

**AN INVESTIGATION ON THE DAY OF THE WEEK EFFECT IN THE  
NAIROBI SECURITIES EXCHANGE**

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**D63/68195/2011**

**A RESEARCH PROJECT SUBMITTED IN PARTIAL  
FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD  
OF THE DEGREE OF MASTER OF SCIENCE IN FINANCE,  
SCHOOL OF BUSINESS, UNIVERSITY OF NAIROBI**

**2012**

## DECLARATION

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

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## **DEDICATION**

This research work is dedicated to my parents, Stephen Oyori and Josephine Oyori for their encouragement and financial support; my siblings Lillian, Dennis, Collins and Kevin for their never tiring support.

To my colleagues and friends Cynthia, Cecilia, Roslyne, and Ndibui I can never be grateful for the moral support that you gave me all through this research project.

Thank you and God bless you abundantly.

## **ACKNOWLEDGEMENT**

I would like to extend special thanks to all those who helped me in one way or another in making this project a reality.

Firstly I am indebted to my supervisor DR. Josiah Aduda for his scholarly guidance throughout the conduct of this research project. His useful criticism and comments were very instrumental in the research implementation.

I would also like to acknowledge Mr. Lincoln Njiru and Ms. Maureen Nyakio whom I often consulted during the project.

Further I am very grateful to all employees of the relevant organizations for their valuable assistance in making available to me the required data.

I would like to appreciate the School of Business, University of Nairobi for providing me with the relevant study materials I needed during this research.

Above all my gratitude goes to the Almighty God for the endurance and grace all through this research project.

## **ABSTRACT**

The day of the week patterns have been investigated extensively in different markets. The average daily return is not the same for each of the day of the week; hence the day of the week effect phenomenon resulted in a different return for each day of the week which can affect investors in deciding investment strategy, portfolio selection and profit management. Most of the studies done have depicted different results, more so in Kenya most studies conducted on market efficiency have concentrated on the weak-form efficiency using various corporate announcements, with none vouching for market anomalies, hence more studies should be done in these area to come up with more viable results and findings as the study and knowledge on market efficiency in stock markets is of importance and significance to all participants for obvious reasons.

The main objective of the study was to investigate the presence of day of the week effect in NSE. This research study made use of descriptive research design. This study sought to understand the relationship between the independent variables against dependent variable to determine the negative and positive returns on the different days of the week. The target population for this study constituted all the companies at the NSE. The sample of the study constituted the NSE-20share index from the NSE. Both monetary information on prices of securities and value data for the NSE-20 share index was used. The researcher used secondary data for obtaining necessary information for the study. Using a data collection sheet, the daily stock prices, that is opening and closing index values was collected from the daily price list compiled by the NSE. The data included daily returns and prices from January 2008 to December 2011. The study made use of SPSS version 21.0 in analyzing data. The researcher used quantitative method to analyze data. The quantitative data collected was summarized and analyzed by using descriptive statistics. Regression analysis was

used to determine the positive and negative returns in the days of the week. The study found day of the week effect is present in the return of share prices equation. It was clear from these findings that Friday recorded the highest mean score than other days of the week over the period studied.

The study concludes that the Day-of-the-Week had a significant effect on the NSE 20-share index during the investigated period. From the analysis of the various sectors in the NSE, the returns for the stock market sectors are non-normally distributed and have fatter tails and high peaks. The findings of this suggest that the Companies as well as the investors should consider the day of the week effect since it is noteworthy because they are suggestive of underlying behavioral factors. The phenomenon has been known for a long time, and markets should adjust and be efficient in this regard. Moreover, the growth of the internet should be reinforced since it reduces information and transaction costs, mitigating the Day of the Week Effect.

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## **ABBREVIATIONS**

ATS	-	Automated trading system
CDS	-	Central depository system
CMA	-	Capital markets Authority
DJ	-	Dow Jones
EMH	-	Efficient Market Hypothesis
NASI	-	NSE All Share index
NSE	-	Nairobi Securities Exchange
S&P	-	Standard and Poor's composite Index
U.K	-	United Kingdom
U.S	-	united States
USE	-	Uganda stock Exchange

# **CHAPTER ONE**

## **INTRODUCTION**

### **1.1 Background in the Study**

In recent years the testing of market anomalies on stock returns has become an active field of research in empirical finance. Calendar effect is cyclical anomalies on returns in the financial market, where the cycle is based on the calendar.

The most important calendar anomalies are the January effect, holiday effect and the day of the week effect. The day of the week effect also known as the weekend effect refers to the tendency of stocks to exhibit relatively large returns on Friday as compared to those on Monday.

#### **1.1.1 The Concept of EMH**

The Efficient Market Hypothesis (EMH) is an important point of reference in the financial market theory, which was developed E. Fama (1960). It means that the financial markets are efficient, in the sense that existing information is already priced within and thus nobody is able to achieve above average profits. According to EMH theory it is described that when investors are faced with new set of information they can overreact and some may under react to the forthcoming situation (Fama, 1998). In these scenario investors reactions are random behaviour and trace a normal distribution pattern so that the net effect on market prices may not be reliably explored to make an abnormal profitable situation, when considering transaction costs i.e. commissions and spreads. The EMH is categorised into three forms that is the weak form EMH, semi-strong EMH and strong EMH.

The weak-form hypothesis states that stock prices already reflect all information that can be derived by examining market trading data such as the history of past prices, trading volume, or short interest. This version of the hypothesis implies that trend analysis is fruitless. Past stock price data are publicly available and virtually costless to obtain (Fama, 1970). The weak-form hypothesis holds that if such data ever conveyed reliable signals about future performance, all investors already would have learned to exploit the signals. At last, the signals lose their value as they become widely known because a buy signal, for instance, would result in an immediate price increase.

The semi-strong form hypothesis states that all publicly available information regarding the prospects of a firm already must be reflected in the stock price. Such information includes, in addition to past prices, fundamental data on the firm's product line, quality of management, balance sheet composition, patents held, earning forecasts, and accounting practices. Again, if investors have access to such information from publicly available sources, one would expect it to be reflected in stock prices. Finally, the strong-form version of the efficient market hypothesis states that stock prices reflect all information relevant to the firm, even including information available only to company insiders. This version of the hypothesis is quite extreme. Few would argue with the proposition that corporate officers have access to pertinent information long enough before public release to enable them to profit from trading on that information. Indeed, much of the activity of the Securities and Exchange Commission is directed toward preventing insiders from profiting by exploiting their privileged situation.

### **1.1.2 The Day of the Week Effect**

In recent years the testing of market anomalies on stock returns has become an active field of research in empirical finance. Calendar effect is cyclical anomalies on returns in the financial market, where the cycle is based on the calendar. The most important calendar anomalies are the January effect, holiday effect and the day of the week effect. The day of the week effect also known as the weekend effect refers to the tendency of stocks to exhibit relatively large returns on Friday as compared to those on Monday.

The studies on day of the week effect have been ongoing since Kelly (1930) when he revealed the existence of a Monday effect on the US markets where the return turned out to be negative. The day of the week patterns have been investigated extensively in different markets. The average daily return is not the same for each of the day of the week; hence the day of the week effect phenomenon resulted in a different return for each day of the week which can affect investors in deciding investment strategy, portfolio selection and profit management.

The day of the week effect contradicts the efficient market theory, since investors can adjust their buying and selling strategies accordingly to increase their returns. Gibbons and Hess (1981) observed that average market return in the first trading day and in some countries in the second trading day is negative or at least lower than the rest of trading days. The most satisfactory explanation that has been given for this phenomenon is that usually the most unfavorable news appears during the weekends. These unfavorable news influence the majority of the investors negatively, causing them to sell on the coming first trading day.

In addition, many analysts believe that the investors' psychology can play an important role in causing this anomaly (Shiller, 1995, Shefrin and Statman, 1994) among others; as investors feel pessimistic on the first trading day as they regard it as the worst day of the week, because it is the first working day of the week, and optimistic on the last trading day. They proceed on sales and purchases, respectively. For the second trading day negative returns, the explanation is that bad news of the weekend affecting the market, influence negatively some markets.

### **1.1.3 NSE Background**

In Kenya, dealing in shares and stocks started in the 1920's when the country was still a British colony. However the market was not formal as there did not exist any rules and regulations governing stock broking activities. ("History of Organisation," n.d., para. 1).

In 1954 the NSE was then constituted as a voluntary association of stockbrokers registered under the Societies Act. Since Africans and Asians were not permitted to trade in securities, until after the attainment of independence in 1963, the business of dealing in shares was confined to the resident European community. At the dawn of independence, stock market activity slumped, due to uncertainty about the future of independent Kenya. ("History of Organisation," n.d., para. 3 and 4).

1988 saw the first privatization through the NSE, of the successful sale of a 20% government stake in Kenya Commercial Bank. The sale left the Government of Kenya and affiliated institutions retaining 80% ownership of the bank.

Notably, on February 18, 1994 the NSE 20-Share Index recorded an all-record high of 5030 points. The NSE was rated by the International Finance Corporation as the best

performing market in the world with a return of 179% in dollar terms. (“History of Organisation,” n.d., para. 3 and 4).

In 1996, the largest share issue in the history of NSE, the privatization of Kenya Airways, came to the market. Having sold a 26% stake to KLM, the Government of Kenya proceeded to offer 235,423,896 shares (51% of the fully paid and issued shares of Kshs. 5.00 each) to the public at Kshs. 11.25 per share. More than 110,000 shareholders acquired a stake in the airline and the Government of Kenya reduced its stake from 74% to 23%. The Kenya Airways Privatization team was awarded the World Bank Award for Excellence for 1996 for being a model success story in the divestiture of state-owned enterprises. (“History of Organisation,” n.d., para. 13 and 14).

On Monday 11 September 2006 live trading on the automated trading systems of the NSE was implemented. In the same breadth, trading hours increased from two (10:00 am – 12:00 pm) to three hours (10:00 am – 1:00 pm). Other innovations included the removal of the block trades board and introduction of the functionality for the trading of rights in the same manner as equities. Besides trading equities, the ATS is also fully capable of trading immobilized corporate bonds and treasury bonds. (“History of Organisation,” n.d., para. 16 and 17).

In July 2007 NSE reviewed the Index and announced the companies that would constitute the NSE Share Index. The review of the NSE 20-share index was aimed at ensuring it is a true barometer of the market.



In 2008, the NASI was introduced as an alternative index. Its measure is an overall indicator of market performance. The Index incorporates all the traded shares of the day. Its attention is therefore on the overall market capitalization rather than the price movements of select counters. (“History of Organisation,” n.d., para. 16 and 17).

