

**TURN OF THE MONTH EFFECT ON THE RETURN OF FIXED INCOME
SECURITIES AT NAIROBI SECURITIES EXCHANGE**

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DECLARATION

I declare that this research project is my original work and has not been submitted to any other institution for academic credit.

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This project paper has been submitted with my approval as the University supervisor.

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DEDICATION

This project is dedicated to my late Mum Catherine, my dad James and my brothers Barnabas, Joseph, Emmanuel and my friends. Thanks for your immense support.

TABLE OF CONTENTS

DECLARATION	ii
ACKNOWLEDGEMENT	iii
DEDICATION	iv
LIST OF TABLES	ix
LIST OF FIGURES	x
LIST OF ABBREVIATIONS	xi
ABSTRACT	xii
CHAPTER ONE	1
INTRODUCTION	1
1.1 Background of the study	1
1.1.1 Turn of the month effect.....	3
1.1.2 Fixed income securities return.....	5
1.1.3 Turn-of the month effect and fixed income securities return	6
1.1.4 Nairobi securities exchange (NSE).....	7
1.2 Research problem.....	9
1.3 Research objective.....	11

1.4 Value of the study	11
CHAPTER TWO	13
LITERATURE REVIEW	13
2.1 Introduction	13
2.2 Theoretical review	13
2.2.1 Efficient market hypothesis	13
2.2.2 Behavioral finance theory	15
2.2.3 Random walk theory	16
2.3 Determinants of fixed income returns	18
2.4 Empirical review	20
2.5 Conceptual framework	23
2.6 Summary of the chapter	23
CHAPTER THREE	24
RESEARCH METHODOLOGY	24
3.1 Introduction	24
3.2 Research design	24
3.3 Population	24

3.4 Data collection.....	25
3.5 Data analysis	25
3.5.1 Analytical model.....	26
CHAPTER FOUR.....	27
DATA ANALYSIS, RESULTS AND INTERPRETATION.....	27
4.1 Introduction	27
4.2 Descriptive statistics.....	27
4.3 Paired t-test for difference in average (mean).....	30
4.3.1 Paired t-test for 5 – ToM days period.....	30
4.3.2 Paired t-test for 9 – ToM days period.....	31
4.4 Interpretation of the findings.....	33
CHAPTER FIVE	36
SUMMARY, CONCLUSION AND RECOMMENDATIONS	36
5.1 Introduction.....	36
5.2 Summary of the findings.....	36
5.3 Conclusions.....	38
5.4 Recommendations	38

5.5 Limitation of the study	39
5.6 Areas for further study	40
REFERENCES	41
APPENDICES	44
Appendix One: List of Participants of Fixed Income Securities.....	44
Appendix Two: Paired t-test Statistics	45

LIST OF TABLES

Table 4.2.1 ToM - 5 days Descriptive Statistics.....	28
Table 4.2.2 ToM – 9 days Descriptive Statistics.....	29
Table 4.3.1 Paired t-test for 5-dayToM period.....	30
Table 4.3.2 Paired t-test for 9-dayToM period.....	32

LIST OF FIGURES

Fig 2.1 Conceptual framework.....	23
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LIST OF ABBREVIATIONS

CE	Calendar Effect
DoW	Day of the Week
EMH	Efficient Market Hypothesis
FIS	Fixed Income Securities
LSE	London Stock Exchange
NSE	Nairobi Securities Exchange
RoM	Rest of the Month
SPSS	Social package of social science
ToM	Turn of the Month

ABSTRACT

The existence of random movements that are associated with prices of financial securities in the market has forced investors to rethink their investment strategies to beat the market and earn abnormal profit. However, one challenge investors face is how to determine the effective time of the year, month or week that the market tend to perform better than any others and what factors contributes to this. These differences in the market can be explained using the concept of market anomaly. There are various types of market anomalies and the most common ones are calendar effect (CE), day of the week (DoW) and turn of the month effect among others. As a result of these anomalies in the market, returns of the financial securities tend to vary over time due to information which does not reach all market participants at the same time. The purpose of this study was to establish the turn of the month effect on return of fixed income securities at Nairobi Securities Exchange (NSE) and to answer the research question; what is the effect of the turn of the month on return of fixed income securities at NSE? The study used descriptive research design since the study aimed to detect empirical evidence from the fixed income security data at the NSE. The study used the data for the 8 participants of fixed income securities at NSE as from 2013 – 2017. The study collected secondary data on coupon rates, prices, face value and then calculated fixed income indices and returns (change in fixed income prices). In order to effectively estimate the ToM effect, the study carried out a t-test to test if there was a statistical significant difference in the mean returns. Based on the results obtained from the analysis of the study, the study established that there was no statistical significant difference in mean returns between ToM for both 5 – days and 9 – day effect and rest of the month (RoM). The study recommends all investors to have a closure look at the factors affecting returns of fixed income securities before investing and deploy effective strategies that can help them earn profit. Research further recommends future studies on similar topic in order to provide more empirical review since most previous studies have concentrated on stock market. Also, other studies could be done on CE and turn of the week effect on fixed income securities returns.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Performance of securities in capital market varies over time. Depending on the approach that investors take to beat the market in order to earn profit, various studies such as Bospalko (2009) still argues that there exist anomalies in the financial market. Moreover, Chui and Chan (2015) explained that security prices tend to move up and down hence making it difficult for many investors to beat the market. As a result, financial markets exhibit various degree of inefficiencies be it in the developed world such as London Stock Exchange (LSE) or developing countries such as NSE. These inadequacies are commonly triggered by variances (anomalies) which may affect foreseeable pattern of share prices and size of stock movements in the financial exchange market, and one of them which the study will focus on is turn-of the month effect anomalies. These variances result as a result of seasonality in the security such that, the share price of a given security such as fixed income is systematically higher or lower in a given calendar year which causes distribution of share prices to be unequal over certain periods of time (Borges, 2009).

