THE TURN OF THE MONTH EFFECT AT THE NAIROBI SECURITIES EXCHANGE

BY

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DECLARATION

This research project is my original work and has not been submitted for examination in any other university.

Signature …………………………..Date…………………………….

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This research project has been submitted for examination with my approval as the University Supervisor

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DEDICATION

I dedicate this project to my family whose time I spend doing this. A special feeling of gratitude to my wife and children who encouraged me all through. Also to my Parents who had the ambitions and the dream of education and showed me the first steps.

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LIST OF ABBREVIATIONS

EMH   Efficient Market Hypothesis

GCC   Gulf Cooperation Council

NSE   Nairobi securities Exchange

NSE   Nairobi Securities Exchange

ROM   Rest of the Month

TOC   Turn of the Calendar

TOM   Turn of the Month

U.K   United Kingdom

U.S.   United States

ABSTRACT

A calendar effect is any market anomaly or economic effect which appears to be related to the calendar. Such effects include the apparently different behavior of stock markets on different days of the week, different times of the month, and different times of year. As a result of the stock anomaly, the information filtering into the stock market would affect the capital gains of a stock by influencing stock prices. The study sought to answer one research question: does the turn Month effect exist in the different sectors at the Nairobi Securities Exchange? The objective of the study was to investigate the turn of the month effect at the Nairobi Securities Exchange. This study adopted a descriptive research design. This research design was appropriate since the study aimed to use empirical evidence from the reports at the NSE. The study made use all 61 firms listed at the NSE as at 31st December, 2013. This study collected market share prices per segment and then computed stock price indices and stock returns (Change in stock prices). To establish whether there exists month effect at the NSE on segment basis, the study used a paired t-test to test if there was a significant difference in mean returns. The study established that the many segments did not have pronounced turn of the month effect. On the overall, the effect offsets when the analysis is done on the overall NSE. This meant that in general there is no significant difference between the end of the month prices and those recorded during the month. From the analysis of paired T-tests, in most circumstances, there was no difference between the mean at the end of the month and the mean for the rest of the month hence failure to confirm the existence of calendar effects at the NSE. The study recommended that investors assess the performance of share prices during the month so as to know when to sell off or buy shares of a certain firm. The study recommends to the investors to carefully study the market movements in prices when deciding which shares to invest in. This study therefore recommends that investors study carefully the existing relevant market information when deciding when to buy or sell their shares at the NSE.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Seasonality refers to regular and repetitive fluctuation in a time series which occurs periodically over a span of less than a year. Among the causes of seasonal variations in time series data include, but is not limited to, changes in climate, investor perceptions, tax-loss-selling and information hypothesis. Similarly, stock returns exhibits systematic patterns at certain times of the day, week or month (Aly & Perry, 2004). The most common of these are monthly patterns; certain months provide better returns as compared to others i.e. the month of the year effect. Similarly, some days of the week provides lower returns as compared to other trading days i.e. days of the week effect (Hossain, 2004).

The efficient market hypothesis is a central paradigm in finance. The EMH relates to how quickly and accurately the market reacts to new information and that stock markets are informational efficient (William, 2002). An efficient market is one where the securities prices fully reflect all the information available in the market. This means that the stock prices should quickly adjust to the new information as it flows into the market, thus no investor can make an abnormal profit by taking advantage of information flowing in the market. This is however not always the case. Some stock markets do not follow the EMH rules. The existence of fluctuations in stock returns however violates the efficient market hypothesis. These deviations are referred to as anomalies. These anomalies could be a one off occurrence or a repeated. Anomalies classified into three categories namely: Fundamental, Technical and Calendar anomalies.

According to Pandey (2002), there is new data that is constantly entering the market place through economic reports, company announcements, political statements, or public surveys. If the market has all the information then the security prices adjust rapidly and accurately in relation to the changing information and thus since the prices are a reflection of the information, then a trader will not make excess returns. However Mokua (2003) proposes that it is not possible to outperform the market through market timing or stock selection. In the context of financial markets and particularly in the case of equity market seasonal periods have been recorded. They are called calendar anomalies effects (Pandey 2002).The presence calendar anomalies in stock returns violates the weak form of market efficiency since equity prices are no longer random and can be predicted based on past pattern. This facilitates market participants to devise trading strategy which could fetch abnormal returns on the basis of past pattern. This study examines the presence of turn of the calendar effect in the various sectors of the Nairobi securities Exchange (NSE).

1.1.1 Turn of the Month Effect

A calendar effect is any market anomaly or economic effect which appears to be related to the calendar. Such effects include the apparently different behavior of stock markets on different days of the week, different times of the month, and different times of year (Schwert, 2001). Some of the most popular calendar effects include the weekend effect, the turn-of-the-month effect, the turn-of-the-year effect and the January effect (Pandey, 2002). Turn of the Calendar effect (TOC) is a calendar anomaly under which the prices of stock increases on the last trading day of the month and the first three days of the months.

The weekend effect describes the tendency of stock prices to decrease on Mondays, meaning that closing prices on Monday are lower than closing prices on the previous

Friday (Mokua, 2003). The turn-of-the-year effect describes a pattern of increased trading volume and higher stock prices in the last week of December and the first two weeks of January. January Effect: Amid the turn-of-the-year market optimism, there is one class of securities that consistently outperforms the rest. Small-company stocks outperform the market and other asset classes during the first two to three weeks of January. This phenomenon is referred to as the January effect (Hossain, 2004).

1.1.2 Stock Returns

Stock Returns are the returns that the investors generate out of the stock market. This return could be in the form of profit through trading or in the form of dividends given by the company to its shareholders from time-to-time (Strong, 1992). Stock Returns can be made through dividends announced by the companies. Generally at the end of every quarter, a company making profit offers a part of the kitty to the shareholders. This is one of the source of stock return one investor could expect. The most common form of generating stock return is through trading in the secondary market. In the secondary market an investor could earn stock return by buying a stock at lower price and selling at a higher price. Technical Analysis tries to evaluate the future trend of stock price s by using various statistical tools, chart s, among others.

Technical analysts focus on the historical price movement of a stock and predict accordingly. They consider that the price movements are repetitive in nature because the psychological setup s of the investors are seen to follow a certain pattern. The intra-day traders, momentum traders and the swing traders use technical analysis extensively (Strong, 1992). Stock Returns are subject to risk but now days there are many derivative instrument s like future s, option s, etc. for hedging the risk associated with such investments. These tools can also be utilized by many speculators for leverage d speculative purposes. Derivatives are used by many for

arbitraging by utilizing the price discrimination between different markets. Hedging and Arbitraging don't give higher returns but do help in minimizing losses and in protecting the capital (Strong, 1992).

1.1.3 Turn of the Calendar Effects and Stock returns

In finance, the Efficient Market Hypothesis (EMH) states that security prices on financial markets reflect all relevant information. On an efficient market there are no investment opportunities which can lead to abnormal returns. Abnormal returns are the differences between the actual and the expected returns of securities. Stock returns are comprised of two elements: capital gains and dividends (Strong, 1992).

As a result of the stock anomaly, the information filtering into the stock market will affect the capital gains of a stock by influencing stock prices. When using daily closing values of their major stock indexes for the period 2000-2008, Georgantopoulos, Kenourgios and Tsamis (2011) document the existence / non-existence of the day of the week effect, the January (monthly) effect, the half month effect, the turn of the month effect and the time of the month effect in both mean and volatility equations (Strong, 1992). They indicate that the calendar effect can have both negative and positive effects on the stock returns of a market.