In July 2011, the Nairobi Stock Exchange Limited changed its name to the Nairobi Securities Exchange Limited. The change of name reflected the strategic plan of the Nairobi Securities Exchange to evolve into a full service securities exchange which supports trading, clearing and settlement of equities, debt, derivatives and other associated instruments. In the same year, the equity settlement cycle moved from the previous T+4 settlement cycles to the T+3 settlement cycle. This allowed investors who sell their shares, to get their money three (3) days after the sale of their shares. The buyers of these shares will have their CDS accounts credited with the shares, in the same time. (“History of Organisation,” n.d., para. 22 and 23).

## **1.2 Statement of the Problem**

A prominent paper about the day-of-the-week effect was written by French (1980). He found out that stocks in the U.S. tend to exhibit relatively large returns on Fridays compared to those on Mondays. This finding contradicts the EMH which states that average returns are similar for all the trading days in a week, hence the importance of these study on the day of the week effect in the stock market.

There some researches on the day of the week effect both internationally and locally; Lakonishok and Levi (1985), Jaffe and Westerfield (1985) and Onyuma (2009) and

some of their findings support that there exist the day of the week effect in stock returns where Monday shows the lowest and negative returns as compared to Friday which has relatively high returns

Lakonishok and Levi (1985) argued that one presumable reason behind the day-of-the-week effect has to do with measurement errors as they pointed out that realized daily rates of return cannot be computed from only two consecutive closing prices. Payments for a stock purchased on any day except on Friday will in general occur eight calendar days after the trade. For Fridays, payments cannot be made on Saturdays hence resulting in a delay of two more days.

Jaffe and Westerfield (1985) studied not only the U.S. stock market but also the markets in the U.K., Canada, Japan, and Australia finding that the Monday-effect applies for stock market returns for the U.S., U.K., and Canada whereas for the Japanese and the Australian stock markets, the lowest mean return occurs on Tuesday.

Dubois and Louvet (1996) found negative returns on Monday which are compensated by abnormal positive returns on Wednesday for seven out of nine markets studied (U.S-DJ and U.S.-S&P., Canada, Germany, France, Switzerland and Hong Kong) All this evidence goes back to Fama (1965) who reported that Monday's variance is approximately 22% greater than the within week variance for the Dow-Jones Industrial Average. According to French and Roll (1986) returns on Mondays may have a higher variance relative to other days. Two factors lie behind this finding that is, the arrival of public information may be more frequent during the business day, and private information is received throughout the week.

In South Africa, Coutts and Sheikh (2002), Day of the week and month of the year effect on returns, on the Johannesburg Stock Exchange 1987-1997 and for three sub-samples of equal length. He found no evidence for any of the anomaly tested over the eleven year period. Over sub sample examination, only one particular day (Tuesday), in the second sub period has a significant return. No monthly seasonality and no persistent pre-holiday effect are detected.

There are also some researches on the day of the week effects in Kenya; Onyuma (2009) studied the existence of day of the week effect at the NSE and the findings also support that there exist the day of the week effect in stock returns where Monday shows the lowest and negative returns as compared to Friday which has relatively high returns, Rasugu (2005) studied the existence of holiday effect at the NSE and his findings depict the absence of holiday effect. Mokuua (2003) studied the weekend effect on stock returns at the NSE and concluded that Monday returns are not significantly lower than the other days nor Friday returns significantly higher than the other days of the week. Koech (2008) on weekend effect at the NSE depicted the absence of weekend effect the study covered the period of July, 1 2006 to July, 31 2008.

Most of the studies done have depicted different results, more so in Kenya most studies conducted on market efficiency have concentrated on the weak-form efficiency using various corporate announcements, with none vouching for market anomalies, hence more studies should be done in these area to come up with more viable results and findings as the study and knowledge on market efficiency in stock

markets is of importance and significance to all participants for obvious reasons. The study therefore, seeks to further investigate; does day of the week effect actually exist at the NSE?

### **1.3 Objectives of the Study**

The main objective of the study is to investigate the presence of day of the week effect in NSE.

### **1.4 Significance of the Study**

Performance of stock in the market is a major interest to different stakeholders. Some of these stakeholders include the government, investors, fund managers, financial analysts and academicians.

The Kenyan government as a regulator of stock markets through the CMA is able to monitor the performance of stock market as a signal of economic stability of the country, hence will attract both local and foreign investors.

Investors are keen on the day to day performance of stock market. The findings of this study will indicate whether NSE behaves like the other international stock markets, it will also benefit investors, if one is planning on buying stocks, he is better off doing it on a Monday than any other day of the week. If one is an experienced trader, and is interested in short selling, then Friday is the best day to take a short position as stocks tend to be priced higher on a Friday, and Monday is the best day to cover your short. The weekend also gives investors a chance to catch up on their reading, stew and fret about the market, and develop pessimism going into Monday. Investors will often tend to abandon underperforming stocks if they have a loss in them so that they can use those losses to offset capital gains taxes.

Funds managers are charged with the responsibility of identifying and investing in viable projects on behalf of investors. Findings from the study will help them gauge the performance of the stock market which will enable them decide on whether to buy or sell stocks.

Financial analysts will also benefit from this study, as they are in charge of advising investors, they will be able to give sound information that will lead investors to make informed decisions. Knowledge of such crucial information on stock variations may assist financial analyst to plan well on when to trade and get abnormal returns and when to hold in order to maximise returns.

Finding certain patterns in volatility may be useful in numerous ways. Investors have a better insight when implementing investment strategies for hedging and speculative purposes. Financial advisors, financial managers, and bankers also benefit from them, for instance by determining a specific day for the initial stock issuance and as Engle (1993) indicated, investors that dislike risk may adjust their portfolios by reducing their investments in those assets whose volatility is expected to increase.

The scholars and academicians want to contribute to the body of knowledge, the same body of knowledge has been known to change and research is always the only way to study the same phenomenon over time. This study will therefore help in opening up opportunities for doing further studies on market efficiency. It is for this purpose that I propose to investigate on the presence of the day of the week effect in NSE.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter reviewed the EMH, the random walk theory and behavioral finance. The stock market anomaly that is the day of the week effect was reviewed. A topic on day of the week effect reviewed past studies particularly the local studies.

#### **2.2 Review of theories**

##### **2.2.1 Efficient Market Hypothesis and Random Walk Theory**

The efficient market hypothesis is inseparably related to the random walk theory. The idea that security prices might follow random was put forward by Bachelier (1964). The random walk is used to refer to successive price changes which are independent of each other. In other words, there should be no trends in price changes. Random walk theory for share prices reflects a securities market where new information is rapidly incorporated into prices and where abnormal returns or excess returns cannot be made from spotting trends or from trading on new information (Lo and Mackinley, 1999). That share prices appear to follow a random walk is an interesting result and proving it or attempting to disprove it occupied significant proportion of research in 1970's. But what remained to be shown was why share prices followed a random walk. There was plenty of evidence, but a formal theory was missing. What was needed was a model of share price behaviour to explain the random walk. The gap was filled by more general model based on the concept of efficiency of the markets in which shares are traded that is the EMH.

According to EMH, the ability of investor to pick winners and make excess returns using new information is directly related to the speed and efficiency of a market at

absorbing that information (Fama, 1965). So, efficiency is considered in terms of the 'fair game' concept. A market is regarded as efficient with respect to a particular set of information if investors using that information are faced with fair game, that is, they receive on average the return expected for the risk involved and make no consistent abnormal returns. That is current stock prices fully reflect available information about stocks of a firm, and there is no way to earn excess profits, by using this information. The term market efficiency is used to explain the relationship between information and share prices in the capital market literature.

Fama classifies market efficiency into three categories namely, weak form, semi-strong form and strong form. Weak form EMH considers that current prices fully reflect all information contained in historical prices, which implies that no investor can devise a trading rule based solely on past price patterns to earn abnormal returns (Shleifer, 2000). A market is semi strong efficient if stock prices instantaneously reflect any new publicly available information and Strong form efficient if prices reflect all types of information whether available publicly or privately (Fama, 1965). The efficient markets hypothesis implies that investors react quickly and in an unbiased manner to new information.

The existence of the day of the week effect present contradictory evidence on the EMH stating that average daily stock returns are different among trading days that is a contradiction to the weak-form of the efficient markets hypothesis, which states that the market is efficient in past price and traded volume information and stock movements cannot be predicted using such historic information. This form of efficiency therefore infers that stock return is time invariant, that is, there is no

identifiable short-term time based pattern. The existence of seasonality or monthly effects in domestic and international markets therefore suggests market inefficiency (Gardeazabal and Regulez, 2002), in that investors should be able to earn abnormal rates of return incommensurate with the degree of risk. Therefore, the issue regarding the existence of anomalies in the stock market has become a key topic for investigation in finance, since it has significant implications about the characteristics of stock markets. Dickinson and Muragu (1994) provide evidence of market efficiency in Nairobi Stock Exchange. They conclude that small market such as Nairobi Stock Exchange provides empirical results consistent with weak-form efficiency.

### **2.2.2 Behavioural Finance**

By the beginning of the twenty-first century, the once widely approved efficient market hypothesis had become less accepted. The field of “behavioural finance” evolved in attempt to better understand and explain how emotions and cognitive errors influence investors and the decision-making process. Kahneman and Tversky (1979), Shefrin and Statman (1994), Shiller (1995) and Shleifer (2000) are among the leading researchers that have utilised theories of psychology and other social sciences to shed light on the efficiency of financial markets as well as explain many stock market anomalies, bubbles and crashes. The evidence that stock market is inefficient or at best only weak- form efficient, suggests that stock investors do not always adhere to rationality and are influenced by emotions. As such, it is considered that behavioural finance theories have a lot to offer towards analysing stock investments.



The view that security prices are at least partially predictable became shared by a number of economists and statisticians. Some even claimed that by studying patterns in stock returns investors were able to earn above-average risk adjusted rates of return. Behavioural finance uses cognitive psychology to explain the actions of investors (Malkiel, 2003). Unlike conventional financial theory, behavioural finance does not expect investors to be rational. In fact, behavioural finance argues that investors often make irrational decisions. Heuristics, overconfidence, conservatism, and mental accounting are just some of the patterns which can explain the irrational actions of investors. Benson and Rystrom (1989) suggested that individual behaviour and psychological reasons are behind the day-of-the-week effect. Investors are influenced by moods and emotions which might lead them to make irrational decisions. The general good mood of Friday afternoons might result in more purchases being made. Similarly, the less euphoric mood of Monday mornings could increase the level of sell transactions. Dyl and Maberly (1988) suggested that the day-of-the-week effect is, at least partially, related to the unusually high amount of adverse information that is released by firms during the weekend. In their study, they found that favourable information is released uniformly throughout the week. Unfavourable information, however, has a tendency to be released during the weekend.