Bachelier in 1900 was the first to introduce the concept of random hypothesis under his thesis “Theory of speculation” and later evolved by Fama in 1965 into market efficiency. Various scholars have contributed to the work study on market efficiency in recent decades. This occurred in 1973 to 1990; such as the work Malkiel in 1973, Beja in 1977, Grossman and Stiglitz in 1980, Lo and Mackinlay in 1988, Lehmann in 1990 among others. Therefore, Fama (1970) further explained that, a financial market is well-

organized if the share prices reflect fully all the accessible data prices. Despite much interest by scholars on this theory, it can be noted in reality that in the current and existing business world, it is not easy to find a financial market that really incorporate every assumptions of efficient market theory as explained by the work of Fama; such as no transaction cost, easy access to information and complete census between the market participants. Also, behavioral finance theory presents the cognitive psychology of investors towards financial securities in the market based on their past, present and future performance (Borges, 2009).

Globally, fixed income securities are considered less risky than equity securities since their returns are tied to a given rate in the market based on market factors such as economic performance. Mamede and Malaquias (2017) did a study on Monday effect on fixed income securities in Brazilian market and established that on average, Mondays showed lower returns than other DoW. Zaremba and Schabek (2017) also examined January effect of government bond markets in 25 countries and established that bond returns had remained unaffected by the January effect. Locally, several research studies have been done to explain the phenomenon of turn-of the month effects in the financial markets using various securities, where return on share prices tend to be higher or lower than average return in a given calendar period, such as Opondo (2016) and Adago (2016). The issues surrounding the anomalies still make it an area of interest for many scholars wishing to undertake a study on it. Based on its influence in allowing investors to predict the future share prices, there is still more need to assess the impact of ToM effect on return of fixed income securities in the financial market, specifically NSE.

1.1.1 Turn of the month effect

Financial markets have inconsistency based on the performance of security share prices over a given time. These inconsistencies can only be explained with the help of turn-of-the month anomalies. Market anomalies can be said to be abnormal stock returns experienced either on the month and the week. The existing anomalies in the market therefore can be day-of-the week effect, month-of-the year effect or January effect. Day-of-the week effects communicates to the significant variance in mean of returns for different trading days in a week while month-of-the year effect narrates the important changes in the mean of returns for various months of the year such as a given month which generates higher or lower return than the other months in that year (Anya, 2016).

Turn-of-the month and intra-months' effects arise when share prices of security traded increases on the last day of trading of the months and the first few days of trading in the following month. The weekend effects is an opinion that mean Monday returns are the lowest and at times even adverse compared to that of Friday which in many cases is high and positive more than other days. Turn-of-the year effect tells the periodic pattern in the security market associated with an increasing trading capacities and moderately higher share prices in the last week of December and the first two weeks of January. The changes in price movements both in share price and traded volume of securities have created opportunities for investors willing to undertake various analyses to beat the market. Predicting share prices as a result of market anomalies allow investors to trade carefully in the market, more so risk averse investors (Kumar & Jawa, 2017).

Hence, investment companies must trade efficiently in observing the disparities that exists in volatility of fixed security returns as a result of turn-of the month effects (Borges, 2009). According to a study by Arsad, Chuah and Nordin (2011) on the predictability of turn-of the month effect at stock Markets in Malaysia, the study established that there is inconsistency in the absence or existence of the turn-of the month effect with little evidence of predictability. However, it was lower in the month of August and September. The study further established that the findings also vary across countries at a given time hence no specific time. Additionally, Chan and Hui (2015) found out that the Halloween effect was significant in Hong Kong and United States (US) markets, but not significant in other countries' markets.

Kumar (2015) examined ToM effect in Indian currency and established the existence of ToM effect on trading days which are significantly lower than the returns during non-turn of the month trading days. Based on this, it is clear that investors may not beat the market to earn extra profit by timing their positions in the market; hence to achieve this, they must understand the market performance based on monthly returns of each security to establish which days of the month and ToM that the securities perform better. The inconsistencies in the market therefore provide gap for other studies to be done on the ToM effect.

1.1.2 Fixed income securities return

Fixed income securities are type of financial securities where investors earn predictable returns at agreed intervals of time. Many investors view fixed income securities as safe and with low volatility or risks hence is an ideal alternative investment vehicle in the security market with fixed returns with low default risks. These securities have fixed maturity period ranging between 90 days to 30 years. They have interest or coupon rates which are usually issued at discount to par value. For governments, they issue mostly treasury bills in form of government securities, banks issue certificate of deposits while companies issue commercial papers or corporate bonds (Kumar & Jawa, 2017).

Fixed income security returns therefore refer to the returns that investors get from investing in fixed income securities in the financial market. Further, return or yields on fixed income securities are calculated differently from other type of financial securities such as stock or share. While in most other securities the returns depend on the current prevailing market prices, for fixed income securities it is different. In this regard, the return of fixed income securities which is denoted by its (yield) therefore depend on various factors including face value (how much you paid for it at the beginning), coupon value (the rate of interest an investor receives annually), duration (as in when will the security be redeemed if an investor wishes to hold it for maturity) and lastly, is the market price (how much an investor will receive for the security if he or she was to sell it in the market).

Face value, coupon rate and duration of fixed income securities cannot change once the fixed income security has been issued. However, its market price varies with changes in market rates of interest which affects the return. Increase in interest rates decreases the prices of fixed income securities whereas when the interest rates decrease, the price increases. Therefore, changes in market prices as a result on increase or decrease of interest rates affect the market price of fixed income securities. Changes in prices lead to changes in overall return of the security as well, which results to decrease on the return due to increase in market price and vice versa. Finally, the fixed income securities will be measured using the total rate of return or the term structure of interest rates. This will help in determining turn of month effects on fixed income securities return performance.

1.1.3 Turn-of the month effect and fixed income securities return

From the available literature review on ToM effect on fixed income securities return in the financial market, most of the studies have been on stock returns. In contrast to the available studies on fixed security return, little focus has been placed to examine ToM effects on the return of fixed income securities. Fixed income security is an area of interest for scholar due to the volume of traded fixed income securities in the financial market. Further, government depend more on fixed income securities to finance its long term projects than any other types of financial securities (Kamuti, 2013).

In addition, this study will provide the emerging issues on the price movements of fixed income securities (FIS) as it will provide room for comparison between turn-of the month effect patterns of fixed income securities in response to risk causing factors (Bespalko, 2009).

A study by Kayacetin and Lekpek (2015) on ToM effects in Turkish stock returns found out that the mean daily index return was higher in the three-day time frame that covers the last trading day of every month and the first two trading days of the next month, with little or no return in the rest of the days. The findings of this study therefore resounds well with gradual resolution of uncertainty following high information risks periods where large pool of liquid funds are released from accumulating in the market (Kayacetin & Lekpek, 2015).