1.1.4 The Nairobi Securities Exchange

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 and there were no rules and regulations to govern stock broking activities. Trading took place on a 'gentleman's agreement.' Standard commissions were charged with clients being obligated to honour their contractual commitments of making good delivery, and settling relevant costs. At that time, stock broking was a side line business conducted by accountants,

auctioneers, estate agents and lawyers who met to exchange prices over a cup of coffee. Because these firms were engaged in other areas of specialization, the need for association did not arise (NSE, 2011). In 1954 the Nairobi securities Exchange was constituted as a voluntary association of stockbrokers registered under the Societies Act with the name Nairobi stock exchange. 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. The NSE is a member of African Stock Association and it is a self-regulating organization for listed companies (Munga, 1974). The NSE currently has 59 listed companies. These have been grouped into 10 main segments namely, agricultural, automobiles, banking, commercial and services, construction, energy and petroleum, insurance, investment, manufacturing and telecommunications. Various companies listed in the Nairobi Securities Exchange have undertaken merger activity. It is a requirement that any company undertaking any activity or events that have or are likely to have a material effect on the financial results must disclose it to the public within twenty for hours after the board resolution (NSE, 2011).

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 cycle 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 (NSE, 2014). Previous studies at the NSE have shown mixed results. Mulumbi (2010) found that there exist Tum-of-the-month effect at the Nairobi Stock, that is, the

coefficient of determinations for all the companies listed at NSE was greater than 90%. Migiro (2010) shows that the average stock returns for the rest of the month was always higher than the returns for the turn of the month and that the comparison of the arithmetic means across the years showed that there is no significant differences in the means for all the four years.

1.2 Research Problem

Finance scholars have over the years sought to understand the factors affecting the security returns and how to mitigate these factors. The theory of EMH has been studied over and over to enable the investors to predict the stock prices more accurately. TOC therefore being one of the anomalies is very important in these studies. The presence of TOC effect in a market can greatly influence the investors buy and sell decision and hence the return. Some companies' shares have fluctuated over the period. Some companies' shares have fluctuated over the period. Over the last ten years daily stock returns have largely gravitated between -2% and 2% with occasional instances of trend breakouts. Between 1998 and 2002 major trend breakouts in returns appeared to occur, approximately, after every six months perhaps in tandem with the half-year announcement cycles for most listed companies Consequently, it can be said that in general daily returns fall in the -2% to 2% range save for instances that occasion significant element of earnings surprise or in times of political change and transition (Balusi, 2013).

An analysis of statistics from the NSE share price movements indicates that Safaricom limited share prices for the month of April, 2010 at the beginning of the month was Ksh. 5.55 for from the first day of trading until 10th after which it started increasing slightly to reach Ksh. 5.60 by the 14th day of the Month, Ksh 5.65 by the

20th day of the Month and Ksh 5.80 from 26th till the end of the month. A review of the same share in the Month of September 2010 recorded Ksh. 4.85 By the 1st day of the month which then reduced to Ksh. 4.80 by the 6th day. The reduction continued to reach Ksh. 4.35 by 29th before increasing dismally to Ksh. 4.45 by the 30th September 2010. This analysis reveals some movement in share prices during the month.

Rozeff and Kinney (1976) presented evidence of the existence of seasonality in monthly rates of return. This research was made on the New York Stock Exchange and showed significant differences in mean returns among months. Gugten (2010) did a study on stock Market Calendar Anomalies and Macroeconomic News Announcements. The statistical significance of each stock market calendar anomaly when all trading days are considered is compared with the statistical significance of each stock market calendar anomaly when only non announcement days are considered. The results of this thesis show that macroeconomic news announcements have little to no influence on stock market calendar anomalies in the U.S. and the U.K

Wachira (2012) did a study on the January effect and stock returns: evidence from the Nairobi securities exchange. The data comprised of daily values of the two major indices; Nairobi Securities Exchange 20-share index and Nairobi Securities Exchange All-share index. The regression results showed negative coefficients in the model used. These coefficients confirmed the existence of January effect since they signify higher returns in January than other months. The T-statistics analysis also indicated that the coefficients are significant confirming that January effect does not exist at NSE. Kuria (2013) examined the Stock Market Anomalies: A Study of Seasonal Effects on Average Returns of Nairobi Securities Exchange. The study examined three types of anomalies namely, day of the week effect, weekend effect and monthly

effect. The analysis provides evidence about the presence of the seasonal effect in the NSE. Thus it was established that the stock markets in Kenya are not yet free from seasonal anomalies despite increased use of information technology and numerous regulatory developments.

From the local and international studies above there was none that concentrated on the turn of the calendar effect thus creating a research gap. Thus this study seeks to establish the return of the calendar effect: evidence from the different sectors in the Nairobi securities exchange (NSE). The study sought to answer one research question: does the calendar effect exist in the different sectors at the Nairobi Securities Exchange?

1.3 Objective of the Study

To investigate the turn of the calendar effect at the Nairobi Securities Exchange.

1.4 Value of the Study

The findings of this study would contribute to the various theories on the market efficiency and also point out areas needing further studies. The findings would also be of significance to academicians and scholars since they would use the study as a reference. This study also adds knowledge in the finance field as well as highlights the areas that the researchers need to research more on.

The study would also be of value to investors. A rational investor takes into account several parameters when making investment decisions. This study would inform them of the various anomalies in the stock market and their effects on the return of the stock. The information would also be important to stock brokers and dealers who require any crucial information that may enable them know when to trade and maximize on their returns.

The management of various companies that are into investments or listed would also benefit from the study. Management is charged with the responsibility of day to day running of companies. Their decisions and policies may be affected positively or negatively by seasonality on the company stocks. Thus they would be able to make informed choices based on the findings of the anomalies in the market.

The NSE would also benefit from the study as it would also help the NSE to come up with policies and procedures to improve efficiency in the market.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter discusses literature that has previously been done on the calendar anomalies and their effects on the stock market. The study reviews the efficient market hypothesis (EMH), the random walk hypothesis theory. The chapter also presents empirical literature and summary of literature review.

2.2 Theoretical Literature Review

This section reviews theoretical review where it looks at the theoretical framework of the study. The study is grounded on two theories: random walk model and efficient market hypothesis model. These models are discussed below:

2.2.1 Random Walk Model

The random walk hypothesis was introduced by Kendall (1953) and it was later confirmed by Fama (1965). The random walk states that successive returns are independent and that the returns are identically distributed over time, i.e. the stock prices follows a random walk (Fama, 1965). This theory was published by Regnault and Bachelier (1963). This hypothesis states that stocks move randomly, because the stock markets are efficient. The same ideas were later developed by MIT Sloan School of Management professor Paul Cootner in his 1964 book The Random Character of Stock Market Prices.

This form of efficiency exists when security prices reflect historical price information That is, an investor cannot generate an abnormal profit by trading based on historical price information and that future prices cannot be predicted by analyzing prices from

the past prices. The semi strong level of efficiency is an extension of the weak form of efficiency and advocates that prices reflect all public available information. This implies that there is no advantage in analyzing public information, since this information has already been included in the price. Hence if a company undertakes a particular economic event, this information would be reflected in the share price (Fama, 1970).

This form of efficiency implies that neither fundamental analysis nor technical analysis would be able to reliably produce excess returns. However, it is generally accepted that stock market returns do not have a zero mean and are heteroskedastic. Therefore, the time path of stock prices is more appropriately specified by a random walk plus drift model, under the random walk hypothesis, there is no seasonality in stock prices, because the stock prices are completely random. Let us have a model treating any kind of seasonality by using dummy variables. If the random walk hypothesis holds, any such model must have all the parameters referring to the seasonality equal to zero. The only non-zero parameter should be the constant term, which is the drift.

2.2.2 Efficient Market Hypothesis

The efficient-market hypothesis was developed by Fama (1960) at the University of Chicago Booth School of business as an academic concept of study through his published Ph.D. thesis in the early 1960s at the same school. The efficient market hypothesis shows how quickly and accurately the market reacts to new information (William, 2002). The theory also argues that stock markets are informational efficient. That is the prices of the securities fully reflect the information in the market.Under strong form efficiency, the current price reflects all information, public as well as

private. Private information, in this context, means information not yet published. On the stock market, there are professionals (for example security analysts, fund managers) who have private as well as public information.