### **2.3 Stock Market Calendar Anomalies: Day of the Week Effect**

Many researchers have found, evidence against the weak and semi-strong-form of the EMH. This evidence is considered as anomaly. Anomalies indicate market inefficiency or inadequacies in the security markets (Fama, 1970). Empirical studies have found that stock returns exhibit a pattern, also called calendar anomaly, during market trading days suggesting that historical stock prices can be used to predict the

future movements of the stock prices. These calendar anomalies are divided into several categories such as day-of-the-week effect and the January-effect among others.

The day-of-the-week effect refers to the variation of stock market returns by day of the week in which Monday is generally considered to exhibit negative returns whereas Friday exhibits positive and the highest returns in a week. There exist a vast number of studies regarding the day-of-the-week effect for several stocks markets around the world. This phenomenon goes back to (Fields, 1931) who, using the DJ Index, observed that returns tend to be negative and positive on Mondays and Fridays respectively. One of the most emblematic studies on this effect is attributed to French (1980). Based on daily returns of the S&P 500 from 1953 to 1977 and dividing the sample into two subsamples corresponding the full period.

Traditionally, business and financial activities have a slow start on Mondays since all financial intermediaries, stock market, and many corporations in Kenya are closed on Saturdays and Sundays. This break produces a sluggishness effect and a slow start on Mondays as well as a quiet space where information such as bad news occurring during the weekend may have more effect on the Monday performance than it might, had it occurred during the busy workweek. Therefore, the most satisfactory explanation for the negative returns on Mondays is that usually the most unfavorable news appears during the weekends (Onyuma, 2009). These unfavorable news influence the majority of the investors negatively, causing them to sell on the coming Monday. The sale of stocks increases the supply having as a consequence the negative returns of the shares on that specific day. In addition, the investors' psychology can

play an important role in causing this anomaly. In any case, Monday is regarded by most investors as the worst day of the week because it is the first working day of the week and they regard Friday as the best day, because it is the last one, they feel pessimistically on Mondays and optimistically on Fridays, they proceed on sales and purchases, respectively. Consequently, the prices fall on Monday, due to the increasing supply and rise on Friday, due to the increasing demand.

In fact, speculative factors could also come into play in this low-return Monday and high return Tuesday and Friday. The differentials between Monday and Tuesday could also exist in this market through speculative activities (Onyuma, 2009). One scenario is that speculators could employ short-term trading to buy stocks on Monday and then sell on Tuesday. This would cause the stock return on Wednesday to be lower compared to Tuesday. Then speculators could buy again and sell on Friday. The result of such speculative behavior and the effect from international portfolio markets is that stock market returns appear to be the lowest on Monday and the highest on Friday.

## **2.5 Review of empirical studies**

Past studies indicate that Monday produces the lowest negative returns, while Friday produce the largest positive returns. These results are useful in providing evidence of deviation from the efficient markets theory and in drawing conclusions about anomalies in a stock market. Many past studies have been carried out to test the presence of the day of the week effect. Most of the studies have shown that the day of the week effect exists in some markets on particular periods. However some studies have shown absence of the day of the week effect.

Cross (1973) was one of the first researchers to document returns disparities among weekdays. He examined price changes for the S&P 500 for the period 1953 through 1970. He found stock prices to have risen most often on Fridays and least often on Mondays. In addition, he found Monday returns to have been dependent on the performance of the previous Friday.

French (1980) examined the S&P 500 index returns over the period 1953 through 1977. In his study he found Monday returns to have been persistently and significantly negative. In addition, returns were found to have been significantly positive from Wednesday through Friday.

Lakonishok and Smidt (1988) examined 90 years (1897–1986) of weekday returns for the Dow Jones Industrial Average. They found Monday returns to have been significantly negative for the entire sample period and for seven out of nine sub-periods.

Jaffe and Westerfield (1985) found proof of a day-of-the-week effect in the equity markets of the United Kingdom, Canada, Japan and Australia. According to their study, all of the mentioned equity markets had seven negative Monday returns and high returns on the last trading day of the week. In Japan and Australia, the lowest mean returns occurred on Tuesday, rather than Monday. They also found that the day-of-the-week effect in foreign markets was not dependent on the American stock market; measurement errors or settlement procedures did not cause the weekly

seasonal; and time zone differences did not explain the negative Tuesday returns in Japan, but might have explained some of the seasonal in Australia.

Dubois and Louvet (1996) found negative returns on Monday or Tuesday for nine developed markets including Canada, Hong Kong, Germany, and France. Brooks and Persaud (2001) studied five Southeast Asian stock markets and found evidence of a day-of-the-week effect in Thailand, Malaysia and Taiwan. Monday returns were found to have been significantly positive for Thailand and Malaysia together with significantly negative returns on Tuesday.

Coutts and Sheikh (2002), on the day of the week and month of the year effect on returns, used daily data of All Gold Index on the Johannesburg Stock Exchange 1987-1997 and for three sub-samples of equal length. No evidence found for any of the anomaly tested over the eleven year period. Over sub sample examination, only one particular day (Tuesday), in the second sub period has a significant return. No monthly seasonality and no persistent pre-holiday effect are detected.

Studies investigating stock market anomalies in East Africa include Mooka (2003), Rasugu (2005), Osman (2007), Kipsang (2011), Koech (2008) and Onyuma (2009).

Mooka (2003) objective was to establish whether or not stock returns at the NSE are affected by the weekend effect variation. In his study he used the daily stock return and equality of means to test for the seasonality in some stocks quoted in the NSE for the period April 1, 1996 to March 31, 2001. He found out that Monday returns neither are significantly lower than the other days nor are Friday returns significantly higher

than the other days of the week. His findings show the absence of weekend effect in the NSE for the period under study.

Osman (2007) in his study of holiday effect attempted to find out if stocks listed at NSE exhibit higher returns on average on the days preceding holidays. His study covered a period of nine years January 1998 to December 2006 taking into account the eight day window, being four days before and four days after the holidays. His population of study consisted of all the company's constituting the AIG index, 20 of them constituting the NSE-20 share index. He used regression on the AIG index and correlation analysis on his study. Correlation analysis was used to test for multicollinearity between an indicator and the index. A low correlation coefficient suggests that the relationship between two variables is weak or non-existent. A high correlation coefficient indicates that a dependent variable will most likely change when the independent variable changes. He found no holiday effect on stock returns at the NSE and hence a strategy of investing around holidays cannot be used by investors.

Kipsang (2011) to determine presence of weekend effect at the USE, where the period of study was September 1, 2009 to August 31, 2010, the returns were computed using closing and opening prices of each day and no significant difference on returns at the different days was found at USE hence no weekend effect was detected.

Onyuma (2009) in his study of day of the week effect and month of the year effect on the Kenyan stock market attempted to determine if daily and monthly seasonal anomalies do exist in the Kenyan stock market. His study covered a period of 1980 to

2006 where he analyzed data on prices and adjusted returns by using the NSE 20 share index using regression analysis to identify the behavior of stock investors in Kenya. The average daily return in the market was expressed in local currencies (shillings) and calculated as the first natural logarithmic neporiano difference of stock market indexes multiplied by 100. In the overall period, 1980-2006, the estimated ordinary least-squares regression results indicate that the NSE 20 Index returns are inversely related to the Monday returns but directly related to the Tuesday, Wednesday, Thursday and Friday returns.

From the various researches done on the day of the week effect, different empirical results have come up both internationally and locally where different researches actually prove the existence of this anomaly for instance Lakonishok and Smidt (1988), Jaffe and Westerfield (1985) while others show that the day of the week effect did not exist, Coutts and Sheikh (2002), and Mokuu (2003). In Kenya for instance Osman (2007) and Koech (2008) both found that day of the week effect did not exist at the NSE while Onyuma (2009) result showed that the day of the week effect exist at the NSE. Given the time period when Onyuma (2009) did his research that is 1980 to 2006 there is need for more research in this area to show if day of the week effect actually exist at the NSE.

## **2.6 Conclusions from Literature Review**

The day-of-the-week effect has been extensively documented for different stock markets around the world and has yielded different results for different countries depending on the specific time-period chosen as well as the choice of model with

which the anomaly was examined hence more studies in these area to study this anomaly.

The existence of the day of the week effect present contradictory evidence on the EMH stating that average daily stock returns are different among trading days, EMH states that average daily stock returns are same in all the days. While much has been undertaken in testing market efficiency in Kenya, day of the week effect has not been adequately proven Hence this study was to assist in identifying the anomaly exists in the stock markets that is presence of the day of the week effect.



## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter presents the study design and methodology used in gathering information needed for the purpose of completing the study. This was done in terms of introduction, research design and target population, sampling design, and data collection instrument and procedures and data analysis criteria that will be used.

#### **3.2 Research Design**

Research design provides the glue that holds the research project together. A design was used to structure the research, to show how all of the major parts of the research project (the samples or groups, measures, treatments or programs, and methods of assignment) work together to try to address the central research questions.

This research study made use of descriptive research design since it allows collection of large amounts of data from the target population as compared to other methods. It involved gathering of data (daily stock prices) at the NSE and analyzing this data statistically to determine the presence of the day of the week effect. In particular, this study sought to understand the relationship between the independent variables against dependent variable to determine the negative and positive returns on the different days of the week.

#### **3.3 Population**

Mugenda (2003) described population of the entire groups or individual, events or objects having common characteristics about which the researcher wishes to make generalizations, International statistic indicate the likelihood that what was true of the sample is also true of the population from which is drawn. When the target population

is similar the researcher has more confidence making generalization Ary et, al (2006) Fraenkal and Walken (2006). The target population for this study constituted all the companies at the NSE (Appendix A).

### **3.4 Sampling**

The sample of the study constituted the NSE-20share index from the NSE. Both monetary information on prices of securities and value data for the NSE-20 share index was used. (Appendix B)

### **3.5 Data collection**

Data is defined as row facts that are yet to be processed to be reliable information for the purpose of design making. The researcher used secondary data for obtaining necessary information for the study. The secondary market data was available in the NSE. Using a data collection sheet, the daily stock prices, that is opening and closing index values was collected from the daily price list compiled by the NSE. The data was checked against the NSE market statistical bulletins for consistencies. The data included daily returns and prices from January 2008 to December 2011.

### **3.6 Data analysis**

The study made use of SPSS version 21.0 in analyzing data. In particular, the software aided in determining the reliance of the dependent variable on the various independent variables. The researcher used quantitative method to analyze data. The quantitative data collected was summarized and analyzed by using cross tabulations and descriptive statistics. The results of data analysis were presented by the use of tables to display information that was obtained from the NSE. Following French (1980) and Keim & Stambaugh (1984) regression model was used to analyze returns. Regression analysis was used to regress Monday to Thursday against the remaining

day of the week, to determine the positive and negative returns in the days of the week.