Additionally, Anya (2016) conducted research on evidence for DoW effect in Thailand bond market and established that 30 days and 90 days bonds have significant positive Monday returns while longer maturities of 3 to 15 years have positive Thursday and Friday returns. Research attributed these effects to bond auction. This implied that for shorter maturity bonds, the positive Monday returns are the returns on auction Mondays while for longer maturity bonds, the positive Thursday and Friday returns are spillovers from the auctions of more than 15-year bond.

1.1.4 Nairobi securities exchange (NSE)

This is among the most vibrant financial security markets in Africa. Various fixed income securities are traded at NSE including certificate of deposit, commercial paper and bonds. It is therefore worthy to examine ToM effect on return of these securities to determine the significant impact. With various developments for the market to adapt modern financial technologies as well as to cope with globalization, the NSE has attracted many investors both individual and institutional in investing in various securities in the market.

It plays a key role in ensuring that there is a competitive business environment for investors by creating a business environment where lenders and borrowers can meet to transact their business. As such, security exchange market is very key in economic development of any nation (Nganya, 2013).

The market was initiated in 1954 having experienced numerous developments that have contributed to its growth in the country. Such developments that have occurred include but not limited to fixed income security market and investment markets which happened around the year 2001. With existence of robust regulation framework and oversight role, the market has offered equal opportunities for investors wishing to trade in the security market, creating available market for them. This has resulted increase of volume of goods traded as well enhancement of liquidity of goods traded (Migiro, 2016).

There are different segments or classification under which companies are listed at the NSE. These segments include; commercial and services, insurance sector, investment sector, construction, agricultural, manufacturing and allied sector, energy and petroleum sector, automobiles, banking and telecommunication. Prior 2011, NSE was stock exchange market but later transformed to a securities exchange market to incorporate all financial securities and not only a stock market. This was a strategic plan aimed at involving the market into completely service securities exchange which also promotes exchange, clearing and settlement of equities securities, bond market, derivatives and other financial securities such as real estate.

NSE therefore makes a good target population of the study since it incorporates all publicly trading companies. This therefore implies that all the financial data needed for the study can easily accessed from NSE as it requires all financial and non-financial trading companies to publish their financial statements to the public. Various studies on CE have been taken at NSE such as Ondiala (2014) who in his findings, established that indeed there exist anomalies in the security market which force investors to try as much as they can to predict and beat the market performance by earning extra return.

1.2 Research problem

Based on the theory of efficient market hypothesis as proposed by Fama (1970), various scholars and studies still exhibit the notion that the assumptions of the theory still exist in the modern world. With technology and globalization, a lot has changed in the financial market, be it in developing or developed countries. Studies such as Kamau (2017) and Odapo (2016) have confirmed that indeed there exist anomalies in the Kenyan financial market, NSE. Depending on the approaches they took, the country has different holidays which if looked at properly could have effect on the return of fixed income securities. The recent Muslim holiday given by the state is one such holiday effect that could be addressed. Additionally, there exist several CE such as turn-of the month effect which the research seeks redress. Research on ToM effect on fixed income securities return helped the investor to determine promising period to trade securities in order to maximize returns both in long and short run. It's resoundingly clear that no investor will trade securities at any given time but preferably in the promising calendar period.

The random movements of share prices exhibited by all financial securities has attracted criticism for and against from many scholars. Though some investors have applied the concept of efficient hypothesis in getting high returns, many still find it difficult to beat the market due to inefficiencies which results from market anomalies. Fixed income securities have different performance in a calendar year hence the need for investors to observe the market and establish appropriate ToM effect which is favorable in maximizing high return.

Zaremba and Schabek (2017) examined January effect of government bond markets in 25 countries and indicated that January effect do not have much effect on fixed income returns over the period of study. Another study by Bepalko (2009) on CE in daily bond returns in emerging economies, such as Brazil, Bulgaria, Mexico, Russia, Turkey, Phillipines and Ukraine established that day of the month effect and ToM effect were significant for bond and equity market, however end month returns are higher than any other day of the month implying that investors trade securities when they secure liquid cash. These are global studies which leaves a gap on the effect of such study in the local financial market

Kuria (2013) conducted a study on calendar effects and stock returns and established that anomalies still exist at NSE. Existence of anomalies causes investors to try as much as they could to predict future share price performance using technical and fundamental analysis to beat the market. This must entail looking at the price movements on a seasonal basis. Even though many studies have been done to show evidence that anomalies exist, few of them have managed to clearly demonstrate the extent of these effects on fixed income securities as majority deal with stock returns. Fixed income

securities exhibit different features from that of stock securities which many studies have not explored. This therefore demonstrates that there exists a gap between ToM effect and return of fixed income securities that this study intends to address. The research strived to answer the question: What's the impact of turn of the month effect on return of fixed income securities at NSE?

1.3 Research objective

The research aimed at testing turn-of the month effect on fixed income securities returns in Nairobi Securities Exchange.

1.4 Value of the study

Research findings were beneficial to management of NSE as the biggest financial market in the country with policy recommendations in order to eliminate existing anomalies, if there be, so as to allow all investors to trade in an efficient market.

To the academicians and scholars, the study will add additional literature review on the topic of end of month effects on return of fixed income securities and also draw major criticism which helps in the developing of efficient market hypothesis in the real world scenario.

To the investors, the study provides an economically significant explanation on effect of turn-of the month effect anomalies, whose impact on return of fixed income securities in the financial market is straight forward to measure and liquidity hypothesis.

To the government, the study allows other policy makers in relation to regulating the financial market so that such anomalies can be eliminated or reduced significantly to promote transparency, easy access to information for all the trading participants.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The research investigated turn of the month effect on return of fixed income securities at NSE. Existing literature was analyzed and studies related to the study were identified to aid in comparison of study findings in chapter four. Addition, theories related to the study were identified in order to help in modeling the concept of the study. Therefore, this chapter presents the theories related to the study, determinants of fixed income securities returns, empirical review and conceptual framework.

2.2 Theoretical review

Theoretical framework provides theories relevant to the study such as efficient market hypothesis, behavioral finance and random walk theories.