Efficient Market Hypothesis (EMH) assumes that no investor has monopolistic access to any information. This means that as new public and private information is released, it is incorporated in share price to reflect its true value. An investor will not be able to consistently find undervalued or overvalued shares and make gains on the strong form efficient market. Fama (1970) perceives a strong form efficient market as one where investors are not expected to earn excess returns by relying on inside information. Fama (1970) described the semi-strong form efficiency as one where share price fully reflect all information contained not only in past prices but all public information.

All public information includes capital market information as used in the weak form Efficient Market Hypothesis (EMH) as well as non-market information such as earnings, dividend announcements, price earnings ratio, information about the economy and political news (Reilly1997). New public information is almost instantaneously integrated in share price and the share price is adjusted so as to reflect the true value of the share. This means that an investor cannot use public information to generate gains on the stock market. Fama (1970) stipulates that no investor can earn excess returns by formulating trading strategies based on historical price or return information in a weak-form efficient market. The weak-form efficiency thus assumes that the price of a stock fully reflects all information contained in past prices that is the historical sequence of prices, rate of returns and other historical market information. A weak-form efficient market implies that it is of no use to engage in technical analysis that use past prices alone to find undervalued stocks.

2.3 Determinants of Stock Returns

This section discusses the various factors that determine stock returns. These include inflation rate, price earnings ratio and dividend.

2.3.1 Financial Market Anomalies

Literary meaning of an anomaly is a strange or unusual occurrence. The word anomaly refers to scientific and technological matters. It has been defined by George & Elton (2001) as irregularity or a deviation from common or natural order or an exceptional condition. Anomaly is a term that is generic in nature and it applies to any fundamental novelty of fact, new and unexpected phenomenon or a surprise with regard to any theory, model or hypothesis (George & Elton 2001). Anomalies are the indicator of inefficient markets; some anomalies happen only once and vanish, while others happen frequently, or continuously. Tversky and Kahneman (1986) defined market anomalies as "an anomaly is a deviation from the presently accepted paradigms that is too widespread to be ignored, too systematic to be dismissed as random error and too fundamental to be accommodated by relaxing the normative system".

While in standard finance theory, financial market anomaly means a situation in which a performance of stock or a group of stocks deviate from the assumptions of efficient market hypotheses. Such movements or events which cannot be explained by using efficient market hypothesis are called financial market anomalies (Silver 2011). Anomalies can be divided into three basic types; Fundamental anomalies; Technical anomalies; and Calendar or seasonal anomalies.

Calendar anomalies are related with particular time period i.e. movement in stock prices from day to day, month to month or year to year. Some of the main calendar anomalies have been identified as follows;

2.3.1.1 Day of the Week / Weekend Effect

This effect entails the difference in return of days in week. The findings have been lowest returns on Monday and exceptionally high return on Friday than other days of week (Hess 1981). Largest variance on Monday and lowest is on Friday. There is mixed findings on it. Dubois & louvet (1995) found that in European countries, Hong Kong and Canada lower return for beginning of week but not necessarily on Monday. Agrawal & Tendon (1994) found that out of 19 countries there are negative Monday returns in nine countries and negative Tuesday return in eight countries. Also the Tuesday returns are lower than Monday returns in those countries. Negative Monday and positive Friday effects are not observed in Indian market (Kumari).It was found that Tuesday returns are negative in Indian markets, while the Monday returns were significantly greater than other days. It was because of settlement period in India i.e. 14 days period that starts on Monday and ends at Friday. Agrawal & Tendon (1994) concluded in the findings that weekend effect is present in the half of the countries. While in the other countries the lowest return are on the Tuesday.

2.3.1.2 Intra-monthly Anomaly

Ariel (2002) observed monthly return in United States stock index return. It was found that stocks earn positive average return in beginning and first half of month and zero average return in second half of month. Weak monthly effects have been observed in foreign countries (Jaffe & Westerfield 1989). Australia, United Kingdom and Canada showed same pattern as Ariels found in United States while Japan had

opposite effect. Australia and Canada had positive monthly effects while Japan market had negative monthly effects (Boudreau, 1995). Boudreau (1995) extended Jaffe & Westerfield (1989) results and observed monthly effects in Denmark, France, Germany, Norway, Switzerland and negative effect is founded in Asian pacific basin market of Singapore/Malaysia. According to Hensel (2011) cause of occurrence of higher short-term equity return anomalies i.e. Cash flow increased just after and before specific period causes anomalous return, Behavioral constraints as investors feeling and emotions that leads towards sale and purchase of specific equities. Timing constraints like delay in unfavorable reporting, and Slow react of market towards new information.

2.3.1.3 Turn of the Month effect

According to this calendar anomaly the mean returns in early days of the month are higher than other days of the month (Nosheen et al. 2007). Cadsby & Ratner (1992) studied turn of the month effect for USA, Canada, Switzerland, Germany, UK and Australia while no such effect they found in Japan, Hong Kong, Italy and France. Nosheen et al. (2007) reported Turn of the month effect in KSE of Pakistan and stated that turn of the month effect and time of the month effect is almost same. While turn-of- the- month effect which is the large returns on the last trading day of the month is found in fourteen countries (Agrawal & Tandon 1994).

2.3.1.4 Turn of the Year Effect

This anomaly describes the increase in the prices of stocks and trading volume of stock exchange in the last week of December and the first half month of January. According to Agrawal & Tandon (1994) the possible reason of the year end effect is

attributed to window-dressing and inventory adjustment by institutions and pension fund managers.

2.3.1.5 January Effect

This is the phenomenon of company stocks to generate more return than other asset classes and market in the first two to three weeks of January. Ligon (1997) found that January effect is due to large liquidity in this month. There are higher January volume and lower interest rates correlates with greater returns in January. According to watchel (1942) there are higher returns on Monday than other months in year. Rozeff & Kinney (1976) found that in New York exchange average return is 3.5% than other months 0.5% in period 1904 to 1974.The general argument is that January effect is due to tax-loss hypothesis investors sell in December and buy back in January. Keong (2010) concluded that most of the Asian markets exhibit positive December expect Hong Kong, Japan, Korea and china. Few countries also exhibit positive January, April and may effect and only Indonesia exhibit negative august effect. January effect is due to tax loss saving at the end of the tax year, portfolio rebalancing and inventory adjustment of different traders and the role of exchange specialist (Agrawal & Tandon 1994).

2.3.1.6 Holiday Effect

This is the phenomena where abnormally high returns are reported on the trading day before a holiday. Chong et al. (2005) examined pre holiday effect across three important markets of the world i.e. U.S, U.K and Hong Kong, for the period 1973 - 2003. S&P 500, FT 30 and Hang Seng indices were used for U.S, U.K and Hong Kong markets respectively. The results provided a strong evidence for the existence of the pre holiday effect in all the three indices, effect being most significant for U.K

and Hong Kong indices. It was found that the average of the returns on the days specifically before a certain holiday was more than the average of the returns on other non pre holidays. Another test was also conducted to analyze if this anomaly persists or has declined over the years in these three markets. Time series regression analysis was used for deriving results and a declining pre holiday effect was witnessed in the U.S market specifically in the 1990s. The decline was not that evident in the other two markets i.e. U.K and Hong Kong.

Al-Loughani (2005) investigated the presence and causes of holiday effect on stock returns in the Kuwait stock exchange (KSE). The general daily stock index published by the Global Investment House was the data used. The time period under study was from 1984-2000. The holidays considered for the study were those that were declared by the government and that involved closure of the stock market.