The multiple regression equation was,

$$R_t = \beta_0 + \beta_1 D_1 + \beta_2 D_2 + \beta_3 D_3 + \beta_4 D_4 + \beta_5 D_5 + \varepsilon_t$$

Where:

$R_t$  = Daily return at time  $t$

Daily return = (closing price - opening price) / opening price

$\beta_0$  = Intercept that is the value of  $R_t$  when all predictor variables take the value of zero

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$  = the mean return for each day of the week

$D_1 - D_5$  = Are dummy variables such that

$D_1 = 1$  if  $t$  is a Monday and  $D_1 = 0$  for all other days

$D_2 = 1$  if  $t$  is a Tuesday and  $D_2 = 0$  for all other days

$D_3 = 1$  if  $t$  is a Wednesday and  $D_3 = 0$  for all other days

$D_4 = 1$  if  $t$  is a Thursday and  $D_4 = 0$  for all other days

$D_5 = 1$  if  $t$  is a Friday and  $D_5 = 0$  for all other days

$\varepsilon_t$  = Error term at time  $t$

## **CHAPTER FOUR**

### **DATA ANALYSIS AND INTERPRETATIONS**

#### **4.1 Introduction**

The purpose of this research was to investigate the presence of day of the week effect in NSE. Having identified the problem of study in chapter one, reviewed existing literature and shown gaps of knowledge in chapter two, chapter three explained the methods that the study used to collect data. This chapter presents the analysis and interpretations of the data from the field. The chapter is organized under sub-sections guided by the research questions. The study employs various statistical tools for extracting the presence of day of the week effect in NSE. The data was gathered exclusively from the published reports obtained from the Nairobi Securities Exchange 20-share index for the period between 2008 and 2011. The data obtained was fed into SPSS version 21.0 and used to compute the ratios used as proxies to measure the presence of day of the week effect in NSE. Descriptive analysis, regression analysis and Karl Pearson Correlation analysis were conducted to ascertain the presence of day of the week effect in NSE.

#### **4.2 Institution Details and Information**

The study targeted the 20 representative companies of share price movements at the Nairobi Stock Exchange market. These companies included Rea Vipingo Plantations Ltd, Sasini Ltd, CMC Holdings Ltd, Barclays Bank of Kenya Ltd, Equity Bank Ltd, Kenya Commercial Bank Ltd, Standard Chartered Bank Kenya Ltd, The Co-operative Bank of Kenya Ltd, Express Kenya Ltd, Kenya Airways Ltd, Nation Media Group Ltd, Athi River Mining, Bamburi Cement Ltd, E.A. Cables Ltd, KenGen Co. Ltd, Kenya Power & Lighting Co Ltd, British-American Investments Co.(Kenya) Ltd, East African Breweries Ltd, Mumias Sugar Co. Ltd and British American Tobacco

Kenya Ltd. These companies are spread across the various industries that have firm quoted in the NSE including banking, manufacturing & allied, telecommunication & technology, construction and energy & petroleum. The choice of the data frequency is informed by the nature of the study, which seeks to investigate the day-of-the-week effect, therefore daily data are more appropriate. To control for the holiday effect, the mean returns before and after the holidays are deleted since the focus of this study is the investigation of the day-of-the-week effect. Thus, the holiday effect is separated from the day-of-the-week effect. All holiday returns have been omitted in the investigation of the day-of-the-week effect.

#### **4.3 Descriptive Comparison of Day of the Week Performances By Years**

The study aimed at establishing the relationship between a given day of the week and the corresponding share return in Nairobi Securities Exchange. Daily average returns on each day, Mondays through Fridays, are compared with the average daily rates of returns for the rest of the days of the week.

**Table 4.1: Descriptive Statistics on Comparison of Days of the Week Effect**

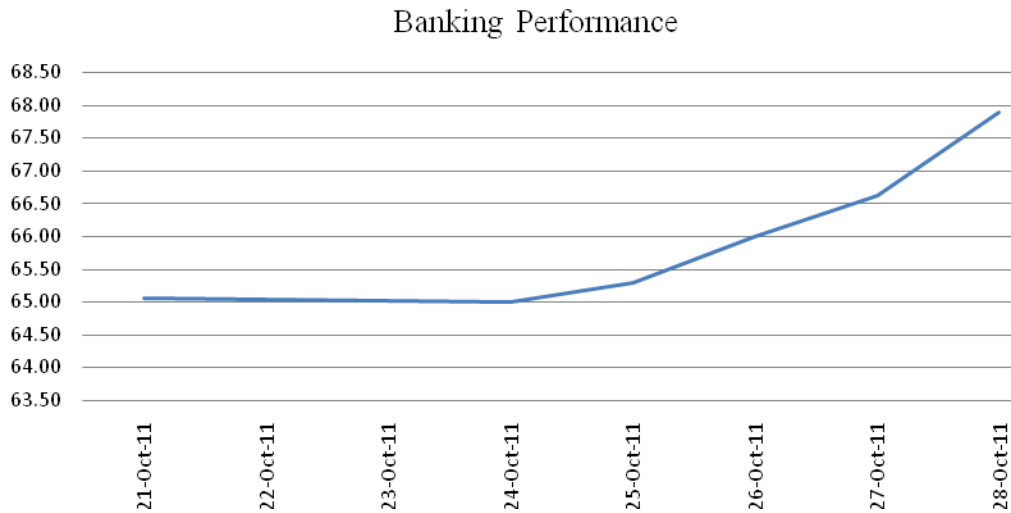
<b>Day</b>	<b>Average 2008</b>	<b>Average 2009</b>	<b>Average 2010</b>	<b>Average 2011</b>	<b>Mean</b>	<b>Std. Dev.</b>
Monday	95.0	60.4	81.5	72.1	77.2500	14.64662
Tuesday	94.7	60.0	81.5	72.0	77.0500	14.69161
Wednesday	94.9	59.9	81.2	71.9	76.9750	14.79265
Thursday	95.6	59.8	81.5	72.1	77.2500	15.11963
Friday	96.5	60.3	81.8	71.8	77.6000	15.35990

**Source: Study Data, 2012**

From the study, year 2008 recorded the highest share prices on Mondays with 95.0 as compared to year 2009 which recorded the lowest return on shares at 60.4. The mean prices for the day of Monday were 77.05 and the deviation was 14.65. Tuesdays recorded almost the same prices as Mondays where Tuesdays of year 2008 had the highest prices of 94.7 and average returns of Tuesdays in year 2009 were the lowest at 60.0. However the Tuesdays mean score were the lower than Monday at 77.05 and the deviation from the calculated mean was 14.69. The prices of Wednesday were such that year 2008 recorded the highest at 94.9, followed by year 2010 at 81.5, then year 2011 with 72.0 and the lowest was year 2009 with 59.8. On the same, the mean score for the day was 76.96 hence the lowest of the days of the week while the standard deviation was 14.79. On Thursdays the share prices started to show an upward trend with average prices in 2008 hitting the highest mark at 95.6, followed by year 2010 at 81.5, then year 2011 at 72.1 while year 2009 recorded the lowest prices at 59.8. The mean score for Thursdays was 77.25 and the deviation was 15.12. The day of Friday is expected to record the highest effect and from this study, year 2008 recorded the highest prices at 96.5 as compared to year 2010 with 81.8, year 2011 with average prices at 71.8 while year 2009 recorded the lowest average prices at 60.3. It is clear from this study that Friday recorded the highest mean score at 77.60 and the standard deviation was 15.3.

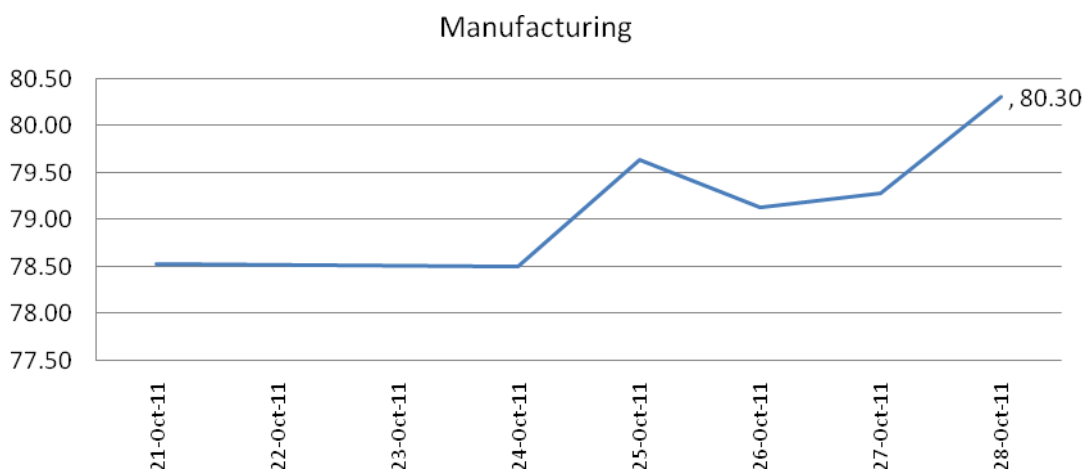
#### **4.4 Analysis of the Day of the Week Effect by Sector**

The study also sought to establish the performance of the various sectors forming the NSE 20-share index. This section therefore presents the results on the performance of the banking sector, manufacturing sector, telecommunications and technology sector, energy and petroleum sector, agricultural sector, automobiles and accessories sector, insurance sector and investment sector.



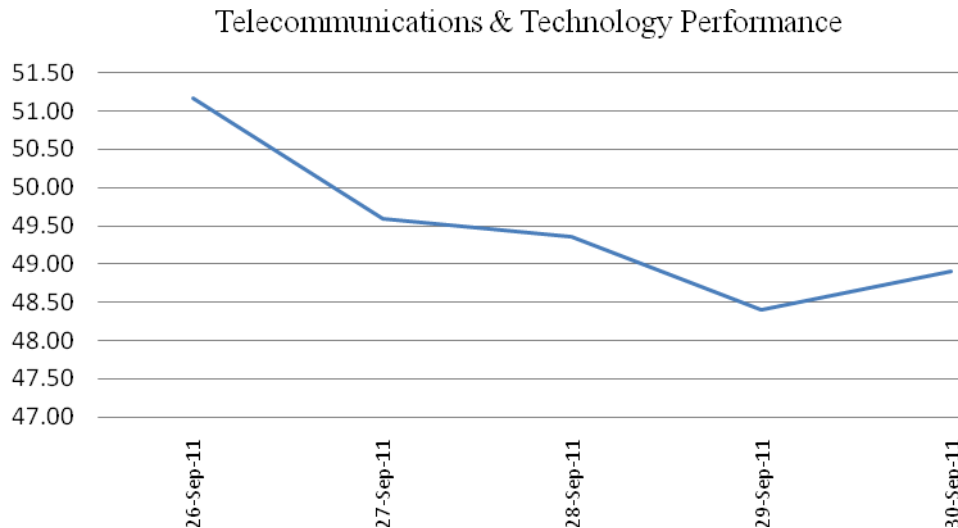
**Figure 4.1: Performance of the Banking Sector**

The analysis of the performance of the banking sector shows that the share prices of the banking Companies listed in the NSE kept rising as the week progressed from Monday to Friday.