2.2.1 Efficient market hypothesis

According to Fama (1970), efficient market hypothesis classifies the level of efficiency of security market based on the ability of stocks traded to reflect the available information. Efficient market is usually categorized into three main forms namely weak form, semi strong form and strong form depending on the amount of information incorporated into the security prices. Security prices in weak form market reflect historical information. In semi strong form, security prices reflect all publicly available information. This is contrary to the strong form where security prices reflect both the private and public information.

Efficient market provides rational investors with information that would cause the security price to be an estimate of the intrinsic value of the stock. The absence of CE therefore contributes to the proposition that market is efficient devoid of the behavioral biases that would lead to CE anomaly (Atala, 2015). Investors are consistently mindful about the market activities to hold security prices at a level that promises them a return. The investors should understand the macroeconomic variables to ensure that security prices are stable. Efficient market proposition will thus provide the basis for determining the efficiency of the NSE.

Further, it is argued that the assumptions of efficient market theory do not hold in the current financial market. Where investors pay for information and apply for different investment strategies to beat the market and earn abnormal profit, it leaves scholars with no choice rather to questions its viability in the current exchange market. As a result, the strategies applied in the market tend to enhance the extent of anomalies in the market which the study seeks to determine. Though many studies have been done to identify market risks, there so many types of risks that need to be studied and one area that this study will focus on is turn of the month effect.

Fixed securities have different characters portrayed by the stock securities. Whereas the price and share values tend to vary over time, the coupon rate and face value of fixed income securities do not change over time since they are set at the initial stage of bond purchase. The variation in shares and bond characteristics are affected by the level of efficient information in the market as indicated by Fama (1970). According to Fama, information in the market should reach all investors at the same. Also, all information should be captured in the prices of the securities.

However, in the developing financial market such as NSE of Kenya, this has never been the case. This theory therefore connects to this study as it will highlight the benefits of efficient information and how it contributes to market anomalies.

2.2.2 Behavioral finance theory

This theory comprises of the cognitive psychology and the limits to arbitrage. Cognitive psychology explains how people think depending on past experience or the investor reaction to arrival of new information in the market. This influences investors buying and selling decisions. The theory states that the real market is risky and scarce hence arbitrage effectiveness relies on accessibility of close substitutes to securities whose prices are highly influenced by the market noise. This uncertainty can be mitigated by encouraging investors who sell undervalued stocks to also buy overpriced securities (Ritter, 2003).

Behavioral theory discusses issues such as behavioral biases, framing and heuristics (repetitiveness, anchoring, and availability). The theory acknowledges the irrationalities that affect security prices to deviate from the expected. Notably behavioral theory is relevant to the study given that it explains the fixed income security behavior in the market. The theory helps the market participants understand the dynamics to enable them adjust their trading pattern. This theory dictate when an investor will most likely to buy or sell securities in order to maximize returns while minimizing the market risks.

Financial market is characterized by uncertainty that tend to keep away other investors in the market. Security prices are in most cases not stably and tend to move up and down in a random way which requires investors to have effective knowledge in determining their movements by reading the previous patterns.

Lack of knowledge and unfair competition through accessibility of information by a few of the investors has caused majority of the investors to develop attitudes and behaviors towards investment in the security market. Such behaviors' can be rational or irrational. Rational investors would invest even in risky securities since they believe that high risk leads to high return in the market. However, for irrational investors, they prefer undertaking due diligence, in order to determine which security who give them a high return in a short duration without incurring losses.

Connecting this theory to the study, behavioral finance has become an area of interest for many scholars. Many believed that there is always psychology behind how investors make decisions. In the past few years, much interest was given to the secondary data and the results of the performance of the company without consideration into how decisions were made to enhance the profit. Financial market requires decisions to be made promptly hence the need to determine the behavioral aspects of investors. This theory therefore is essential in developing the concept of the study through its contribution in the development of behavioral finance.

2.2.3 Random walk theory

According Kendall (1953), "the theory shows that security prices follow a random walk making it difficult to generate returns from trading strategies that utilize observe security trends." Random walk implies that security returns on a week, month or a year proceeding the trading period should not be higher than returns from any other trading period.

The theory state that successive returns are independent and the gains are identically distributed over time making it interesting to establish other trends an investor can exploit to earn abnormal returns.

Existence of long term and short term securities have forced investors to apply both short term and short term strategies to beat the market. Active investment strategies have been deployed to aid in the technical aspect of continuously observing the security performance in the market. On the other hands, passive investment strategies have been used by irrational investors to invest in long term securities that do not require continuous overhaul of the security structure over time. As such, security prices are believed to be moving up and down in a random manner which makes it difficult to investors to earn abnormal profit. It therefore requires effective strategy and study of the market to determine the specific days, weeks, months and years that investors are most likely to earn the abnormal return.

This theory is significant to the study due to its contribution in understanding the movements of security prices in the market. It tends to encourage investors to give a closer look at the security prices by studying their movements over time in order to identify the periods that they are most likely to earn abnormal profit. Further, the theory provides investors with an opportunity to develop effective strategy which is essential in assisting investors to analyze and select securities which can enable them earn abnormal profit.

2.3 Determinants of fixed income returns

The main determinants of fixed income return are the macro economic factors including inflation, interest rate, market risks and trading volume.

2.3.1 Interest rate

This refers to the cost that lender charge to extend funding to individuals or institutions. The cost of borrowing funds do fluctuate and this dictates the prices of fixed income securities thus their ability to generate return to the investor. High interest rates discourages borrowing hence the investor purchasing power is likely to reduce and the vice versa is true. Interest rates should be optimum to sustain money circulation in the economy.

Money lenders in the security market bank on interest rates as a way of earning their profit. They lend capital or money to the borrowers over a given period of time with aim of maximizing profit. High interest rates determine the cost of borrowing and lending as well as the cost of production in the country. Over the years, many service and product industries depend on the debt to finance their operations hence the need for the financial market regulators to ensure that there are affordable interest rates which does not cause the increase of products in the market. As such, coupon rates which are a rate for fixed income securities tend to be fixed over time hence the need for investors to carefully give attention to coupon rates in the market.

