

**HOLIDAY EFFECT ON STOCK MARKET RETURN AT THE  
NAIROBI SECURITIES EXCHANGE, KENYA**

**NDIRITU JANE WANJIKU**

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

**2020**

## DECLARATION

I, the undersigned, declare that this is my original work and has not been presented to any institution or university other than the University of Nairobi for examination.

Signed: \_\_\_\_\_ Date: \_\_\_\_\_

**NDIRITU JANE WANJIKU**

**D63/81703/2015**

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

Signed:  Date: December 7, 2020

**Dr. Winnie Nyamute**

**Senior Lecturer**

**Department of Finance and Accounting**

**School of Business, University of Nairobi**

## ACKNOWLEDGEMENT

I thank the Almighty God for seeing me through the completion of this project.

To my family and friends thank you for the great support during my entire study period of this program, you provided me with motivation that gave me every reason to work harder and ensure that this study becomes a success.

I would also like to express my sincere gratitude to my supervisor Dr. Winnie Nyamute for her guidance, support, contribution and advice during the research project period.

## **DEDICATION**

To Mum and Dad, my brothers Hudson and Hiram

# TABLE OF CONTENTS

<b>DECLARATION</b> .....	<b>ii</b>
<b>ACKNOWLEDGEMENT</b> .....	<b>iii</b>
<b>DEDICATION</b> .....	<b>iv</b>
<b>LIST OF TABLES</b> .....	<b>viii</b>
<b>LIST OF FIGURES</b> .....	<b>ix</b>
<b>LIST OF ABBREVIATIONS AND ACRONYMS</b> .....	<b>x</b>
<b>ABSTRACT</b> .....	<b>xi</b>
<b>CHAPTER ONE: INTRODUCTION</b> .....	<b>1</b>
1.1 Background of the Study.....	1
1.1.1 Holiday Effect.....	2
1.1.2 Stock Market Returns .....	4
1.1.3 Holiday Effect and Stock Market Returns.....	5
1.1.4 Nairobi Securities Exchange .....	6
1.2 Research Problem .....	8
1.3 Research Objective .....	9
1.4 Value of the Study.....	9
<b>CHAPTER TWO: LITERATURE REVIEW</b> .....	<b>11</b>
2.1 Introduction.....	11
2.2 Theoretical Framework .....	11
2.2.1 Efficient Market Hypothesis.....	11
2.2.2 Capital Asset Pricing Model .....	13
2.2.3 Behavioral Finance Theory.....	14
2.3 Determinants of Stock Market Returns.....	15
2.3.1 Holiday Effect.....	15
2.3.2 Economic Growth.....	16
2.3.3 Inflation Rate .....	16

2.3.4 Interest Rates .....	17
2.3.5 Unemployment Rate .....	18
2.3.6 Money Supply.....	18
2.3.7 Exchange Rates.....	19
2.4 Empirical Review .....	20
2.4.1 Global Studies.....	20
2.4.2 Local Studies .....	22
2.5 Summary of the Literature Review and Research Gaps .....	24
2.6 Conceptual Framework .....	24
<b>CHAPTER THREE: RESEARCH METHODOLOGY .....</b>	<b>26</b>
3.1 Introduction.....	26
3.2 Research Design.....	26
3.3 Target Population and Sample Design .....	26
3.4 Data Collection .....	26
3.5 Diagnostic Tests .....	27
3.6 Data Analysis .....	28
3.6.1 Measuring Daily Movements .....	28
3.6.2 Abnormal Returns.....	29
3.6.3 Cumulative Abnormal Returns .....	29
3.6.4 Standardized Cumulative Abnormal Returns .....	29
3.6.5 Operationalization of Study Variables .....	30
3.6.6 Tests of Significance.....	30
<b>CHAPTER FOUR: DATA ANALYSIS, RESULTS AND FINDINGS .....</b>	<b>31</b>
4.1 Introduction.....	31
4.2 Descriptive Analysis .....	31
4.3 Individual Holidays Effect .....	32
4.3.1 New Year Effect.....	32

4.3.2 Easter Holiday Effect.....	33
4.3.3 Labour Day Effect .....	34
4.3.4 Madaraka Day Effect.....	34
4.3.5 Mashujaa Day Effect .....	35
4.3.6 Jamhuri Day Effect.....	35
4.3.7 Christmas Holiday Effect .....	36
4.4 T-test on Abnormal Returns.....	36
4.5 T-test on Cumulative Abnormal Returns .....	37
4.6 Discussion and Interpretation of Research Findings.....	39
<b>CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS</b> .....	<b>41</b>
5.1 Introduction.....	41
5.2 Summary of Findings.....	41
5.3 Conclusion .....	42
5.4 Recommendations .....	43
5.5 Limitations of the Study.....	43
5.6 Suggestions for Further Research .....	44
<b>REFERENCES.....</b>	<b>47</b>
<b>APPENDICES .....</b>	<b>52</b>
Appendix I: Firms Listed at the NSE.....	52
Appendix II: Research Data .....	54