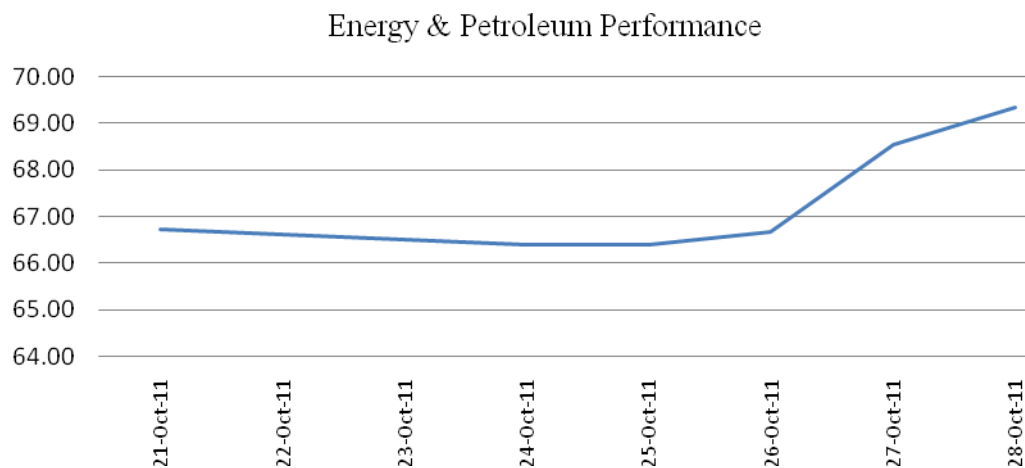
**Figure 4.2: Performance of the Manufacturing Sector**

The trend of the performance of the manufacturing sector was the same as that of the banking sector in a typical week where Monday recorded the lowest share price and a sharp rise was observed on Friday then a downward trend through Monday to Wednesday when the rise starts again.



**Figure 4.3: Telecommunications and Technology Sector**

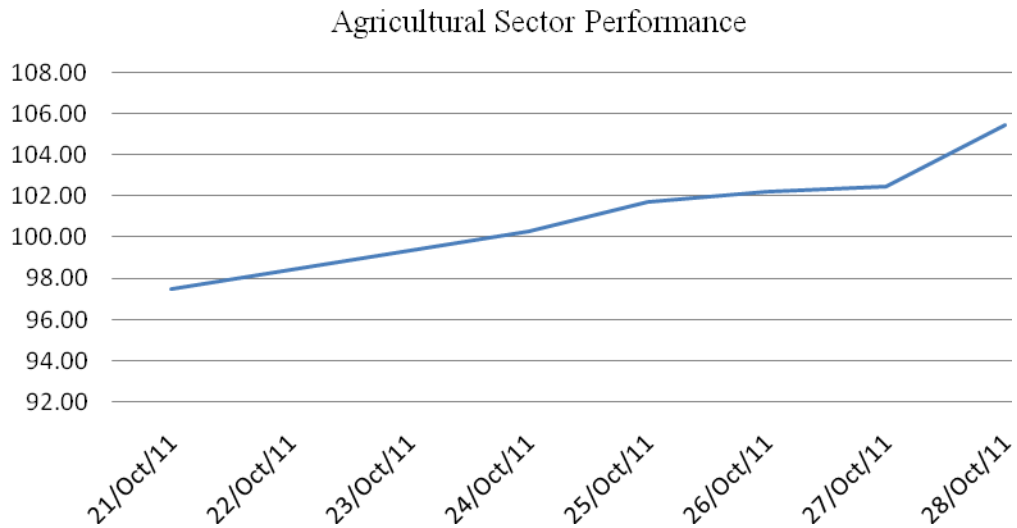
In the telecommunications and technology sector, the performance was however different. The performance was in a general downward trend throughout the week. This could be attributed to the nature of the industry where a lot of postulations are high at the beginning of the week and moves down as the week grows old.



**Figure 4.4: Energy and Petroleum Sector Performance**

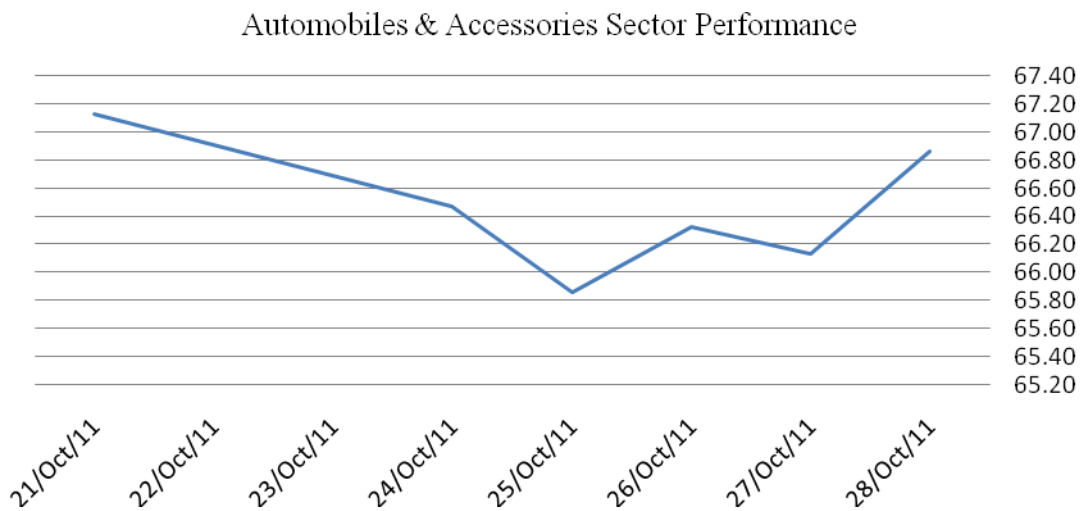
There was energy and petroleum sector performance also a general upward trend of the performance of the price shares of the energy and petroleum sector companies. There was a gradual downward followed by a gradual sharp increase in the share prices.





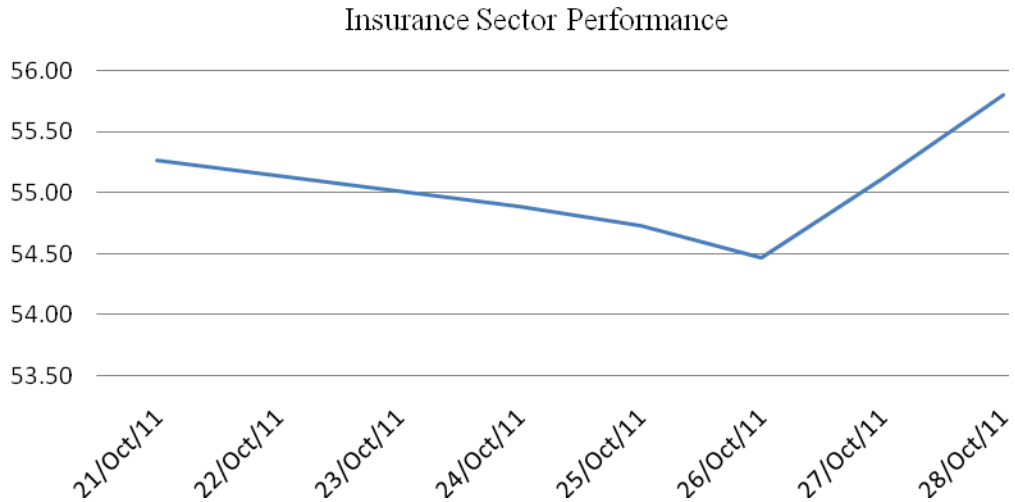
**Figure 4.5: Agricultural Sector Performance**

The same trend was recorded in the agricultural sector where the first days of the week showed a lower performance in terms of share price returns as compared to the last days of the week whose share prices were higher.



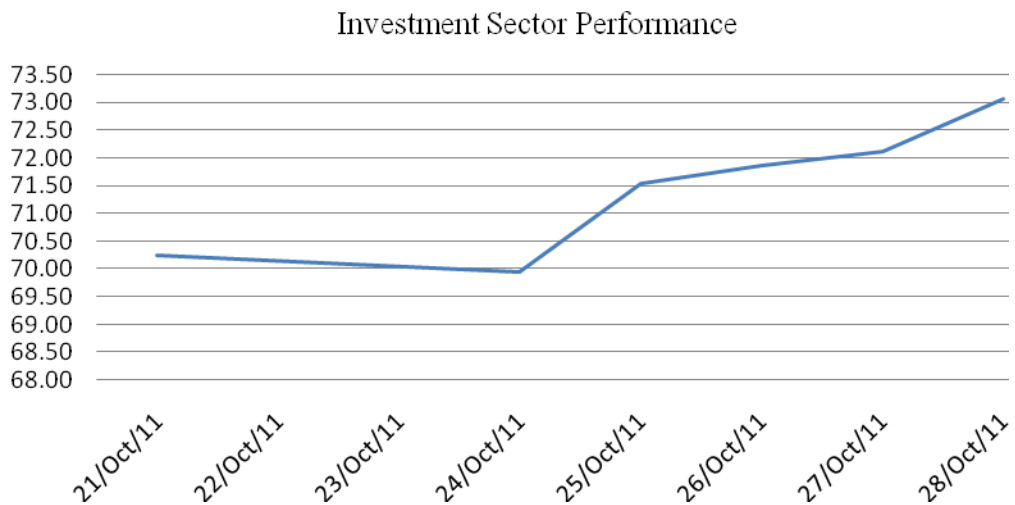
**Figure 4.6: Automobiles and Accessories Sector Performance**

Automobiles and accessories sector also formed part of the NSE 20-share index. The trend was generally upward with Monday and Tuesday were recording lower price returns than the other days of the week.



**Figure 4.7: Insurance Sector Performance**

From the Insurance sector, the price returns were decreasing from Friday to Tuesday and then picked on an upward trend from Wednesday to Friday.

