found similar results on the Bombay Stock Exchange in India. These developed markets have their stock market traders realizing higher returns at the end of the month.

Basing on the absence of the turn of the month effect on the NSE, the findings of this research seem to point towards ratifying the NSE as an efficient market in which buyers and sellers simply trade without emotions and that all information on stocks is equally understood by all and reactions are similar. Further, given that the findings of Hansen & Lunde (2003) in developed markets confirming the presence of the turn of the month effect, it can be argued that the NSE is less developed. In this context, it is assumed that developed countries have developed financial markets unlike the developing countries like Kenya and Jamaica in which the urn of the month effect is nonexistent.

CHAPTER FIVE

SUMMARY CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

The intention of this research was to establish whether the turn of the month effect was existent on the NSE. The turn of the month effect is a financial market anomaly in which the returns at the end of the month are higher than the returns of the rest of the days of the month. To establish the presence or the absence of the turn of the month effect return at the dates within the turn of the month were, by regression analysis, compared to returns of the rest of the month.

The research was done on all the firms listed on the NSE by finding the weighted average of the returns on Wednesdays within the study period with data from NSE. The returns of Wednesdays in the end of the month were separated from the returns of other Wednesdays within that month. To make a complete observation with both dependent and independent variable, the returns of the Wednesdays in the rest of the month were turned in one single average to be regressed with the turn of the month returns. The return of the turn of the month made the dependent variable while the average of the returns of the rest of the month made the independent variable.

The regression results show that constant term was positive and significantly different from zero. The coefficient of regression was positive but not statistically significant and the whole regression was not statistically significant. Further, the variation in the returns of the rest of the month did not strongly explain the variation in the returns of the turn of the month.

5.2 Conclusions

Several conclusions can be drawn from the findings of this research. First the returns at the end of the month and the returns of the rest of the month do not adhere to the normal distribution. The conclusion drawn here is that the returns do not adhere to the random walk hypothesis asserting that returns in an efficient market are purely random occurrences.

The regression results show that constant term was positive and significantly different from zero. This indicates that the returns of the end of the month vary significantly independent of the variations of the returns in the rest of the month. In the case of this research, the returns at the end of the month are less than the average of the rest if the month.

The coefficient of regression was positive but not statistically significant. The whole regression was not statistically significant and the explanation of the variation in the end of the month poorly explained by the variation in month average returns. This indicates that there is no statistically significant connection between returns at the end of the month and those of the rest of the month. However, the coefficient term was positive, indicating lower returns at the end of the month. The conclusion is that the turn of the month effect is not existent on the NSE.

The absence of the turn of the month effect on the NSE indicates the efficiency of this financial market. Testing the presence of the turn of the month effect is a test of the efficient market hypothesis. Its absence indicates stock prices and, therefore returns are purely random. The NSE is, therefore to the extent of these findings, an efficient market.

5.3 Policy Recommendations

Basing on the non-normality of the returns it elicits the observation that traders are keen on the kind of information generated about stock traded on the NSE. The traders react to this information. It is important that the trading companies and the NSE be careful about information reaching traders about the companies whose stocks they trade in.

The trading behavior of Kenyans do not seem to change much at the end of the month judging the insignificant difference in the pattern of returns during and at the end of the month. The turn of the month does not affect returns on the NSE.

Kenyan traders on the NSE seem to be consumers of the information they get about the stocks they buy. This is likely to have been achieved through the improvements in the information technology and the interpretation of the received information. This information efficiency should be made even better so that Kenyans get timely and material information about stocks they trade in.

The findings about the behavior of returns in Kenya seem to be different from the behavior in the more superior markets in Europe, USA and parts of Asia. While the findings in the developed markets show that these developed markets experience the turn of the month effect, the NSE does not. This could mean the Kenyan securities market is still underdeveloped. Mechanisms should be put in place to ensure improvements in the NSE to attain level of the developed countries.

5.4 Limitations of the Study

The strength of this research lies in its time limit. The scope of this research was for the five years ending and including the year 2012. It is not known whether the results would

hold if a longer period would have been researched upon. Further it is not possible to tell whether the same findings will hold for the period after 2012.