2.3.2 Inflation

Inflation is the key determinant of the consumer purchasing power in the market. Rise in inflation increases the price of fixed income securities and other commodities in the market thus reducing the consumer's purchasing power. This is different when the inflation rates are relatively lower, the consumer purchasing power increases enabling the trade of fixed income securities in the market.

It's the role of central bank of Kenya (CBK) to control the rate of inflation in the country. Where competition is the order of the day, inflation rates have effect on the fixed income securities. They can reduce the bond prices or increase the bond prices which also have effect on the volume of traded fixed income securities in the market. Most institutions including the government rely on debt as a fixed income security to finance their long term projects. As such, it's a big determinant in the bond market where investors are required to have a closer study on how it can affect the performance of the securities.

2.3.3 Trading volume

This refers to the quantities of securities traded daily in the capital market and measures changes in the prices of securities. Higher trade volumes signify that the investors will generate a higher return on the fixed income securities. The relationship between the trading volume and fixed income return tend to be positive and significant (Nganga, 2013). Kamuti (2013) stated that trade volume influences security prices because prices changes are great input into trading strategies thus unfavorable price changes can discourage investments given the fact that investors are risk averse.

In other words, the investor would hold a higher volume of fixed income securities when the prices are relatively promising returns as opposed to when the prices are very low. This point explains why investors will sell their shares when market prices are stable and hoard securities when the prices are low due to avoid making losses.

2.3.4 Market anomalies

The political environment also determines the trade patterns in the capital market. Fixed income securities are usually stable before elections but declines during elections due to the speculation of the uncertain market environment to support investments. According to NSE (2017) report, the value of securities went down during the 2017 elections and also following the Supreme Court ruling that nullified the presidential results. The security prices started to stabilize after the elections since investors were certain about the market condition.

2.4 Empirical review

Migiro (2010) examined month effect for companies listed at NSE. Kalui (2004) studied the determinants of stock price volatility at NSE for the year 1998-2002. The study established that listed companies experienced stock price volatility. Similarly, Onyuma (2009) analyzed data obtained using NSE 20 share index and used regression method to look at the movement and behavior of stock returns from 1986-2006. The result provides largest positive returns from January and Friday while lowest negative returns were on Mondays.

Additionally, Gao and Kling (2005) did a study to test effect of month to month and daily variances in Chinese Stock Market. The results of their study established a change of the CE when using individual stock returns. In Shanghai and Shenzhen, it was indicated that the year-end was strong in 1991 but disappeared later. Again, the research further established that the highest returns were also gained in March and April since the Chinese year end in February. As for the daily effects, it was found that Fridays are profitable since many investors trade securities.

Rezvanian and Mahdian (2008) in their study investigated the effect of calendar anomalies in Chinese equity markets using indices from six Chinese Stock Exchanges. The outcome of the study revealed that Monday and day-of-the week effects validate no tradition Monday effect in six of the Chinese stock indices during the study period. In addition, the cross days-of-the week correlation analysis found out that no foreseeable daily returns patterns and no significant correlation across the days-of-the week.

Furthermore, Wyeme and Olfa (2011) studied the Tunis Stock Exchange evaluating the month of the year effect for five years. Secondary data was used. The research established that month of April has effect on the mean daily market returns largely higher than any other month of the year. This result motivates the researcher to further examine the effect of calendar effects on the fixed income security return in the NSE.

Mulumbi (2010) further investigated existence of turn of the month effect at NSE examining whether seasonal patterns in advanced economies like United States could also be present in Kenya and to what extent.

Results identified that average return for stocks quoted at NSE are usually higher for the last day of calendar and in the second day proceeding calendar month. The monthly effect is independent of other unknown calendar risks such as January and holiday effect.

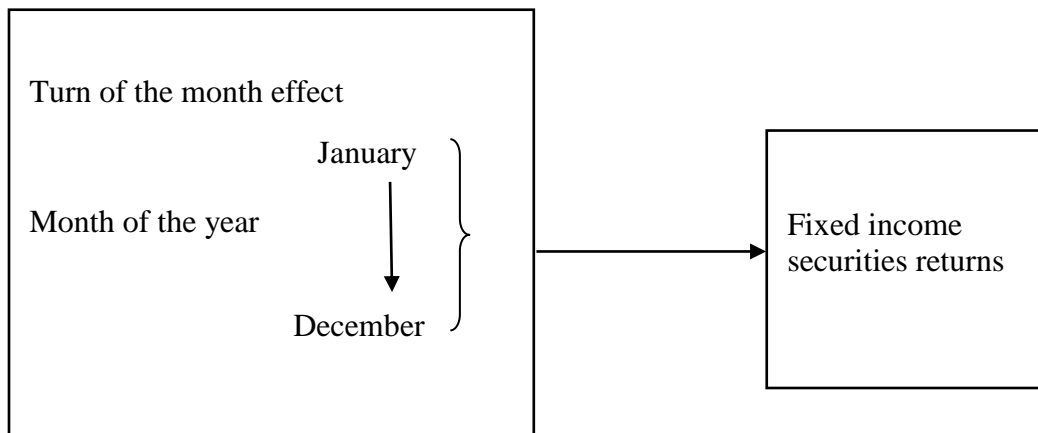
According to a study conducted by Sifuna (2012) on DoW effect on stock return at NSE, the study established that January has highest positive return while Wednesday has negative return. The volatility of stock return is mainly experienced on Tuesdays while it's insignificant on Fridays. This provides that rational investor will invest in January to maximize return because many people tend to trade securities particularly on Fridays.

2.5 Conceptual framework

This is a model which explains the relationship between independent and the dependent variables as shown in Figure 2.1

Independent Variables

Dependent Variable



2.6 Summary of the chapter

This chapter emphasized on the available literature on calendar effects and fixed income securities as well as stock returns. Three theories were developed in explaining the concept of the study which consists of efficient market hypothesis, behavioral finance and random walk theory. Also, determinants of fixed income securities were explained and they included interest rates, inflation rates, trading volume and market anomalies. The researcher performed empirical review based on the scholarly work which will be used in comparing research results to the previous study. Conceptual framework illustrates the relationship between independent and dependent variables of the research.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter provides a plan or steps that have to be followed in gathering, analyzing and reporting data in a systematic way that can allow easy understanding by all interested parties. To ensure that the data gathering and analysis process were effectively and systematic, the chapter presented appropriate design for the study in addition to the population that provided useful data for research. Data was collected using secondary means analysis was conducted to retrieve meaning and insights required to inform the study. This provided a basis that the researcher considered while making relevant recommendations as far as the topic is concerned.