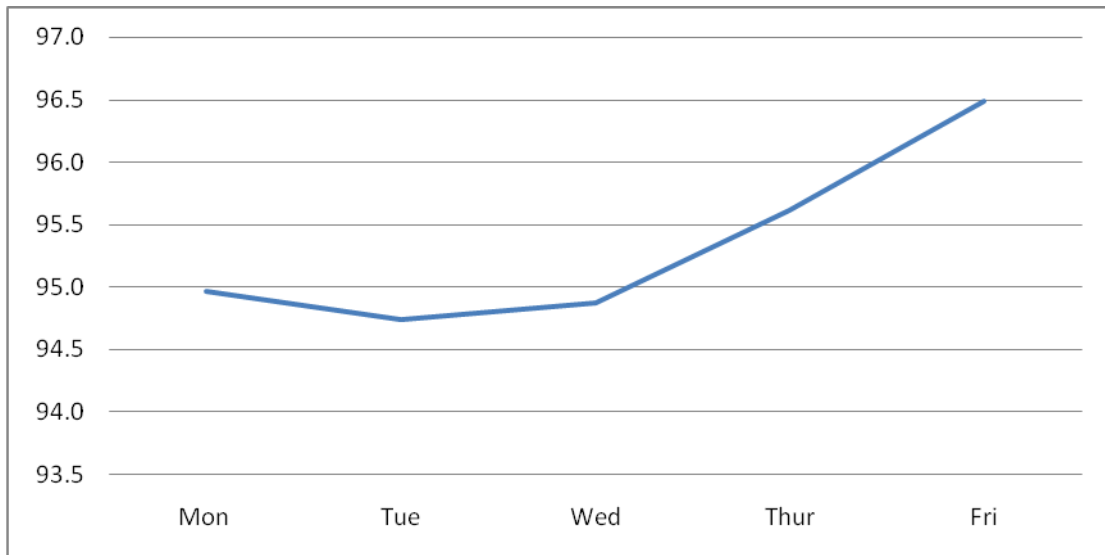


**Figure 4.8: Investment Sector Performance**

The investment sector was clear in showing the day of the week effect with Monday recording the lowest returns on the share prices while Friday was showing the highest returns on the share prices.

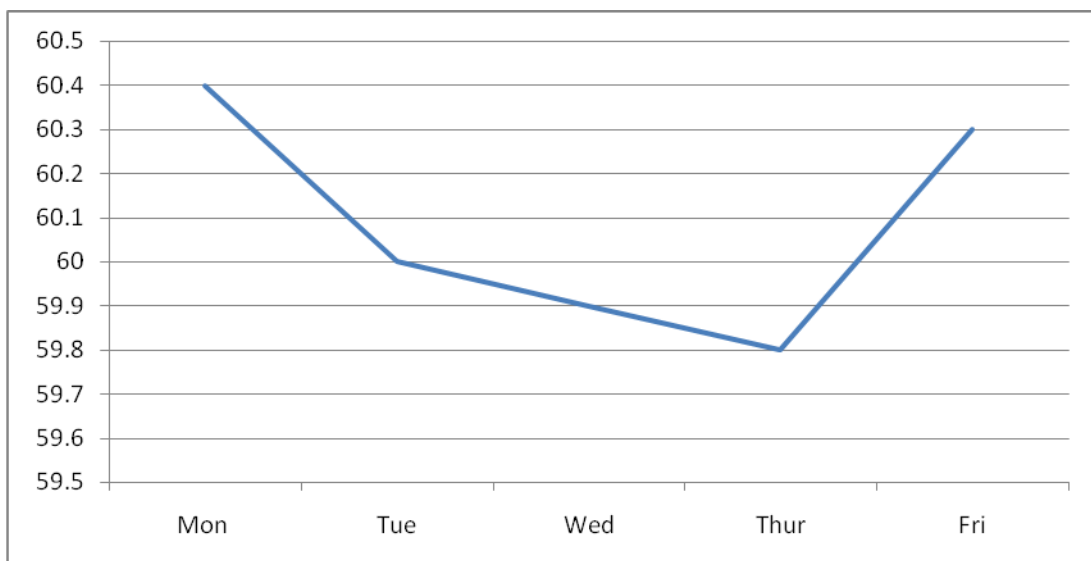
#### 4.5 Analysis of the Various Days of the Week by Year

The study sought to establish the trend of performance in the five days of the week. Therefore the trend was investigated over the four years under study. The results are presented in this section for the period of years 2008, 2009, 2010 and 2011.



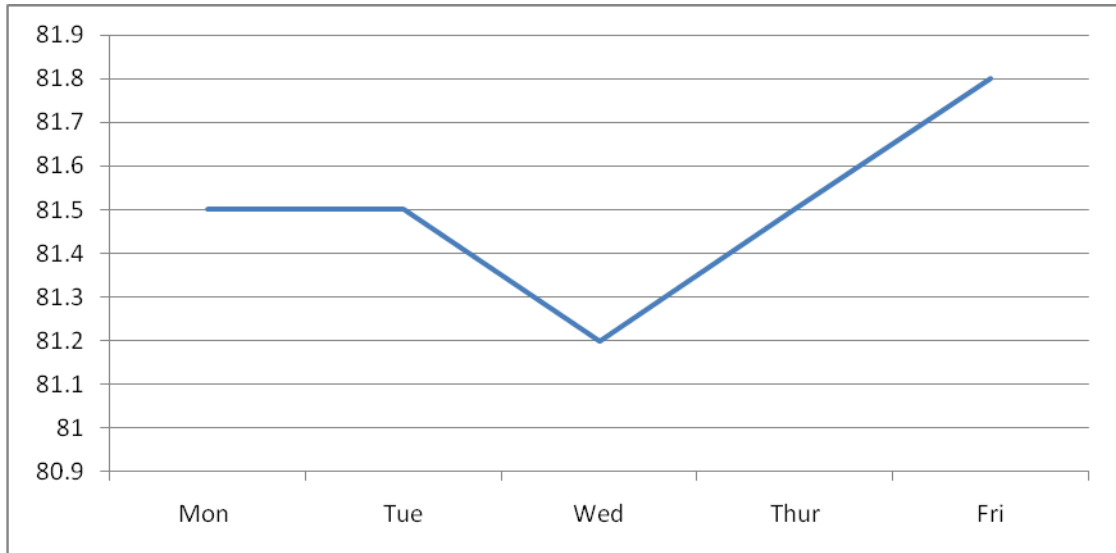
**Figure 4.9: Overall Year 2008 Performance of the NSE 20-Share Index**

The overall performance of year 2008 NSE 20-share index was clearly showing that the day of the week effect starts with Monday showing the lowest share prices and Friday recording the highest share prices.



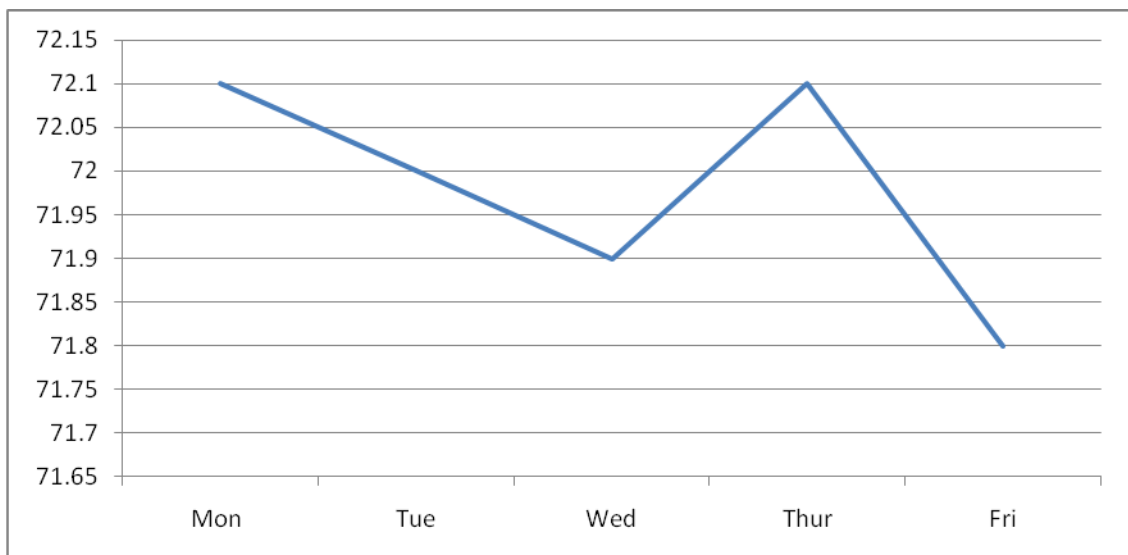
**Figure 4.10: Overall Year 2009 Performance of the NSE 20-Share Index**

During year 2009, Monday and Tuesdays were in a constant trend, Wednesday was in a downward trend and Thursday and Friday were high performing with Friday showing the highest share price.



**Figure 4.11: Overall Year 2010 Performance of the NSE 20-Share Index**

The overall year 2010 performance of the NSE 20-Share Index was starting at a high note on Monday then an upward curving trend was seen where a deep was seen on Thursday followed by a rise afterwards.



**Figure 4.12: Overall Year 2011 Performance of the NSE 20-Share Index**

Year 2011 was showing a high performance on Monday followed by a downward trend until Wednesday after which an upward trend is recorded till Thursday and then a fall on Friday.

In addition the study conducted an inferential analysis. Inferential analysis is aimed to reach conclusions that extend beyond the immediate data alone between the independent variables in this study. This section is intended to provide summary statistics for daily index returns through different time periods. The reported significance levels are due to one-sample analysis. The first order autocorrelation coefficients are positive and significant for the whole period and for each year from year 2008 through to year 2011. The study the study conducted inferential analysis to establish the relationship between the independent variables and the dependent variable of which involved a Karl Pearson Correlation analysis, coefficient of determination, ANOVA and a multiple regression analysis.

#### **4.6 Karl Pearson's Correlation on Day of the Week Effect at the NSE**

Karl Pearson correlation is used to measure the degree of association or relationship between two variables quantitatively, an index of relationship. The researcher used Karl Pearson's coefficient of correlation to quantify the strength of the relationship between the variables. The researcher used the Karl Pearson's coefficient of correlation ( $r$ ) to study the correlation between the study variables and the findings.

**Table 4.2: Karl Pearson Correlations on Day of the Week Effect**

Day/ Factor	Monday	Tuesday	Wednesday	Thursday	Friday	Share price
<b>Monday</b>	1	.956	.951	.906	.982	-.047
<b>Sig. (2-tailed)</b>	.	.000	.000	.000	.000	.511
<b>Tuesday</b>	.956	1	.994	.913	.944	.103
<b>Sig. (2-tailed)</b>	.000	.	.000	.000	.000	.150
<b>Wednesday</b>	.951	.994	1	.911	.941	.124
<b>Sig. (2-tailed)</b>	.000	.000	.	.000	.000	.081
<b>Thursday</b>	.906	.913	.911	1	.903	.006
<b>Sig. (2-tailed)</b>	.000	.000	.000	.	.000	.931
<b>Friday</b>	.982	.944	.941	.903	1	.035
<b>Sig. (2-tailed)</b>	.000	.000	.000	.000	.	.629
<b>Share price</b>	-.047	.103	.124	.006	.035	1
<b>Sig. (2-tailed)</b>	.511	.150	.081	.931	.629	.