The findings of the research provide more like more piece of evidence that there is a market in the name of the NSE where during a certain period the turn of the month effect did not exist. This, however, does not provide enough evidence that can be used to make universal the non-existence of the turn of the month effect. Therefore, it still will hold that some of these behavioral phenomena like the weekend effect will still be dependent upon the features of the market being analyzed.

The quality of the data may be a weakness of this study. It is not possible to tell from this research whether the market is efficient enough to enable a clean capture of the behavior of the traders through the prices they settle the deals on the NSE. Actually the use of the data from the NSE is based on the assumption that the prices accurately capture the sentiments of the market accurately. This research does not confirm that the NSE has achieved such a level of efficiency.

This study has not been able to determine whether the turn of the month is the cause of the variation in returns during the turn of the month period. There could be other causes of variation in the returns of assets during this period. This research has not been able to expressly establish that the turn of the month is the main cause of stock returns during that period.

5.5 Suggestions for Further Research

There is a need to answer the question of whether the findings of this research can be made universal across time on the NSE. The NSE has been trading since pre-

independence to date, yet the period of study is only a short five years. This reduces the power of universally applying the results. A research can be done to determine the nature of the turn of the month effect for longer periods of time.

There are very many stock markets in the world and all of them are still developing though at different levels. This study has covered only one market. A research can be conducted to consolidate and reconcile all the findings on the turn of the month effect on the various markets of the world in order to tell what the situation is.

There is need to determine whether actually the stock market prices on the NSE are an accurate measure of the market sentiment in general and whether they capture the turn of the month effect. If prices are to be found not able to capture the sentiment, then there is need to find methods that can be used to accurately capture the sentiment in order to make the findings highly believable and irrefutable.

A study can be done to determine the causality between the turn of the month and the variation in returns. There is need to establish whether the variation of prices at the end of the month is as a result of investors behavior due to the month turning. If so, it has to be determined how much of the variation is due to this turn of the month.

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APPENDICES

Appendix I: Listed Companies (Source: NSE, 2014)

BANKING

1. Barclays Bank Ltd
2. CFC Stanbic Holdings Ltd
3. Diamond Trust Bank Kenya Ltd
4. Housing Finance Co Ltd
5. Kenya Commercial Bank Ltd
6. National Bank of Kenya Ltd
7. NIC Bank Ltd
8. Standard Chartered Bank Ltd
9. Equity Bank Ltd
10. The Co-operative Bank of Kenya

INSURANCE

11. Jubilee Holdings Ltd
12. Pan Africa Insurance Holdings Ltd
13. Kenya Re-Insurance Corporation Ltd
14. CFC Insurance Holdings
15. British-American Invest (K) Ltd

INVESTMENT

16. City Trust Ltd
17. Olympia Capital Holdings ltd
18. Centum Investment Co Ltd
19. Trans-Century Ltd

AGRICULTURAL

20. Eaagads Ltd
21. Kapchorua Tea Co. Ltd
22. Kakuzi
23. Limuru Tea Co. Ltd
24. Rea Vipingo Plantations Ltd
25. Sasini Ltd
26. Williamson Tea Kenya Ltd

COMMERCIAL AND SERVICES

27. Express Ltd
28. Kenya Airways Ltd
29. Nation Media Group
30. Standard Group Ltd
31. TPS Eastern Africa (Serena) Ltd
32. Scangroup Ltd
33. Uchumi Supermarket Ltd
34. Hutchings Biemer Ltd

TELECOM AND TECHNOLOGY

35. AccessKenya Group Ltd
36. Safaricom Ltd

AUTOMOBILES AND ACCESSORIES

37. Car and General (K) Ltd
38. CMC Holdings Ltd
39. Sameer Africa Ltd
40. Marshalls (E.A.) Ltd

MANUFACTURING AND ALLIED

41. B.O.C Kenya Ltd
42. British American Tobacco (K)
43. Carbacid Investments Ltd
44. East African Breweries Ltd
45. Mumias Sugar Co. Ltd
46. Unga Group Ltd
47. Eveready East Africa Ltd
48. Kenya Orchards Ltd
49. A.Baumann CO Ltd