The data was split into two sub periods which were: the pre invasion period which was from 1984-1990 and the post liberation time period which was from 1993-2000. Returns during the trading days right before any specific holiday and the rest of the trading days of the year during the two sub periods were compared. T-statistics, Mann-Whitney test and Kruskal Wallis test were conducted on the data to obtain results for analysis. It was apparent from the tests that there wasn't any noticeable difference between the two sub periods , thereby indicating that holiday effect does not exist in the KSE. A further analysis using Kruskal Wallis test was also done to determine if there was any particular pattern of returns observed during the time surrounding the holidays and it was revealed that the returns on post holidays were higher than the returns on pre holidays or other trading days of the year. The reason quoted in the paper was that the investors engage in selling before the holidays and right after the holidays they develop their investment portfolios again.

2.3.1.7 Presidential Election Effect

This anomaly describes the change in the prices of stocks and trading volume of stock exchange in the presidential election period. For example, Nippani and Medlin (2002, Journal of Economics and Finance) studied the impact of the delay in the declaration of a winner in the US Presidential Elections of 2000 on the performance of stock markets (S & P 500, DJI, and NASDAQ). There was a significant initial negative reaction to the delay in the election results. The reaction was for only 4 days and most negative reaction was noticed immediately after the delay occurred. The market adjusted for the delay after that (confirming the market efficiency concept)

2.3.2 Small Firm Effect

This is where small firms have higher returns on average than larger firms. Such anomaly would affect the pricing of capital assets. Researchers have given different explanations to answer such anomaly. First, Kiem (1983) has shown that half of the small firms effect occurs in January. The reasoning he gives is that investors sell securities at the end of the year to establish short-term tax losses for tax purposes. Roll (1987) tested this hypothesis and found that January effect cannot be fully explained by tax-loss selling. Secondly, Banz (1981) argued that the lack of information about small firms could cause certain investors to exclude them from their portfolios. This would lead to a higher risk adjusted returns for the undesirable small firms. After identifying the importance of size as a factor for pricing an asset in Fama and French (1995), they extended their work to find the relationship between size and firm earnings. They found that small firm effect is relevant and small firms have stronger earnings than large firms.

2.3.3 Inflation Rate

Inflation can be described as a decline in the real value of money or a loss of purchasing power. When the general price level rises, each unit of currency buys fewer goods and services. A chief measure of price inflation is the inflation rate, which is the percentage change in a price index over time. Inflation affects sales revenue and borrowing of a firm through changes in nominal cash flows or the discount rate. Anticipated inflation is already priced in the discount rate and sales price.

The NSE 20-share index is a weighted mean with 1966 as the base year at 100. It is based on 20 companies calculated on a daily basis. The index is useful in determining the performance of the NSE by measuring the general price movement in the listed shares of the stock exchange. P/E ratios are ratios of share prices to earnings. The P/E ratio of a stock is equal to the price of a share of the stock dividend by per share earnings of the stock. For a stock index, the P/E ratio is calculated the same way the average share price of the firms in the index is divided by the average earnings per share of these firms.

Since there has been a considerable increase in economic globalization, most of the businesses are directly or indirectly affected by international activities. Globalization and liberalization have increased in the last 30 years as a result of the increase; the exchange rates play an important role in capital mobility. Consequently, sales of cash flow may change in the value. It is considerable as an important risk factor from some investors' point of view.

2.4 Empirical Literature

Various studies have been done on the calendar anomalies and their effects on the stock market. This section lists several international and local evidence of empirical literature on the turn of the calendar effect.

2.4.1 International Evidence

A study of Aly, Mehdian and Perry (2004) had investigated daily stock market anomalies in the Egyptian stock market using its major stock index, the Capital Market Authority Index (CMA), to shed some light on the degree of market efficiency in an emerging capital market with a four-day trading week. The results indicated that Monday returns in the Egyptian stock market were positive and significant on average, but were not significantly different from returns of the rest of the week. Thus, no evidence was uncovered to support any daily seasonal patterns in the Egyptian stock market, indicating that stock market returns were consistent with the weak form of market efficiency. The study indicated that its results should be interpreted with caution since the Egyptian stock market has only a limited number of stocks that are actively traded.

Al-Rjoub (2004) had examined the robustness of evidence on the weekend anomaly in stock return data after counting for the impact of possible measurement errors and sample sizes. The sample used the alternative hypothesis of unequal returns across days of the week. The Start-of-the-week day's returns were consistently insignificantly negative across different time frames. The Average returns for the day right after the beginning of the working week was consistently significantly negative. After controlling the change of the working week to start on Sunday's; results had shown that Thursday return (the end of the week) tend to be positive and the highest

while Sunday return was less in most of the cases (negative and the worst). Possible explanations provided by the study for the high positive significant Thursday return was the possible settlement practices, which imply unusually high closing on Thursdays and consequently lower closing on Sundays. Professional market watchers who were aware of the daily return pattern should adjust the timing of their buying and selling to take advantage of the effect. The new logical implication of the study was "Don't Sell Stocks on the Second Day of the Week".

The study of Gao and Kling (2005) examines monthly and daily effects in Chinese stock market. The findings of the study reveal that there is a change of the calendar effect when using individual stock returns. In Shanghai and Shenzhen, it is found that the yearend was strong in 1991, but disappeared later. As well, the highest returns can be achieved in March and April, since the Chinese year end is in February. As for daily effect, the study finds that Fridays are profitable. Additionally, it is found that business funds are used for short term speculations before they are paid back prior to weekends, because Chinese investors are often embezzles business fund for private trading.

Wong, Agarwal and Wong (2006) also analyzed the January effect inherent in the Singaporean stock market. Tests of January effect revealed that during the pre crisis period the average returns in January were higher than the average returns for the rest of the year, difference however not being very noticeable. Average daily returns for the Straits times index were negative for the entire time period under consideration, depicting a vanishing January effect in the later years. Ariss et al. (2011) also inquired about the January anomaly in the Gulf Cooperation Council (GCC) indices. Avery interesting pattern of returns that was observed in the GCC indices was that instead of

January, high, positive and significant returns were obtained in the month of December. These returns were also significantly higher than the returns on all the other months of the year. Therefore, it was concluded that GCC countries had a December effect instead of January effect as in other markets of the world.

On the European Financial Markets, study of Chukwuogor-Ndu (2006) aims to examine the financial markets trends such as the annual returns, daily returns and volatility of returns in 15 emerging and developed European financial markets. It uses a set of parametric and nonparametric tests to check the equality of mean returns and standard deviations of the returns. The findings of the study reveal that in spite of positive annual index closing price changes were the norm between 1997 and 2004, many of the European indexes experienced negative changes especially in 1998 and 2002. Also, seven of the European financial markets experienced negative returns on Monday and seven others also experience negative returns on Wednesday. The study indicates that there was generally high volatility of returns in the European markets.

Calendar effects are examined in the Chinese Stock Market by several studies. Among them are the following. Study of Rezvanian and Mehdian (2008) aims to analyze the calendar anomalies in Chinese equity markets using indices from six Chinese exchanges. The empirical findings of the study reveal that Monday and the day of the week effects demonstrate no tradition Monday effect in six of the Chinese stock indices during the periods of the study. Additionally, the across days of the week correlation analysis reveal no predictable daily returns patterns and no significant correlation across the days of the week.

2.4.2 Local Evidence

Muragu (1990) examined the price movements at the NSE. His focus was on the level of market efficiency in the stock market. The study found out that the random walk holds for the NSE, which implies that there is no systematic pattern in the price movements and future prices are independent of past prices. This was supported by King'ori (1995) who examined whether NSE exhibits monthly and quarterly seasonalities and found that the mean stock returns are equal over all the months and quarters tested. She did not find existence of January effect.