**Source: Study Data, 2012**

From the findings, it was clear that there was positive relationship between share price returns and various days of the week studied. Accordingly, Monday showed a weak negative correlation with share price returns with a correlation figure of -.047. On the other hand it was also clear that there was a strong positive relationship between Tuesdays and share price with a correlation figure of 0.103. There was also a positive correlation between Wednesday and share price with a correlation value of 0.124, Thursday also showed a positive correlation of 0.006 and Friday also had a positive direction with a correlation figure of 0.035. These results show that there was positive correlation on Tuesdays, Wednesdays, Thursdays and Fridays while the Mondays showed a negative correlation with the share price returns.

#### **4.7 Regression Analysis**

In addition, the researcher conducted a multiple regression analysis so as to analyze the presence of day of the week effect in NSE. The researcher applied the statistical package for social sciences (SPSS) to code, enter and compute the measurements of the multiple regressions for the study.

The coefficient of determination is a measure of how well a statistical model is likely to predict future outcomes. The coefficient of determination,  $r^2$  is the square of the sample correlation coefficient between outcomes and predicted values. Coefficient of determination explains the extent to which changes in the dependent variable can be explained by the change in the independent variables or the percentage of variation in the dependent variable (share price returns) that is explained by all the five independent variables (Monday, Tuesday, Wednesday, Thursday and Friday).

**Table 4.3: Coefficient of Determination on Day of the Week Effect in NSE**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.981(a)	0.863	0.691	0.752

**Source: Author, 2012**

From the findings, 86.3% of the share price returns is attributed to combination of the five independent factors (Monday, Tuesday, Wednesday, Thursday and Friday) investigated in this study. A further 13.7% of the share price returns in NSE is attributed to other factors not investigated in this study.

The multiple regression conducted in this study is a statistical technique that allows researchers to predict a score of one variable on the basis of their scores on several other variables. The main purpose of multiple regressions is to learn more about the relationship between several independent or predictor variables and a dependent or criterion variable.

**Table 4.4: Multiple Regression Analysis**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.713	1.068		0.799	0.033
	Monday	0.246	0.203	0.135	0.619	0.036
	Tuesday	0.259	0.193	0.08	0.358	0.014
	Wednesday	0.298	0.250	0.242	0.891	0.023
	Thursday	0.375	0.160	0.346	1.284	0.044
	Friday	0.453	0.088	0.167	1.379	.0041

Dependent Variable: share price returns in the NSE.

The researcher conducted a multiple regression analysis so as to determine the relationship between the share price returns and the five days of the week operations investigated in this study. The regression equation;

$$(R_t = \beta_0 + \beta_1 D_1 + \beta_2 D_2 + \beta_3 D_3 + \beta_4 D_4 + \beta_5 D_5 + \epsilon_t) \text{ was:}$$

$$R_t = 0.713 + 0.246\beta_1 + 0.259\beta_2 + 0.298\beta_3 + 0.375\beta_4 X_4 + 0.453\beta_5 + \epsilon$$

Whereby Y = share price returns in the NSE

D<sub>1</sub> = Monday

D<sub>2</sub> = Tuesday

D<sub>3</sub> = Wednesday

D<sub>4</sub> = Thursday

D<sub>5</sub> = Friday

According to the regression equation established, taking all factors (Monday, Tuesday, Wednesday, Thursday and Friday) constant at zero, the share price returns in the NSE will be 0.713. The data findings analyzed also shows that taking all other



independent variables at zero, a unit increase in Monday operations will lead to a 0.246 increase in share price returns in the NSE. A unit increase in Tuesday operations will lead to a 0.359 increase in share price returns in the NSE; a unit increase in Wednesday operations will lead to a 0.268 increase in share price returns in the NSE, a unit increase in Thursday operations will lead to a 0.168 increase in share price returns in the NSE, while a unit increase in Friday operations will lead to a 0.453 increase in share price returns in the NSE. This therefore implies that all the five variables have a positive relationship with Friday contributing more to the in share price returns in the NSE, followed by Thursday, then Wednesday and Tuesday while Monday contributes the least to the share price returns in the NSE.

## **CHAPTER FIVE**

### **SUMMARY , CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 Introduction**

This is the final chapter in this study which gives the summary, the conclusions and recommendations of the study based on the objective of the study. It comes after identifying the background, problem at hand and the objectives in chapter one, literature review was done in chapter two, chapter three set out the methodology that the study used to collect data and chapter four analyzed the data obtained from the study. The chapter finally presents the suggestions for further studies.

#### **5.2 Summary**

The study found day of the week effect is present in the return of share prices equation. It was clear from these findings that Friday recorded the highest mean score than other days of the week over the period studied. The share prices of the banking Companies listed in the NSE kept rising as the week progressed from Monday to Friday. In the manufacturing sector Monday recorded the lowest share price and a sharp rise was observed on Friday, telecommunications and technology sector was in a general downward trend throughout the week. The energy and petroleum sector performance also had a general upward trend of the price shares as well as in the agricultural sector here the first days of the week showed a lower performance in terms of share price returns as compared to the last days of the week whose share prices were higher. Other sectors with the same trend included automobiles and accessories, insurance sector and investment sector.

The study also found that the day of the week effect starts with Monday showing the lowest share prices and Friday recording the highest share prices. In 2009, Monday and Tuesdays were in a constant trend, Wednesday was in a downward trend and

Thursday and Friday were high performing with Friday showing the highest share price. In 2010 the performance started at a high note on Monday then an upward curving trend was seen where a deep was seen on Thursday followed by a rise afterwards. Year 2011 was showing a high performance on Monday followed by a downward trend until Wednesday after which an upward trend is recorded till Thursday and then a fall on Friday.

From the inferential analysis there was positive correlation on Tuesdays, Wednesdays, Thursdays and Fridays while the Mondays showed a negative correlation with the share price returns. In addition, 86.3% of the share price returns is attributed to combination of the five independent factors (Monday, Tuesday, Wednesday, Thursday and Friday) investigated in this study. According to the regression equation established, taking all factors (Monday, Tuesday, Wednesday, Thursday and Friday) constant at zero, the share price returns in the NSE will be 0.713. The data findings analyzed also shows that taking all other independent variables at zero, a unit increase in Monday operations will lead to a 0.246 increase in share price returns in the NSE. A unit increase in Tuesday operations will lead to a 0.359 increase in share price returns in the NSE; a unit increase in Wednesday operations will lead to a 0.268 increase in share price returns in the NSE, a unit increase in Thursday operations will lead to a 0.168 increase in share price returns in the NSE, while a unit increase in Friday operations will lead to a 0.453 increase in share price returns in the NSE. The individual meaning for each one of the variables could reveal the presence of an atypical yield during a day of the week. Not only is the statistical significance of each dummy variable studied but also possible structure in the autoregressive portion and in the moving average which includes the regression model.

### **5.3 Conclusions**

The study concludes that the Day-of-the-Week had a significant effect on the NSE 20-share index during the investigated period. It was evident that daily seasonal are not constant in direction and magnitude through different time periods.

From the findings, the Monday effect was detected for the various sectors in the NSE 20-share index. As such, this study presents new evidence for the day-of-the-week effect on the NSE. It can be tentatively concluded from this study that the day-of-the-week effect exist on the NSE stock market sectors.

From the analysis of the various sectors in the NSE, the returns for the stock market sectors are non-normally distributed and have fatter tails and high peaks. Given that mean returns for the NSE sector indices do not follow the normal distribution, the use of non-parametric tests, which do not assume that index returns follow a particular distribution, are apt to the detection of seasonal effects.

The study results also confirm that all of the differences between the mean returns of each trading day are significantly different from zero, which are supportive of the day-of-the-week effect. The returns on the five trading days follow different processes, which obviously confirm the presence of day-of-the-week effect in daily stock returns in the NSE 20-share index.

### **5.4 Policy Recommendations**

The study therefore recommends since the information obtained show daily anomalies are valid for individual shares in addition to search for possible sources of these anomalies in an emerging market, then the concerned authorities should work towards enhancing performance of the stocks which can be used by investors, in addition to other stock market analysis tools, to maximize their expected return by exploiting

calendar anomalies in their portfolios as well as to forecast stock market trends, which can help them in their decision making process. This implies that there is room for investors to adjust their portfolios by taking into account day of the week variations in volatility in the stock exchange markets.

The findings of this suggest that the Companies as well as the investors should consider the day of the week effect since it is noteworthy because they are suggestive of underlying behavioral factors. The phenomenon has been known for a long time, and markets should adjust and be efficient in this regard. Moreover, the growth of the internet should be reinforced since it reduces information and transaction costs, mitigating the Day of the Week Effect.

### **5.5 Limitations of the study**

One of the limitations of study was its inability to include more institutions across the Country. This was a study focusing on NSE-20share index from the NSE. The study could have covered more institutions across country so as to provide a broader based analysis however time and resource constraints placed this limitation. The study countered this problem by carrying a study across the segment incorporating data and serve as a representative.

Another limitation for the purpose of this study was regarded as a factor that was present and contributed to the researcher getting either inadequate information. This was due to some reservations held by the target population. This hence would have led to generalization during the analysis and presentation of the data made from those from the responses to represent the views of the rest of the firms in the industries under which the firms fell. The study countered the limitation by making prior

arrangements with the CMA as well as enquiring for the relevant information from the Nairobi Stock Exchange.

Descriptive research design employed in this study may not have the potential for drawing powerful inferences. A descriptive study, thus, does not explain why an event has occurred or why the variables interact the way they do, because that is beyond the bounds of the statistics employed. The study therefore conducted inferential analysis using Karl Pearson's correlation and regression analysis to confirm the descriptive results found.

The staffs of the firms studied as well as the regulator (CMA and NSE) were likely to be reluctant in giving information fearing that the information sought would be used to intimidate them or print a negative image about the firms. The study handled the problem by carrying an introduction letter from the University and assured them that the information they gave would be treated confidentially and it would be used purely for academic purposes.

### **5.6 Suggestion for Further Research**

Further research studies can and should be constructed to investigate whether reported daily anomalies are valid for individual shares in addition to search for possible sources of these anomalies in an emerging market. Another fruitful area of research can be testing whether a trading strategy based on daily seasonal are profitable out of transactions costs.