3.2 Research design

This is the structure that the researcher developed to help in successful implementation of research objective. This study used descriptive research design as it describes variable and phenomenon which the researcher has no control over the way they are. Furthermore, descriptive research design was appropriate as the study sought to apply empirical evidence of turn-of the month effects using NSE reports.

3.3 Population

Target population represents entire group of individuals that the researcher wants to undertake a study. The study obtained information to generalize the findings obtained from the target population and made efficient conclusions about the study.

For this study, the target population was on participants of fixed income securities at NSE, the 8 of them as of September 2018. (See appendix note)

3.4 Data collection

Data collection involved type of data that was used for the study and how it was gathered. The prevailing study used secondary data from the NSE reports to test turn-of the month effects for a period of five (5) years from 2013 – 2017. Daily data were used for modeling. A censured survey of all the listed companies was taken as shown in the appendix list. Additionally, the returns of fixed income securities and returns on market were examined and computed.

3.5 Data analysis

The prevailing research employed SPSS version 21.0 for data analysis. Several tests were conducted including paired t-test and test of significance level which was 0.05 (Mugenda & Mugenda, 2003).

The study considered both null hypotheses (H_0): $F_1 = F_2$ and alternative hypothesis (H_1): $F_1 \neq F_2$. F_1 represents the return at the turn- of month time of the fixed income securities while F_2 represents the return for the rest of the days of the month. The objective of H_0 is to show that there is no significant change in fixed income securities returns as a result of ToM effect. The alternative hypothesis (H_1) aim to provide empirical evidence that there could be change in returns of fixed income securities as a result of ToM effect as compared to other trading days in the financial market for each tested ToM duration.

3.5.1 Analytical model

To establish the ToM effect on fixed income securities returns at NSE, a paired t-test was assessed to test if there could be statistical significant difference in the mean of the abnormal returns. The abnormal return was between the ToM and RoM. In this case, ToM days were the first trading day of the month to the fifth day of the current month and the first to the ninth day of the month while the RoM begins from the tenth day and last day of the month and was obtained using equation below;

$$Return\ t = Ln(index\ t / index\ t-1) = a + u\ t$$

Where $Return\ t$ – is the continuously compounded rate of change in fixed income index

$Index\ t$ is the fixed income market index at time t , a , is a constant and $u\ t$ is a normal random variable with a mean of zero. This imply that average rate of change of fixed income index is equal for every day of the month.

The returns were compounded as percentage change in the price index where $P_{i,t}$ denote price index of fixed income security i at time t , then;

$$R_{i,t} = (P_{i,t} - 1) / (P_{i,t-1} - 1)$$

Where $P_{i,t}$ were the price of i th index at time t . For calculation of returns, t was of two different time periods, that is, $t1$ is the index value after the first five and 9 days and $t2$ will be the tenth DoM plus the rest of the days of the month in order to enhance comparison as explained by Bordeaux (1995).

CHEPTER FOUR

DATA ANALYSIS, RESULTS AND INTERPRETATION

4.1 Introduction

This study investigated turn of month effect on fixed income securities return at NSE. Secondary data was used from NSE of the calculated fixed income yields as well as their prices for the period of 5 years (2013 – 2017). SPSS was used for analyzing data where abnormal returns were calculated and the findings were established. The results were interpreted to provide an in depth understanding about the topic. Results were discussed to provide a basis for making intuitive recommendations.

4.2 Descriptive statistics

Descriptive statistics provides detailed information of the population studied in NSE. The statistics therefore provide a summary for all the participants of fixed income securities at NSE as shown in appendix 1 covering a period of 5 years (2013 – 2017). Descriptive statistics therefore covered 2 turn of the month windows which comprised of 5-days and 9-days effect as shown below.

Table 4.2.1 – ToM days Descriptive Statistics

	Min	Max	Mean	Std Dev
2013	0.0149	0.2091	0.0717	0.0532
2014	-0.2466	0.0726	-0.028	0.1014
2015	0.233	0.2453	0.1202	0.0785
2016	-0.1357	0.3882	0.0384	0.1522
2017	0.85	0.14	0.1168	0.0180

Source: Researcher (2018)

As shown in table 4.2.1, 5-day ToM effect in 2013 had a mean and standard deviation of 0.0717 and 0.0532. In 2014, the research established a mean and standard deviation of -0.028 and 0.1014 respectively. The mean and standard deviation for 2015 was 0.1202 and 0.0785 respectively. In 2016, the researcher established a mean and standard deviation of 0.0384 and 0.1522. In 2017, mean and standard deviation were 0.1168 and 0.0180 respectively. Mean and standard deviation were used to indicate how data for the study in 5-ToM days were distributed and how centered they were. Hence, there was abnormal loss of 0.2466 with abnormal gain of 0.3882.

Table 4.2.2 – ToM days descriptive statistics

	Min	Max	Mean	Std. Dev
2013	-0.062	0.2065	0.0586	0.0827
2014	-0.2748	0.0495	-0.0518	0.1141
2015	-0.0385	0.3511	0.1148	0.1032
2016	-0.431	0.2024	-0.0886	0.1608
2017	0.84	0.142	0.12	0.0191

Source: Researcher (2018)

Table 4.2.2 illustrates the 9 – days ToM data for abnormal returns. The results indicate there were a mean of 0.0586 with a standard deviation of 0.0827 in 2013. Additionally, 2014 had a mean and standard deviation of -0.0518 and 0.1141 respectively. In 2015, the researcher established a mean and standard deviation of 0.1148 and 0.1032. In 2016, there was a mean of -0.0866 and a standard deviation of 0.1608. Lastly, 2017 established a mean and standard deviation of 0.12 and 0.0191. The summary table therefore revealed that the experienced abnormal loss was 0.431 and abnormal return was 0.3511. This could be attributed to low deals made in those days.