Mulumbi (2010) did an investigation of the existence of turn of the month effect at the Nairobi Stock Exchange. The study sought to examine whether the seasonal patterns usually found in the developed markets data like the US is also present in the Kenyan data and to what extent. According to the results the average return for stocks listed at the Nairobi Stock Exchange is higher for the last day of the calendar month and the second day of the following calendar month. The monthly effect was independent of other known calendar anomalies such as the January and the holiday effect documented by others, and also the results are consistent with the US results. The study adopted a descriptive survey; descriptive research portrays an accurate profile of persons, transactions /events, or situations and allows for the collection of large amount of data from a sizable population in a highly economical way. The data was analyzed using regression and correlation analysis. Regression analysis was also used to come up with the model expressing the relationship while correlation analysis was used to test for the overall significance of the models as well as the individual significance of the predictor variables. The study found that there exist Tum-of-the-month effect at the Nairobi Stock, that is, the coefficient of determinations for all the companies listed at NSE was greater than 90%. Further the study identified Dl (the

first day before the end of the month), D4 (the first day after the end of the month) and D, (the second day after the end of the month), were significantly related with market return at time (Turn of the Month Effect).

Migiro (2010) did an empirical investigation of the turn-of-the month effects for companies quoted at Nairobi Stock Exchange. A central challenge to the Efficiency Market Hypothesis (EMH) is the existence of stock market anomalies. This study tries to determine whether the-turn-of-the-month effect exists at the Nairobi Stock Exchange. It allows us to examine whether the seasonal effects usually found in countries like the USA are also present in the Kenyan market. The study used secondary data in the form of daily observations of the stock prices from the NSE database covering the period from 1st January, 2006 to 31st December, 2009. - A comparison of the average stock returns during the turn of the month (TOM) and rest of the month (ROM) shows that the average stock returns for the rest of the month was always higher than the returns for the turn of the month for three of the four years (2006-2008). the year 2009 was exceptional as it showed the arithmetic returns for the TOM were more than the arithmetic returns for the ROM. Performing t-test for comparison of the arithmetic means across the years, it's shown that there is no significant differences in the means for all the four years (2006-2009), implying that there does not exist turn of the month effect in any year of the study. According to the results, therefore, its shown that the average stock returns for the rest of the month was always higher than the returns for the turn of the month and that the comparison of the arithmetic means across the years showed that there is no significant differences in the means for all the four years

Muchemi (2012), examined the month of the year and the pre-holiday effects, and their implications for stock market efficiency in the biggest markets in Africa. He

used monthly market indices for the markets namely; NSE All Share Index for Nigeria, N20I for Kenya, Tunn index for Tunisia, MASI index for Morocco and FTSE/JSE All Share index, CASE30 Share Index and ZSE Industrial index for South Africa, Egypt and Zimbabwe respectively. The January seasonality is evident in Egypt, Nigeria and Zimbabwe. There is a February effect for Morocco, Kenya, Nigeria and South Africa. The hypothesis that returns for all months are equal can be rejected for Egypt, Nigeria and Zimbabwe. For four markets (Morocco, Kenya, Tunisia and South Africa) there is insignificant variation between monthly returns, and none of them exhibit any January seasonality. These results contrast with those of Claessens et al. (1995), who find no evidence of a month of the year effect for Zimbabwe.

Wachira (2013) studied the January effect and market returns: evidence from the Nairobi Securities Exchange. The objective of this study was to find out whether there exists a January effect at the Nairobi Securities Exchange. The population of interest was all the listed companies for equity stocks at the NSE as at December 2012. The data comprised of daily values of the two major indices; Nairobi Securities Exchange 20-share index and Nairobi Securities Exchange All-share index. Regression analysis was used to analyze the data collected. The results show negative coefficients in the model used. These coefficients confirm existence of January effect since they signify higher returns in January than other months. T-statistics analysis indicated that the coefficients are significant confirming that January effect does not exist at NSE. Further study should be undertaken to explain why January effect exists in this market.

2.5 Conclusions from Literature Review

The chapter reviewed literature as presented by other scholars on claender effect at the securities exchanges all over the world. Aly, Mehdian and Perry (2004) investigated daily stock market anomalies in the Egyptian stock market using its major stock index, the Capital Market Authority Index (CMA), to shed some light on the degree of market efficiency in an emerging capital market with a four-day trading week. Al-Rjoub, (2004) examined the robustness of evidence on the weekend anomaly in stock return data after counting for the impact of possible measurement errors and sample sizes. Gao and Kling (2005) examines monthly and daily effects in Chinese stock market. Wong, Agarwal and Wong (2006) also analyzed the January effect inherent in the Singaporean stock market. Chukwuogor-Ndu (2006) aims to examine the financial markets trends such as the annual returns, daily returns and volatility of returns in 15 emerging and developed European financial markets. Rezvanian and Mehdian (2008) aims to analyze the calendar anomalies in Chinese equity markets using indices from six Chinese exchanges. All these studies presented empirical literature from an international perspective which has a different operating environment and condition from that at Nairobi Securities exchange. The current study therefore presented literature from a local perspective.

On the local perspective, Muragu (1990) examined the price movements at the NSE focusing on the level of market efficiency in the stock market. Mulumbi (2010) did an investigation of the existence of turn of the month effect at the Nairobi Stock Exchange. Migiro (2010) did an empirical investigation of the turn-of-the month effects for companies quoted at Nairobi Stock Exchange. Muchemi (2012), examined the month of the year and the pre-holiday effects, and their implications for stock market efficiency in the biggest markets in Africa. Wachira (2013) studied the

January effect and market returns: evidence from the Nairobi Securities Exchange. The only study that tackled calendar of the month effect was that of Migiro (2010). However, the study was conducted at the whole NSE which could have presented some compensating effects among segments and companies. The current study seeks to conduct an analysis on segment basis to establish whether there exists calendar of the month effect at segment level at the NSE. There is no study that has conducted an analysis on the existence of calendar effects at the NSE on segment basis. This study therefore sought to fill this research gap.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the methodology that was used in gathering, analyzing the data and reporting the results. Here the researcher aimed at explaining the methods and tools used to collect and analyze data to get proper and maximum information related to the subject under study.

3.2 Research Design

Research design refers to the structure used in obtaining answers to the study question. This study adopted a descriptive research design. Mugenda and Mugenda (2003) describes descriptive research design as a systematic, empirical inquiring into which the researcher does not have a direct control of independent variable as their manifestation has already occurred or because the inherently cannot be manipulated. This research design was appropriate since the study aimed to use empirical evidence from the reports at the NSE.

3.3 Population Size

Mugenda and Mugenda (2003) define target population as the entire group of individuals or objects to which researchers are interested in generalizing the conclusions on. The study made use all 61 firms listed at the NSE as at 31st December, 2013.

3.4 Data Collection

The study used secondary data obtained daily for the 5 years from 2009-2013. This study collected market share prices per segment and then computed stock price indices and stock returns (Change in stock prices).

3.5 Data Analysis

The study used Statistical Package for Social Sciences Version 21.0 to aid in data analysis. The paired t-test, a non-parametric test of differences developed by Sir Williams Gosset (Mugenda & Mugenda, 2003) used in this study as a test of significance the analysis was at 0.05 level of significance.

3.5.1 Analytical Model

In order to determine the existence of the turn of the calendar effect in the Nairobi securities exchange, the researcher conducted a paired t-test. Following Boudreaux (1995), the study will assume that the return on the General NSE index:

Return t = Ln (Indext / Indext-1) = a + ut   **(1)**

Where **Return$_t$** is the continuously compounded rate of change in the stock index. Index t is the stock market index at time **t,** a is a constant and **ut** is a normal random variable with a mean of zero. This implies that the average rate of change of a stock index is equal for every month of the year. The returns are computed as percent change in the price index. Letting **Pi,t** denote the price index of stock **i** at time **t**, then:

Ri,t = (Pi,t) - (Pi,t-1) * (1 /Pi,t-1)   **(2)**

Where **Pi,t** is the price of the **ith** index at time **t.** As for calculation of returns, t represents two distinct time periods, **t1** is the index value after the first four trading days and **t2** is the second to last trading day of the month. The last trading day of each

month is included in the next month's return in order to allow comparison with Ariel (1987), Jaffe and Westerfield's (1989) and Boudreaux (1995).