The study also recommends that the use of stock market sectors rather than the all share index is more likely to give accurate results; hence future studies should focus on micro- rather than macro levels. It would also be worthwhile to investigate if there are portfolio diversification benefits from holding any combination(s) of these stock

market sectors. The use of parametric methods, which are amenable to returns that follow statistical distributions other than the normal, would also be useful to detect seasonality.

With respect to the existence of abnormal volatility in the equation of conditional variance in the stock markets, a day of the week effect is present in all of the financial markets, where a symmetric model is applied. If the parameter is introduced which accounts for different behaviour in the volatility of the stock market indexes, then continuity in the day of the week effect becomes evident, differentiating the rise and fall of prices. This study therefore recommends that future research be carried out on the impacts of institutional factors stock prices within the various days of the week.

The study also suggests that tests of complements and substitutes of day of the week effects can be performed by including new instruments. These tests relevant for complementarities of other commodities are still an open ground for research as the models used in this and previous studies are based on NSE-20-share index in the stock markets and the same picture is expected in other market commodities.

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## REFERENCES

- Ary D, Jacobs LC, Razavieh A, Sorensen C (2006). Introduction to research in education (7th ed.). Belmont, CA: Thomson Wadsworth.
- Bachelier, L. (1964). Theory of Speculation. In Paul Cootner (ed.), *The Random Character of Stock Market Prices*. Cambridge, MA: MIT Press, pp. 17–75.
- Benson, E.D. & Rystrom, D.S., (1989). Investor psychology and the day-of-the-week effect. *Financial Analysts Journal*, 45, 75-78.
- Coutts, J. A. and Sheikh, M. A. (2002). The anomalies that aren't there: the weekend, January and pre-holiday effects on the all gold index on the Johannesburg stock exchange 1987–1997. *Applied Financial Economics*, 12, 863-71.
- Cross, F. (1973). The behavior of stock prices on Friday and Monday, *Financial Analyst Studies*, 29, 67-69.
- Dickinson, J. P. and Murage, K. (1994). Market efficiency in developing Countries: A Case Study of the Nairobi Stock Exchange. *Journal of Business Finance & Accounting*, 21, No.1, 133-150.
- Dubois, M. and Louvet, P. (1996). The day of the week effect: the international evidence. *Journal of Banking and Finance*, 43, 431-50.
- Dyl, E.A. and Maberly, E.D., (1988). The anomaly that isn't there: a comment on Friday the Thirteenth. *Journal of Finance*, 43, 1286-1295.
- Fama, E.F. (1965). The Behaviour of Stock Market Price. *Journal of Business* 38:34-106.



- Fama, E.F. (1970). Efficient Capital Markets: A Review of Theory and Empirical Work. *Journal of Finance* 383-417.
- Fama, E.F. (1970). The behavior of stock market prices. *Journal of Business*, 38, No. 1, 34-105.
- Fama, E.F. (1998). Market Efficiency, Long-Term Returns, and Behavioural Finance. *Journal of Financial Economics* 49:3:283-306.
- Fields, M.J. (1931). Stock prices: A problem in verification. *Journal of Business*, 7 (1931), 415-418.
- Fraenkel, J.R., & Wallen, N.E. (2006). *How to design and evaluate research in education*. New York: McGraw-Hill.
- French, K.R. (1980). Stock returns and the Weekend effect. *Journal of Financial Economics*, March, 55-70.
- Gardeazabal, J. and Regulez, M. (2002). *The weekend-dividend effect in the Spanish market*: Paper presented at the European Finance Management Association Conference, London, UK.
- Gibbons, M. R. and Hess, P. (1981). Day-of-the-Week Effect and Asset Returns. *Journal of Business*, Vol. 54, pp. 579-596.
- History of Organisation. (n.d.). Retrieved from <http://www.nse.co.ke/about-nse/history-of-organisation.html>

- Jaff, J. and Westerfield R. (1985a), “The week-end effect in common stock return: the international evidence”, *Journal of Finance*, 40, pp. 433-54.
- Jaff, J. and Westerfield, R. (1985b). Patterns in Japanese common stock returns: day of the week and turn of the year effect. *Journal of Financial Quantitative Analysis*, 20, pp. 261-72.
- Jaff, J., Westerfield, R.L. and Ma, C. (1989). A twist on the Monday effect in stock prices: Evidence from the U.S. and foreign stock markets. *Journal of Banking and Finance*, 13, pp.641-50.
- Keim, D.B., & Stambaugh, R.F. (1984).A further investigation of the weekend effect in stock returns. *Journal of Finance*, 39, 819-835.
- Kelly, F., (1930). Why you Win or Lose: *The psychology of speculation*. Boston: Houghton Mifflin.
- Kipsang, E. B (2011). A test of the weekend effect of the Uganda Securities exchange. (Unpublished MBA Project). University of Nairobi, Nairobi, Kenya.
- Koech, (2008). *Weekend effect at the NSE*. (Unpublished MBA Project.) University of Nairobi, Nairobi, Kenya
- Lakonishok, J. and Smidt, S. (1988). Are seasonal anomalies real? A ninety-year perspective, *Review of Financial Studies*, 1, 403-25.
- Lo, A.W. and MacKinley. A.C. (1999). *A Non-Random Walk Down Wall Street*. Princeton: Princeton University Press.

Listed companies and NSE 20-share index companies retrieved from <http://www.nse.co.ke/listed-companies/list.html?start=50> and <http://financials.nairobist.com/?p=63>

Malkiel, B.G. (2003). The Efficient Market Hypothesis and Its Critics. *Journal of Economic Perspectives* 17:1:59-82.

Markowitz, H. M. (1952). Portfolio selection. *Journal of Finance*. 7(1):77-91.

Mokua, C. (2003). *Weekend effect on the stocks at the NSE*. (Unpublished MBA Project). University Of Nairobi, Nairobi, Kenya.

Mugenda, O. M and Mugenda, A.G (2003). *Research methods, quantitative and qualitative approaches*. Nairobi: African center for technology studies, Kenya.

Onyuma, S. O. (2009). Day of the week and month of the year effect on the Kenyan stock market. *Eastern Africa Social Science Research Review*, Vol 25, No2, June 2009, pp. 53-74

Osman, A. M (2007). *Study of the holiday effect at the NSE*. (Unpublished MBA Project) University of Nairobi, Nairobi, Kenya.

Rasugu, N.C (2005). *The existence of the holiday effect at the NSE*. (Unpublished MBA Project). University Of Nairobi, Nairobi, Kenya

Roll, R.( 1983). The turn of the year effect and the return premier of small firms. *Journal of Portfolio Management*, 3, 379-402.

Phaisarn, S. and Wichian, P. (2010). Analysis of calendar effects: Day of the week effect on Stock Exchange of Thailand 2005-2009. *International Journal of Trade, Economics and Finance*, Vol 1 No.1 June 2010.

- Sharpe, William F., (1964). Capital asset prices: A theory of market equilibrium under conditions of risk. *Journal of Finance* 19, 425-442.
- Shefrin, H. and Statman, M. (1994). *Behavioural Portfolio Theory*. (Unpublished paper) Santa Clara University.
- Shiller, R. J. (1995). Conversation, Information, and Herd Behavior. *American Economic Review*, 85(2): 181–185.
- Shleifer, A. (2000). *Inefficient Markets: An Introduction to Behavioural Finance*. Oxford: Oxford University Press.
- Tversky, A. and Kahneman, D. (1974). Judgment under Uncertainty: *Heuristics and Biases*. *Science*, 185: 1124–1131.

## **APPENDICES**

### **Appendix A: Listed Companies in NSE**

#### **AGRICULTURAL**

Eaagads Ltd

Kapchorua Tea Co. Ltd

Kakuzi

Limuru Tea Co. Ltd

Rea Vipingo Plantations Ltd

Sasini Ltd

Williamson Tea Kenya Ltd

#### **COMMERCIAL AND SERVICES**

Express Ltd

Kenya Airways Ltd

Nation Media Group

Standard Group Ltd

TPS Eastern Africa (Serena) Ltd

Scangroup Ltd

Uchumi Supermarket Ltd

Hutchings Biemer Ltd

Longhorn Kenya Ltd

#### **TELECOMMUNICATION AND TECHNOLOGY**

Access Kenya Group Ltd

Safaricom Ltd

#### **AUTOMOBILES AND ACCESSORIES**

Car and General (K) Ltd

CMC Holdings Ltd  
Sameer Africa Ltd  
Marshalls (E.A.) Ltd

## **BANKING**

Barclays Bank Ltd  
CFC Stanbic Holdings Ltd  
Diamond Trust Bank Kenya Ltd  
Housing Finance Co Ltd  
Kenya Commercial Bank Ltd  
National Bank of Kenya Ltd  
NIC Bank Ltd  
Standard Chartered Bank Ltd  
Equity Bank Ltd  
The Co-operative Bank of Kenya Ltd

## **INSURANCE**

Jubilee Holdings Ltd  
Pan Africa Insurance Holdings Ltd  
Kenya Re-Insurance Corporation Ltd  
CFC Insurance Holdings  
British-American Investments Company ( Kenya) Ltd  
CIC Insurance Group Ltd

## **INVESTMENT**

City Trust Ltd  
Olympia Capital Holdings ltd  
Centum Investment Co Ltd

Trans-Century Ltd

**MANUFACTURING AND ALLIED**

B.O.C Kenya Ltd

British American Tobacco Kenya Ltd

Carbacid Investments Ltd

East African Breweries Ltd

Mumias Sugar Co. Ltd

Unga Group Ltd

Eveready East Africa Ltd

Kenya Orchards Ltd

A.Baumann CO Ltd

**CONSTRUCTION AND ALLIED**

Athi River Mining

Bamburi Cement Ltd

Crown Berger Ltd

E.A.Cables Ltd Ord

E.A.Portland Cement Ltd

**ENERGY AND PETROLEUM**

KenolKobil Ltd

Total Kenya Ltd

KenGen Ltd

Kenya Power & Lighting Co Ltd

## **Appendix B: NSE-20 Share Index**

### **Agricultural Sector**

Rea Vipingo

Sasini

### **Commercial and Services Sector**

CMC Holdings

Kenya Airways

Safaricom

Nation Media Group

### **Finance and Investment Sector**

Barclays Bank of Kenya

Equity Bank

Kenya Commercial Bank

Standard Chartered Bank

Co-operative Bank of Kenya

### **Industrial and Allied Sector**

Bamburi Cement

British American Tobacco

KenGen

East African Breweries

East African Cables

Kenya Power and Lighting Company

Athi River Mining

Mumias Sugar

### **Alternative Investment Market Segment**

Express Kenya