4.3 Paired t-test for difference in average (mean)

The study conducted a paired t-test for the turn-of the month (ToM) periods on fixed income securities at NSE for the 5 years commencing 2013 – 2017. The paired t-test was applied to investigate whether there's statistical significant change or differences in the mean abnormal return of securities over the period. The level of significance for the study was 0.05. The null hypothesis for the study in assessing the ToM effect was (H_0): $F_1 = F_2$ and alternative hypothesis (H_1): $F_1 \neq F_2$. Therefore, the null hypothesis implied there was no significance difference between turn of month and the rest RoM while alternative hypothesis implied there was significance difference between ToM and RoM. The level of significance between the ToM periods indicated the period that had positive returns.

4.3.1 Paired t-test for 5 – ToM days period

The study carried out a paired t-test to determine the difference in mean for the 5- day ToM and the Rom for the period 2013 – 2017 and the findings were shown below.

Table 4.3.1 Paired t-test for 5 – days ToM period

	Average Abnormal Returns 5-days ToM(%)	Average Abnormal Returns RoM (%)	Turn-of the Month Effect	P-value
2013	0.072	0.064	Positive	0.8703
2014	-0.028	-0.087	Positive	0.5942
2015	0.120	0.066	Positive	0.3095
2016	0.138	-0.046	Negative Positive	0.0417
2017	0.117	0.118		0.728

Source: Researcher (2018)

The findings in table 4.3.1 show the paired t-test statistics for the 5-days ToM for the study period. The average abnormal returns for the ToM effect were positive in 2013, 2014, 2015 and 2017 with a negative ToM effect seen in 2016. Additionally, the p-values were 0.8703, 0.5942, 0.3095, 0.0417 and 0.728 for the year 2013, 2014, 2015, 2016 and 2017 respectively. The ToM effect had a p-value greater than 0.05 for 2013, 2014, 2015 and 2017 which implied there's no statistical significant difference in fixed income securities return mean between ToM and RoM days indicating that anomaly does not exist. However, 2016 had a p-value < 0.05 which could indicate there's significant difference in average abnormal return of fixed income securities between ToM and RoM days hence, anomaly exist. Based on the findings, there is minimal evidence to declare ToM effect exists for the period (5-days ToM).

4.3.2 Paired t-test for 9 – ToM days period

Here, the study sought to carry out a paired t-test to determine the difference in mean for the 9-dayToM and the RoM for the period 2013 – 2017 and the findings were shown below.

Table 4.3.2 Paired t-test for 9 – ToM days period

	Average Abnormal Returns 9-days ToM (%)	Average Abnormal Returns RoM (%)	Turn-of the Month Effect	P-value
2013	0.065	0.064	Positive	0.8229
2014	-0.055	-0.087	Positive	0.9444
2015	0.115	0.066	Positive	0.3515
2016	-0.056	0-0.046	Positive	0.4425
2017	0.120	0.118	Positive	0.5557

Source: Researcher (2018)

As shown in table 4.3.2, the paired t-test was performed to establish the difference in mean between the ToM days and RoM in order to determine the market anomaly. From the results obtained, the period for the study that is 2013 – 2017 had a p-value of 0.8229, 0.9444, 0.3515, 0.4425 and 0.5557 respectively. The p-values were higher than 0.05 hence demonstrated that the null hypothesis, there's no statistical significance in mean return of ToM days and RoM days cannot be rejected. Alternative hypothesis that there is a significance difference was rejected. Also, all the study period had a positive turn of month effect. The results therefore were significant to show anomaly does not exist in fixed income securities returns based on their p-values.

4.4 Interpretation of the findings

The research results were analyzed and computed to provide needed information that could be used to make study inferences. The study obtained the descriptive statistics and paired t-tests to show the difference in means of the ToM and RoM. Based on the descriptive statistics for 5- days ToM period, 2013 had a mean and standard deviation of 0.0717 and 0.0532 respectively. In 2014, mean and standard deviation were -0.028 and 0.1014. There was also a mean of 0.1202, 0.0384 and 0.1168 for the year 2015, 2016 and 2017 respectively with a standard deviation of 0.0785, 0.1522 and 0.0180 for the year 2015, 2016 and 2017 respectively. The study also determines the descriptive statistics for the 9- days ToM period. The findings indicate that there was a mean 0.0586, -0.0518, 0.1148, -0.0886 and 0.12 for the year 2013, 2014, 2015, 2016 and 2017 respectively. Also, there was a standard deviation of 0.0827, 0.1141, 0.1032, 0.1608 and 0.0191 for the period 2013, 2014, 2015, 2016 and 2017 respectively.

The study also conducted the paired t-test for both the 5- days and 9- days ToM to determine the significance difference in the abnormal returns. The findings on the 5- days ToM indicated positive ToM effect for 2013, 2014, 2015 and 2017 with 2016 having negative ToM effect. The p-values were 0.8703, 0.5942, 0.3095, 0.0417 and 0.728 for the year 2013, 2014, 2015, 2016 and 2017. Based on these findings, all the study periods had a p-value greater than 0.05 except for 2016.

The p-values of above 0.05 implied that the study accepted the null hypothesis that there's no statistical significance difference in mean abnormal return of the 5- days ToM effect and RoM and rejected the null hypothesis, hence no presence of anomaly. However, for the period of 2016 which had a p-value less than 0.05, the study indicated presence of anomaly. Therefore, there was a mixed finding of the study.

The difference in the average or mean abnormal return for the 9-days ToM period showed a positive turn of month effect for 2013, 2014, 2015, 2016 and 2017. All the p-values of the study period were above 0.05 that is there was a p-value of 0.8229, 0.9444, 0.3515, 0.4425 and 0.5557 for the year 2013, 2014, 2015, 2016 and 2017 respectively. The findings therefore implied that the study rejected the alternative hypothesis and accepted the null hypothesis which indicates that there is no statistical significant difference in the average mean return of 9- days ToM effect and RoM.

Though there is a literature gap on the study of ToM effect on return of fixed income securities at NSE, other studies have been done on ToM effect on return of stock at NSE. Previous studies such as Ondiala (2014) who examined the existence of anomaly through ToM effect on stock returns at NSE obtained mixed findings of her study but concluded that there was no presence of ToM effect at the NSE. The research findings therefore relate to the study results obtained by Ondiala (2014) that there's no statistical significance mean difference in ToM and RoM hence no market anomaly. Mulumbi (2010) also investigated the existence of the ToM effect at NSE. His study examined whether the seasonal patterns found in the developed market data like USA could also be present in the Kenyan data and if so to what degree.