To establish whether there exists calendar effect at the NSE on segment basis, the study will use a paired t-test to test if there is a significant difference in mean returns for equation 1 and equation two above. The null hypothesis of the turn of the month anomaly is: H0: t1 = t2 ; or the returns for the five day period representing the beginning of the month is equal to the returns of the rest of the month. The alternative hypothesis of the monthly anomaly is HA: t1 $\neq$ t2 meaning that the returns for the five day period representing the beginning of the month is not equal to the returns of the rest of the month.

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents analysis, findings and discussion of the study the turn of the calendar effect at the Nairobi Securities Exchange. The study used secondary data obtained daily for the 5 years from 2009-2013. This study collected market share prices per segment and then computed stock price indices and stock returns (Change in stock prices). The study used Statistical Package for Social Sciences Version 20.0 to aid in data analysis.

4.2 Descriptive Statistics

This section presents the descriptive statistics of the population studied. These statistics summarize the sample. The study presented descriptive statistics for the various segments of the Nairobi Securities exchange.

Table 4.1: Descriptive Statistics

Segment	Mean	Mode	Std. Deviation
Alternative Investments	20.1279	5.18	23.10233
Commercial and Services	12.3533	0.15	19.36882
Finance and Investment	6.5520	-0.85	7.42084
Industrial and Allied	14.0924	1.29	5.61006
Agricultural Sector	16.6195	2.2	20.56516
Fixed Income	50.0680	2.29	103.63328

Source: Research Findings

Alternative investments had a mean of 20.1279, a mode of 5.18 and a standard deviation of 23.1023. Commercial and Services had a mean of 12.3533, a mode of 0.15 and a standard deviation of 19.36882. Finance and Investment had a mean of 6.5520, a mode of -0.85 and a standard deviation of 7.4208. Industrial and Allied had a mean of 14.0924, a mode of 1.29 and a standard deviation of 5.6101. The

Agricultural Sector had a mean of 16.6195, a mode of 2.2 and a standard deviation of 20.5652. Fixed Income Sector had a mean of 50.0680, a mode of 2.29 and a standard deviation of 103.63328.

The study examined the presence of the calendar effect by comparing the market price of the various stocks at the exchange by computing the differences in share price in the 28th day and the 4th day and comparing this to the difference values obtained from the 27th and 5th day of each month for the 12 months each year from 2009-2013. The results of the analysis are shown in Table 4.5.

4.3 Paired t-test for difference in Means

The study conducted a paired t-test for the various segments at the NSE for the years 2009 to 2013. A paired t-test was used to test if there is a significant difference in mean returns. The null hypothesis of the turn of the calendar effect was: H0: t1 = t2 ; or the returns for the five day period representing the beginning of the month is equal to the returns of the rest of the month. The alternative hypothesis of the monthly anomaly was HA: t1 ≠ t2.

4.3.1 Alternate Segment

As table 4.2 shows, the null hypothesis cannot be rejected over the period 2009-2011 except for the years 2012 and 2013 in which the monthly anomaly exists and positive. For the years 2009 to 2012, the Sig (2-Tailed) values obtained for this sector for the years 2009-2012 were less than preset significance of 0.05 and thus for those years there was no difference in the means hence there existed no calendar effect. However, for the years 2012 and 2013, the Sig (2-Tailed) values obtained were more than the significance of 0.05 and thus we conclude that for this period, there existed calendar effect. These findings are well illustrated in the table 4.2 below:

Table 4.2: Paired t-test for the Alternate Sector

Period	Average return Beginning of the Month	Average return Remaining of the Month	The turn of Month Effect	Paired t Statistic
2009	-0.07%	0.06%	Negative	0.021
2010	0.75%	0.23%	Positive	-1.202
2011	1.50%	0.13%	positive	-1.587
2012	2.00%	0.25%	Positive	4.974*
2013	0.26%	0.03%	Positive	6.361*

Source: Research Findings

4.3.2 Insurance Segment

The study further carried out a paired t-test for the Insurance sector over the study period 2009-2013. The findings were as shown in the Table 4.3 below:

Table 4.3: Paired t-test for the Insurance Sector

Period	Average return Beginning of the Month	Average return Remaining of the Month	The turn of Month Effect	Paired t Statistic
2009	0.05%	-0.03%	Positive	-1.006
2010	-0.51%	-0.06%	Positive	-0.765
2011	1.50%	0.08%	Positive	0.0152
2012	0.36%	-0.12%	Positive	0.039*
2013	0.21%	0.08%	Positive	0.026*

Source: Research Findings

From the findings in the Table 4.3, the null hypothesis cannot be rejected over the period the study period in this sector because the paired t-test values were below the 5% significance level. We therefore fail to reject null hypothesis and therefore conclude that there is no difference between the two means within this sector over the study period. Therefore, the calendar effect never existed in this segment over the study period.

4.3.3 Agricultural Segment

The study further carried out a paired t-test for the agricultural sector over the study period 2009-2013. The findings were as shown in the Table 4.4 below:

Table 4.4: Paired t-test for the Agricultural Segment

Period	Average return Beginning of the Month	Average return Remaining of the Month	The turn of Month Effect	Paired t Statistic
2009	0.24%	-0.05%	Positive	0.0371
2010	2.50%	0.18%	Positive	-1.458
2011	-0.50%	0.10%	Negative	-0.845
2012	0.41%	0.18%	Negative	-0.232
2013	0.03%	0.00%	Positive	4.619*

Source: Research Findings

From the findings in the Table 4.4, the null hypothesis cannot be rejected over the period 2009-2012 because the p-values of the paired t-test are below the 0.05 significance level. However, there is some calendar effect in the year 2013 where the p-value is more than the significance value at 5%. This therefore shows that over the study period, there was a calendar effect for the last year of analysis.

4.3.4 Commercial and Service Segment

The study further carried out an analysis of the commercial and service segment over the study period. The findings were as shown in the table 4.5 below:

Table 4.5: Paired t-test for the Commercial and Service Segment

Period	Average return Beginning of the Month	Average return Remaining of the Month	The turn of Month Effect	Paired t Statistic
2009	0.05%	-0.03%	Positive	1.006*
2010	-0.51%	-0.06%	Positive	-1.765
2011	1.50%	0.08%	Positive	0.0152
2012	0.36%	-0.12%	Positive	3.539*
2013	0.21%	0.08%	Positive	0.026

Source: Research Findings

From the findings, the study established that, the results indicate that in the year 2009, there was a significant difference between the two means and thus there existed calendar effect in the commercial and service sector. For the years 2010 and 2011, there was no calendar effect as there is no significant difference between the two means for end of the month and the beginning of the month. However, for the period 2012, there was registered calendar effect as indicated by a higher p-value than the 5% significance level. The year 2013 registered no calendar effect. This sector registered a mixture of results from year to another.

4.3.5 Manufacturing and allied segment

Study findings on the paired t-test statistics for the manufacturing and Allied segment are illustrated in the Table 4.6 below:

Table 4.6: Paired t-test for the manufacturing and Allied segment

Period	Average return Beginning of the Month	Average return Remaining of the Month	The turn of Month Effect	Paired t Statistic
2009	1.25%	0.10%	Positive	1.006*
2010	0.75%	0.23%	Positive	-1.765
2011	-0.51%	-0.06%	Positive	0.015
2012	-1.50%	-0.03%	Negative	0.039
2013	1.50%	0.05%	Positive	2.026*

Source: Research Findings

From the findings shown in the Table 4.6 above, there was calendar effect in the year 2009 as the paired t-test p-value was greater than 0.05. For the years 2010 to 2012, we fail to reject null hypothesis since their p-values are less than 0.05 and conclude that there is no difference between the two means recorded. However, 2013 also registered a higher than 0.05 hence calendar effect was present.