CONSTRUCTION AND ALLIED

50. Athi River Mining
51. Bamburi Cement Ltd
52. Crown Berger Ltd
53. E.A.Cables Ltd
54. E.A.Portland Cement Ltd

ENERGY AND PETROLEUM

55. KenolKobil Ltd
56. Total Kenya Ltd
57. KenGen Ltd
58. Kenya Power & Lighting Co Ltd

Appendix II: Table A: Wednesday returns (09th January 2008-02nd December 2009)

OTHER DAYS								END MONTH	
Date	**Return**	**Date**	**Return**	**Date**	**Return**	**Date**	**Return**	**Date**	**Return**
2008/01/09	0.0249	2008/01/16	0.0143	2008/01/23	0.0210	2008/01/30	0.0341	2008/01/02	0.0273
2008/02/13	0.0182	2008/02/27	0.0350					2008/02/06	0.0334
2008/03/12	0.0385	2008/03/19	0.0149	2008/03/26	0.0084			2008/03/05	0.0212
2008/04/09	0.0351	2008/04/16	0.0388	2008/04/30	0.0356			2008/04/02	0.0267
2008/05/14	0.0289	2008/05/28	0.0394					2008/05/07	0.0729
2008/06/11	0.0286	2008/06/18	0.0115	2008/06/25	0.0162			2008/06/04	0.0233
2008/07/09	0.0109	2008/07/16	0.0140	2008/07/23	0.0321	2008/07/30	0.0131	2008/07/02	0.0204
2008/08/13	0.0285	2008/08/20	0.0163	2008/08/27	0.0353			2008/08/06	0.0358
2008/09/10	0.0268	2008/09/17	0.0193	2008/09/24	0.0033			2008/09/03	0.0077
2008/10/08	0.0205	2008/10/15	0.0305	2008/10/22	0.0359	2008/10/29	0.0670	2008/10/01	0.0000
2008/11/12	0.0302	2008/11/19	0.0279	2008/11/26	0.0333			2008/11/05	0.0211
2008/12/10	0.0274	2008/12/17	0.0228	2008/12/24	0.0128	2008/12/31	0.0562	2008/12/03	0.0310
2009/01/14	0.0371	2009/01/21	0.0175	2009/01/28	0.0587			2009/01/07	0.0315
2009/02/11	0.0289	2009/02/18	0.0188	2009/02/25	0.0163			2009/02/04	0.0142
2009/03/11	0.0588	2009/03/18	0.0413	2009/03/25	0.0194			2009/03/04	0.0201
2009/04/08	0.0441	2009/04/15	0.0088	2009/04/22	0.0224	2009/04/29	0.0332	2009/04/01	0.0373
2009/05/13	0.0186	2009/05/20	0.0098	2009/05/27	0.0473			2009/05/06	0.0121
2009/06/10	0.0650	2009/06/17	0.0558	2009/06/24	0.0119			2009/06/03	0.0098
2009/07/08	0.0182	2009/07/15	0.0053	2009/07/22	0.0168	2009/07/29	0.0096	2009/07/01	0.0306
2009/08/12	0.0239	2009/08/19	0.0152	2009/08/26	0.0072			2009/08/05	0.0111
2009/09/09	0.0461	2009/09/16	0.0049	2009/09/23	0.0091	2009/09/30	0.0120	2009/09/02	0.0245
2009/10/14	0.0220	2009/10/21	0.0081	2009/10/28	0.0086			2009/10/07	0.0107
2009/11/11	0.0266	2009/11/18	0.0445	2009/11/25	0.0027			2009/11/04	0.0151
2009/12/09	0.0104	2009/12/16	0.0034	2009/12/23	0.0000	2009/12/30	0.0420	2009/12/02	0.0000

Appendix III: Table B: Wednesday returns (13th January 2010- 07th December 2011)