The finding of the research revealed that the average return for stocks listed at NSE were higher for the last day of the calendar month and the second day of the following calendar month. The monthly effect was found to be independent of the other unknown calendar anomalies like the holiday effect and the January effect. The findings of this study were based on stock returns. However, it could be linked to this study. Therefore, the study findings relate to this study which has accepted the null hypothesis.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This is the last chapter of this study that provides a detailed summary of the study findings, conclusions drawn from the findings of the study and recommendations. The research aimed at investigating turn of the month effect on fixed income securities returns at NSE. The conclusions and recommendations of the study therefore will be made after addressing the research problem; to what extent does turn of the month effect affect fixed income securities returns at NSE?

5.2 Summary of the findings

The purpose of this research was to determine if turn of month effect affects fixed income securities returns at NSE. To obtain this, the study performed a paired t-test to compare the average abnormal return at ToM and RoM days. There has been a lot of debate on whether assumptions exhibited by the work of Fama (1970) regarding the financial market still hold. According to Fama (1970) he indicated that financial market should be efficient that is there is available information on financial securities. The random movement of security prices has contributed widely on the need to understand whether anomalies still exist in the market. This research sought to bridge this gap by specifically addressing fixed income securities return and whether they get affected by ToM effect.

The research addressed ToM effect by looking at the two sections. First, the study looked at ToM from the 5- days ToM perspective where average abnormal return was obtained and compared to the average abnormal return of the remaining days. From the research finding, there was positive ToM effect for the entire study period except in 2016 which had negative ToM effect. Also, the p-values obtained in the study were above 0.05 which is the significance level except for the year 2016 which had a p-value less than 0.05. This therefore implied that the netted results of the study implied there could be no statistical significance difference in mean of the ToM 5-days and the RoM by rejecting alternative hypothesis.

Secondly, the research sought to establish turn of the month effect on fixed income securities return by assessing the difference in mean between 9-days ToM and RoM. The study presented netted findings which clearly demonstrated that there existed no anomalies in the return of fixed income securities in the market. This was based on the established p-values which were all above the significance level of 0.05. Connecting the findings to the studies, there is an agreement that anomalies does not exist so much in the return of fixed income securities in the exchange market. Though many studies have not been carried out in relation to fixed income securities, other studies on stock returns were used for comparisons.

5.3 Conclusions

From the two period analyzed in the study that is 5-days and 9-days ToM and RoM, research established fixed income securities returns have not experienced ToM effect or anomalies in a much publicized context. At the 5-days ToM effect level, the study concluded there's a positive ToM effect for the study period except in 2016 which had a negative ToM effect. This means that there is no much anomaly as a result of 5- day ToM month and RoM effect on fixed income securities returns. Analyzing the 9- days ToM effect and RoM effect on fixed income securities returns, the paired t-test concluded that there was no statistical significance mean difference ToM days and the RoM days with a p-value of above the significance of 0.05. The study therefore recorded no existence of turn of the month effect on return of fixed income securities at NSE.

5.4 Recommendations

The study made recommendations to various stakeholders. To the investors wishing to invest in fixed income securities, the study recommends that there should be a steadily and careful considerations of various factors such as coupon rate, face value and yield of the fixed income securities when deciding to invest in fixed income securities in the market. The performance of bond prices also need to be assessed effectively on a daily and monthly basis in order to establish the performance of both short term and long term fixed income securities.

To the management of firms participating in fixed income securities at NSE, the study recommends a closer look at the market through the issuance of long term and short term securities in order to determine appropriate coupon rate in the market which maximizes returns. Additionally, the study findings recommend that a closer look should be given to the relevance of efficient market hypothesis and how application of efficient hypothesis of the market could contribute to turn of the month effect in the market.

5.5 Limitation of the study

Research was mainly on quoted companies at NSE and their findings cannot be used to generalize all companies located in Kenya, but are not listed in the capital market. The research aimed at establishing turn of the month effect on fixed income securities return. Hence the findings are only limited to quote firms that trade fixed income securities. Additionally, the findings may not be used to make predictions about the performance of firms in developed states with advanced economies and market compared to Kenya.

Given that the study focused mainly on fixed income securities, the findings cannot be applied in stock market. These limit policy makers from making generalization about market performance. The study also relied on secondary data meaning that the accuracy of findings depends on the available data however the researcher could not ascertain its validity. Secondary data also provides scanty information and therefore the research could not unearth the trends for as many years as possible. Secondary data is not easily available and is difficult in obtaining thus such deterrents compromises research.

5.6 Areas for further study

The research assessed turn of month effect on return of fixed income securities in Nairobi securities exchange for five years (2013 – 2017). Various studies undertaken on turn of month effect have been mostly on stock return with less focus on fixed income securities. Though the study is on return of fixed income securities, it recommends other studies to be carried on the topic in order to provide more empirical review on turn of the month effect on fixed income securities using linear regression model as opposed to the used paired t-test.

Further studies should also be carried out on turn of the calendar and other anomalies at the NSE in relation to return of fixed income securities. The study also recommends further study be done to establish the extent and magnitude of anomalies that exist on return of fixed income securities at NSE.

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APPENDICES

Appendix One: List of Participants of Fixed Income Securities

Names of Fixed Income Securities Participant at NSE

1	Government of Kenya
2	Consolidated bank of Kenya
3	PTA bank Limited
4	Barclays Bank
5	CFC Stanbic Bank
6	KenGen
7	Safaricom
8	Housing Finance

Source: NSE (2018)

Appendix Two: Paired t-test Statistics

	Average Abnormal Returns 5-days ToM (%)	Average Abnormal Returns RoM (%)	Turn-of the Month Effect	P-value
2013	0.072	0.064	Positive	0.8703
2014	-0.028	-0.087	Positive	0.5942
2015	0.120	0.066	Positive	0.3095
2016	0.138	-0.046	Negative	0.0417
2017	0.117	0.118	Positive	0.728
	Average Abnormal Returns 9-days ToM (%)	Average Abnormal Returns RoM (%)	Turn-of the Month Effect	P-value
2013	0.065	0.064	Positive	0.8229
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2015	0.115	0.066	Positive	0.3515
2016	-0.056	0-0.046	Positive	0.4425
2017	0.120	0.118	Positive	0.5557