4.3.6 Banking Segment

Study findings on the banking segment are shown in the Table 4.7 below:

Table 4.7: Paired t-test for the banking segment

Period	Average return Beginning of the Month	Average return Remaining of the Month	The turn of Month Effect	Paired t Statistic
2009	0.35%	1.00%	Positive	-1.128
2010	-1.50%	-0.03%	Positive	-0.329
2011	1.00%	-0.06%	Positive	6.716*
2012	0.01%	0.19%	Positive	1.103*
2013	0.32%	0.33%	Positive	0.049

Source: Research Findings

From the findings shown in the Table 4.7 above, there was no calendar effect in the year 2009 as the paired t-test p-value was less than 0.05. For the years 2010 to 2012, we reject null hypothesis since their p-values are greater than 0.05 and conclude that there is a difference between the two means recorded. However, 2013 registered a lower than 0.05 p-value hence no calendar effect was present.

4.3.7 Construction and Allied Segment

Study findings on the Construction and Allied Segment are shown in the Table 4.8 below:

Table 4.8: Paired t-test for the Construction and Allied Segment

Period	Average return Beginning of the Month	Average return Remaining of the Month	The turn of Month Effect	Paired t Statistic
2009	1.25%	0.10%	Positive	-0.0136
2010	3.00%	0.10%	Positive	1.023*
2011	0.19%	-0.07%	Positive	-1.041*
2012	-0.10%	0.23%	Positive	-0.0797
2013	0.06%	0.08%	Positive	0.0184

Source: Research Findings

From the findings, the results indicate that in the year 2009, there was no significant difference between the two means and thus there existed no calendar effect in the Construction and Allied Segment. For the years 2010 and 2011, there was a significance difference between the means of end of the month and for the rest of the month hence the calendar effect. However, for the period 2012 and 2013, there was no calendar effect as indicated by a lower p-value than 5% significance level.

4.3.8 Energy and Petroleum Segment

The study further did a paired t-test for the energy and petroleum segment. The findings were as illustrated in the Table 4.9 below:

Table 4.9: Paired t-test for the energy and petroleum segment

Period	Average return Beginning of the Month	Average return Remaining of the Month	The turn of Month Effect	Paired t Statistic
2009	0.32%	0.33%	Positive	-0.016
2010	0.15%	0.30%	Negative	0.023
2011	0.03%	0.00%	Positive	-0.041
2012	0.06%	0.08%	Positive	-0.0797
2013	0.57%	0.10%	Positive	0.0184

Source: Research Findings

As shown in the Table 4.9, in the period starting 2009 to the end of the study period, there was no significant difference between the two means at the beginning of the month and the other days of the month which leads to the conclusion that we fail to reject null hypothesis. Therefore no calendar effect existed in this segment over the study period.

4.3.9 Automobiles and Accessories

Research findings on the paired t-test for the automobile and accessories are illustrated in the table 4.10 below:

Table 4.10: Paired t-test for the Automobile and Accessories

Period	Average return Beginning of the Month	Average return Remaining of the Month	The turn of Month Effect	Paired t Statistic
2009	0.05%	-0.03%	Positive	-0.232
2010	0.35%	1.00%	Positive	-1.797
2011	-0.21%	-0.28%	Negative	0.036
2012	2.24%	-0.05%	Positive	1.926*
2013	1.25%	0.10%	Positive	0.049

Source: Research Findings

From the findings shown in the Table 4.10 above, there was no calendar effect in the years 2009 to 2013 as the paired t-test p-value was less than 0.05 meaning that there is no difference between the two means for beginning of the month and the rest of the month. For the years 2012, we reject null hypothesis since their p-values are greater than 0.05 and conclude that there is a difference between the two means recorded. However, 2013 registered a lower than 0.05 p-value hence no calendar effect was present.

4.4 Interpretation of the Findings

In the Alternate segment, the observations indicate that from the years 2009 – 2011 there was no significant difference between the means hence no turn of the calendar effect. However for the years 2012 and 2013 there was a significant difference. In the insurance segment we only observed a significant difference in the means in the year 2012 and 2013, for the other years there was no difference. In the agricultural segment from the year 2009 – 2012 there was no significant difference in the means. Its only in 2013 that the difference was recorded. In the commercial and services segment, significant difference in the means was observed in the years 2009 and 2012. The rest had no difference. In the Manufacturing and Allied significant difference in the means was observed in the years 2009 and 2013. In the Banking segment there was a

difference in the years 2010 and 2012 the others dint record a significant difference. In the Construction and Allied the difference was observed in the year 2010 and 2011. In the Energy and Petroleum there was no significant difference in the means for the entire five years of the study. While in the Automotive and accessories significant difference was recorded in the year 2012, the rest dint have a difference. Based on this observation, there was no significant difference in the means in overall. The findings of this study disagree with Kuria (2013) A Study of Seasonal Effects on Average Returns of Nairobi Securities Exchange. The study examined three types of anomalies namely, day of the week effect, weekend effect and monthly effect. The analysis provides evidence about the presence of the seasonal effect in the NSE. Thus it was established that the stock markets in Kenya are not yet free from seasonal anomalies despite increased use of information technology and numerous regulatory developments.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter investigates the existence of the turn of the calendar effect at the Nairobi Securities Exchange. It presents the summary of the data findings, conclusions drawn and the recommendations made thereto. The conclusions and recommendations were drawn after addressing the research question which was: does the turn of the calendar effect exist in the different sectors at the Nairobi Securities Exchange?

5.2 Summary

The objective of the study was to investigate the turn of the calendar effect at the Nairobi Securities Exchange. This was conducted using a paired t test to compare the difference in the means between the end of the month and the rest of the month. Based on these empirical findings, there existed mixed findings as regards the existence of month effects at the NSE. As illustrated in the research findings in chapter four, at segment level, there is some form of turn of the month effect though not large. This could however be consumed by the netting off effect when done on an overall basis. For instance, in the alternate Segment, the null hypothesis cannot be rejected over the period 2009-2011 except for the years 2012 and 2013 in which the monthly anomaly exists and positive. For the years 2009 to 2012, the Sig (2-Tailed) values obtained for this sector for the years 2009-2012 were less than preset significance of 0.05 and thus for those years there was no difference in the means hence there existed no month effect. The findings concur with King'ori (1995) who concluded that mean returns of stocks at the NSE are equal over all the months and quarters tested and thus no seasonalities in the mean returns.

In the commercial Segment, the null hypothesis cannot be rejected over the period the study period in this sector because the paired t-test values were below the 5% significance level. We therefore fail to reject null hypothesis and therefore conclude that there is no difference between the two means within this sector over the study period. In the agricultural sector, the null hypothesis cannot be rejected over the period 2009-2012 because the p-values of the paired t-test are below the 0.05 significance level. However, there is some calendar effect in the year 2013 where the p-value is more than the significance value at 5%. The study findings concur with Mulumbi (2010) who found existence of the tum-of-the-month effect at the Nairobi Stock Exchange.

In the commercial and service segment, the results indicate that in the year 2009, there was a significant difference between the two means and thus there existed turn of the calendar effect in the commercial and service sector. The findings are in agreement with Migiro (2010) who posited that the average stock returns for the rest of the month was always higher than the returns for the turn of the month for three of the four years (2006-2008). For the years 2010 and 2011, there was no calendar effect as there is no significant difference between the two means for end of the month and the beginning of the month. The findings are in agreement with King'ori (1995) who poised that the mean stock returns were equal over all the months and quarters tested and thus monthly seasonalities did not exist.

However, for the period 2012, there was registered turn of the calendar effect as indicated by a higher p-value than the 5% significance level.