OTHER DAYS								END MONTH	
Date	**Return**	**Date**	**Return**	**Date**	**Return**	**Date**	**Return**	**Date**	**Return**
2010/01/13	0.0201	2010/01/20	0.0274	2010/01/27	0.0094			2010/01/06	0.0296
2010/02/10	0.0252	2010/02/17	0.0148	2010/02/24	0.0227			2010/02/03	0.0023
2010/03/10	0.0178	2010/03/17	0.0056	2010/03/24	0.0162	2010/03/31	0.0032	2010/03/03	0.0282
2010/04/14	0.0160	2010/04/21	0.0374	2010/04/28	0.0251			2010/04/07	0.0137
2010/05/19	0.0211	2010/05/26	0.0018					2010/05/12	0.0225
2010/06/09	0.0184	2010/06/16	0.0486	2010/06/23	0.0169	2010/06/30	0.0206	2010/06/02	0.0083
2010/07/14	0.0113	2010/07/21	0.0158	2010/07/28	0.0017			2010/07/07	0.0236
2010/08/11	0.0013	2010/08/18	0.0000	2010/08/25	0.0205			2010/08/04	0.0000
2010/09/08	0.0194	2010/09/15	0.0265	2010/09/22	0.0198	2010/09/29	0.0223	2010/09/01	0.0202
2010/10/13	0.0021	2010/10/20	0.0000	2010/10/27	0.0185			2010/10/06	0.0178
2010/11/10	0.0099	2010/11/17	0.0436	2010/11/24	0.0368			2010/11/03	0.0230
2010/12/08	0.0185	2010/12/15	0.0131	2010/12/22	0.0191	2010/12/29	0.0130	2010/12/01	0.0075
1/12/2011	0.0436	1/19/2011	-0.0126	1/26/2011	-0.0059			1/5/2011	0.0303
2/9/2011	-0.0059	2/16/2011	0.0010	2/23/2011	0.0010			2/2/2011	0.0080
3/9/2011	0.0080	3/16/2011	0.0148	3/23/2011	0.0214	3/30/2011	0.0143	3/2/2011	0.0010
4/13/2011	-0.0056	4/20/2011	0.0210	4/27/2011	0.0010	4/27/2011	0.0010	4/6/2011	-0.0056
5/11/2011	0.0010	5/18/2011	0.0075	5/25/2011	0.0139			5/4/2011	0.0075
6/8/2011	0.0360	6/15/2011	0.0065	6/22/2011	-0.0160	6/29/2011	-0.0220	6/1/2011	0.0901
7/13/2011	-0.1629	7/20/2011	-0.0339	7/27/2011	0.0373			7/6/2011	0.0009
8/10/2011	-0.0056	8/17/2011	0.0477	8/24/2011	0.0137	8/31/2011	0.0324	8/3/2011	0.0570
9/14/2011	0.0314	9/21/2011	0.0009	9/28/2011	-0.0405			9/7/2011	0.0009
10/12/2011	-0.0470	10/19/2011	-0.0305	10/26/2011	-0.0704			10/5/2011	0.0318
11/9/2011	0.0437	11/16/2011	0.0011	11/23/2011	-0.0126	11/30/2011	0.1597	11/2/2011	-0.0129
12/14/2011	-0.0303	12/21/2011	0.0010	12/28/2011	0.0075			12/7/2011	-0.0467

Appendix IV: Table C: Wednesday returns (11th January 2012-04th April 2012)

OTHER DAYS								END MONTH	
Date	**Return**	**Date**	**Return**	**Date**	**Return**	**Date**	**Return**	**Date**	**Return**
1/11/2012	-0.0175	1/18/2012	0.0510	1/25/2012	0.0188			1/4/2012	0.0459
2/8/2012	0.0009	2/15/2012	0.0179	2/22/2012	0.0176	2/29/2012	0.0943	2/1/2012	0.0301
3/14/2012	-0.0238	3/21/2012	0.0008	3/28/2012	-0.0093			3/7/2012	0.0259
4/11/2012	0.0163	4/18/2012	-0.0144	4/25/2012	-0.0095			4/4/2012	-0.0144
5/9/2012	0.0008	5/16/2012	0.0008	5/23/2012	-0.0155	5/30/2012	0.0174	5/2/2012	-0.0409
6/13/2012	-0.0606	6/20/2012	-0.0050	6/27/2012	0.0009			6/6/2012	-0.0263
7/11/2012	-0.1303	7/18/2012	-0.0492	7/25/2012	-0.1882	8/1/2012	0.5061	7/4/2012	-0.0410