In the manufacturing and Allied segment, there was calendar effect in the year 2009 as the paired t-test p-value was greater than 0.05. For the years 2010 to 2012, we fail

to reject null hypothesis since their p-values are less than 0.05 and conclude that there is no difference between the two means recorded. In the banking segment, there was no calendar effect in the year 2009 as the paired t-test p-value was less than 0.05. For the years 2010 to 2012, we reject null hypothesis since their p-values are greater than 0.05 and conclude that there is a difference between the two means recorded.

In the Construction and Allied Segment, the results indicate that in the year 2009, there was no significant difference between the two means and thus there existed no turn of the calendar effect in the Construction and Allied Segment. For the years 2010 and 2011, there was a significance difference between the means of end of the month and for the rest of the month hence the calendar effect. However, for the period 2012 and 2013, there was no calendar effect as indicated by a lower p-value than 5% significance level. In the energy and petroleum segment, in the period starting 2009 to the end of the study period, there was no significant difference between the two means at the beginning of the month and the other days of the month which leads to the conclusion that we fail to reject null hypothesis. Therefore no turn of the calendar effect existed in this segment over the study period.

In the automobile and accessories, there was no calendar effect in the years 2009 to 2013 as the paired t-test p-value was less than 0.05 meaning that there is no difference between the two means for beginning of the month and the rest of the month. For the years 2012, we reject null hypothesis since their p-values are greater than 0.05 and conclude that there is a difference between the two means recorded. The findings concur with Gao and Kling (2005), who posited that there was a change of the calendar effect in the Chinese stock market when using individual stock returns.

However, 2013 registered a lower than 0.05 p-value hence no turn of the calendar effect was present.

5.3 Conclusion

From the analysis, the study established that the many segments did not have pronounced turn of the month effect. At the segment level there is some level of turn of the month effect in some years and months but this is not consistent. On the overall, the effect offsets when the analysis is done on the overall NSE. This means that in general there is no significant difference between the end of the month prices and those recorded during the month. From the analysis of paired T-tests, in most circumstances, there was no difference between the mean at the end of the month and the mean for the rest of the month hence failure to confirm the existence of turn of the calendar effect at the NSE.

5.4 Policy Recommendation

From the study findings and summary above, the study recommends to the investors to carefully study then market movement in prices when deciding which shares to invest in. The study recommends that investors assess the performance of share prices during the month so as to know when to sell off or buy shares of a certain firm.

The existence of calendar or time anomalies denies the Efficient Market Hypothesis, which states there is no identifiable short time based pattern in stock returns and investors cannot predict future market movements by utilizing past information. This study therefore recommends that investors study carefully the existing relevant market information when deciding when to buy or sell their shares at the NSE. This will help in avoiding huge losses by assuming the existence of the existence of the turn of the calendar effect.

5.5 Limitations of the Study

A limitation for the purpose of this study included any condition that was present that played a key role in limiting the attainment or research objective. First, the data available was subject to various accounting principles which may not allow forward comparisons between the share prices among different companies in the same segment. In addition, the prices reflect a lot more information than just turn of the calendar effect. These may range from other key happenings in the economy which may not have been captured by the study. This therefore limits the applicability of research findings to generalization at the NSE.

The study period also faced many policy and monetary changes which may have influenced the share prices which was used to compute share returns. As such the findings may have been distorted by such economic and monetary policies.

5.6 Suggestions for Further Research

This study set to investigate the turn of the calendar effect at the Nairobi Securities Exchange. The study carried out the analysis for five years starting 2009 to the year 2013. This study therefore recommends that future studies be done on the existence of turn of the calendar and daily anomalies at the NSE.

The study further recommends that future studies be carried out on the size effect anomaly at the NSE to establish whether size effect actually exists at the NSE. This will help in policy formulation and guide investors' investment decisions.

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APPENDICES

Appendix I: Firms listed at the Nairobi Securities Exchange as at 31ST December 2013

1. Kakuzi Limited
2. Athi River Mining
3. Bamburi Cement
4. Barclays Bank of Kenya Ltd
5. British American Tobacco - Kenya
6. British-American Investment Company Kenya
7. Car & General Kenya
8. Carbacid Kenya
9. Centum Kenya
10. CFC Stanbic
11. CIC Insurance
12. CFC Stanbic
13. CMC Holdings
14. Co-operative Bank of Kenya
15. Crown Paints
16. Diamond Trust Bank
17. East African Breweries
18. East African Cables
19. East African Portland Cement
20. Eaagads
21. Equity Bank
22. Eveready East Africa
23. Express Kenya
24. Home Afrika Limited
25. Housing Finance Company of Kenya
26. I&M Holdings
27. Jubilee Holdings
28. Kakuzi
29. Kapchorua Tea Company
30. KenGen
31. KenolKobil
32. Kenya Airways
33. Kenya Commercial Bank
34. Kenya Orchards
35. Kenya Power & Lighting
36. Kenya Re
37. Liberty Kenya
38. Limuru Tea
39. LongHorn Kenya
40. Marshalls East Africa
41. Mumias Sugar
42. Nation Media Group
43. National Bank of Kenya
44. NIC Bank
45. Olympia Capital Holdings
46. Pan Africa Insurance Holdings
47. REA Vipingo Plantations
48. Safaricom
49. Sameer Africa
50. Sasini
51. ScanGroup
52. Standard Chartered Bank Kenya
53. Standard Group
54. Total Kenya
55. TPS Serena
56. TransCentury
57. Uchumi
58. Unga Group
59. Williamson Tea Kenya
60. A. Baumann & Company Limited
61. Umeme Limited

Source: www.nse.co.ke

Appendix II: Paired T-Test Statistics

Period	Average return Beginning of the Month	Average return Remaining of the Month	The turn of Month Effect	Paired t Statistic
2009	-0.07%	0.06%	Negative	0.021
2010	0.75%	0.23%	Positive	-1.202
2011	1.50%	0.13%	positive	-1.587
2012	2.00%	0.25%	Positive	4.974*
2013	0.26%	0.03%	Positive	6.361*
2009	0.05%	-0.03%	Positive	-1.006
2010	-0.51%	-0.06%	Positive	-0.765
2011	1.50%	0.08%	Positive	0.0152
2012	0.36%	-0.12%	Positive	0.039*
2013	0.21%	0.08%	Positive	0.026*
2009	0.24%	-0.05%	Positive	0.0371
2010	2.50%	0.18%	Positive	-1.458
2011	-0.50%	0.10%	Negative	-0.845
2012	0.41%	0.18%	Negative	-0.232
2013	0.03%	0.00%	Positive	4.619*
2009	0.05%	-0.03%	Positive	1.006*
2010	-0.51%	-0.06%	Positive	-1.765
2011	1.50%	0.08%	Positive	0.0152
2012	0.36%	-0.12%	Positive	3.539*
2013	0.21%	0.08%	Positive	0.026
2009	1.25%	0.10%	Positive	1.006*
2010	0.75%	0.23%	Positive	-1.765
2011	-0.51%	-0.06%	Positive	0.015
2012	-1.50%	-0.03%	Negative	0.039
2013	1.50%	0.05%	Positive	2.026*
2009	0.35%	1.00%	Positive	-1.128
2010	-1.50%	-0.03%	Positive	-0.329
2011	1.00%	-0.06%	Positive	6.716*
2012	0.01%	0.19%	Positive	1.103*
2013	0.32%	0.33%	Positive	0.049
2009	0.32%	0.33%	Positive	-0.016
2010	0.15%	0.30%	Negative	0.023
2011	0.03%	0.00%	Positive	-0.041
2012	0.06%	0.08%	Positive	-0.0797
2013	0.57%	0.10%	Positive	0.0184
2009	0.05%	-0.03%	Positive	-0.232
2010	0.35%	1.00%	Positive	-1.797
2011	-0.21%	-0.28%	Negative	0.036
2012	2.24%	-0.05%	Positive	1.926*
2013	1.25%	0.10%	Positive	0.049