## LIST OF TABLES

Table 4.1: Descriptive Statistics for NASI Pre and Post-Holiday.....	31
Table 4.2: T-test on Abnormal Returns .....	37
Table 4.3 T-test on Cumulative Abnormal Returns.....	37
Table 4.4 T-test on NASI Pre and Post-Holiday Abnormal Returns.....	38



## LIST OF FIGURES

Figure 4.1: New Year Effect.....	33
Figure 4.2: Easter Holiday Effect .....	33
Figure 4.3: Labour Day Effect .....	34
Figure 4.4: Madaraka Day Effect.....	35
Figure 4.5: Mashujaa Day Effect .....	35
Figure 4.6: Jamhuri Day Effect.....	36
Figure 4.7: Christmas Holiday Effect .....	36

## **LIST OF ABBREVIATIONS AND ACRONYMS**

<b>APT</b>	Arbitrage Pricing Theory
<b>AR</b>	Abnormal Returns
<b>ATS</b>	Automated Trading System
<b>CAPM</b>	Capital Asset Pricing Model
<b>CAR</b>	Cumulative Abnormal Returns
<b>CDSC</b>	Central Depository and Settlement Corporation
<b>CMA</b>	Capital Markets Authority
<b>DJIA</b>	Dow Jones Industrial Average
<b>EMH</b>	Efficient Market Hypothesis
<b>GDP</b>	Gross Domestic Product
<b>GDP</b>	Gross Domestic Product
<b>IPO</b>	Initial Public Offer
<b>NASI</b>	NSE All Share Index
<b>NSE</b>	Nairobi Securities Exchange
<b>SCAR</b>	Standardized Cumulative Abnormal Returns

## ABSTRACT

In an efficient market, securities prices fully indicate all the available information at any time and therefore investors cannot beat the market using past stock price behavior to predict future prices. Those who oppose this hypothesis have argued that security market anomalies do exist in the market. The objective of this study was to investigate the existence of the holiday effect at the Nairobi Securities Exchange (NSE). The study modeled as an event study focuses on abnormal returns and cumulative abnormal returns at the NSE over seven public holidays namely: New year, Easter, Labour day, Madaraka day, Mashujaa day, Jamhuri day and Christmas holiday using companies listed at the NSE over a five year period. Stock market returns as measured by NASI was the dependent variable. The event was the specific holiday in this case and the event day represents the day of the holiday and was symbolized as  $t=0$ . The event window was 11 days broken as 5 days before the event date and 5 days after the event date i.e (+5, -5) days. The estimation period for the study was 5 days ahead of the occasion window as well as 5 days post-event period to avoid overlapping of data. Normal returns, abnormal returns and cumulative abnormal returns were computed while non-parametric tests were used to establish significance of the returns. The study finds that most stock returns generated at the NSE after the holiday are positive when compared with the negative post-holiday returns. Non parametric tests show that positive post-holiday returns proportion are more than the negative post-holiday returns which confirms existence of the post-holiday effect. T-tests conducted on the returns confirm that none of the holidays has greater effects than the other. Further, T-tests on pre-holiday and post-holiday abnormal returns establish that there are no significant disparities amongst the pre and the post-holiday abnormal returns. The study recommends that the market microstructure should be aligned to enhance market price discovery and market efficiency. At the same time, further investigations should be modeled on other corporate events and national or international events that influence security returns in financial markets.

# CHAPTER ONE: INTRODUCTION

## 1.1 Background of the Study

Stock return predictability and stock market performance are of concern to investment analysts. Fama (1970), in his theory of Efficient Market Hypothesis (EMH) posit that securities prices depict all the information available and thus rubbishing the possibility of investors to make abnormal returns by leveraging on any mispricing of asset. Though empirical evidence suggests that the hypothesis has begun show errors and patterns that could not be explained by theories available at the time. One of the earliest errors observed in the financial markets is the calendar anomaly which includes the holiday effect (Chia, Lim, Ong & Teh, 2015). The holiday anomalies occur either one day before the holiday or one day after the holiday in what is referred to us as pre-holiday anomalies and post-holiday anomalies respectively. Fields (1934) was the first on to describe the concept of the holiday anomaly after observing disproportionate frequency of return on the days that preceded the holidays. This laid a ground for other researchers such as Marrett and Worthington (2009) who also found evidence of holiday effect on stock market returns.

This research was guided by three theories namely the EMH, the Capital Asset Pricing Model (CAPM) and behavioral finance theory. Efficient market hypothesis contends that the prices of properties in the market are the reflections of the prevailing market conditions and future prices can be predicted with certainty. It further reveals that in a market where all conditions are working well there will be no windfall profits made from investing in the securities market (Baker, Greenwood & Wurgler, 2009). The CAPM contends that the returns of a portfolio are directly correlated to the risks associated with it expressed in beta. For the model to work, it has to conform to the

linear function developed (Riro & Wambugu, 2015). Behavioural finance by Kahnemann and Tversky (1974) purport that at individuals decisions are not purely informed by logic and rationale but rather driven by personal preferences and experiences and so stock returns usually reflect the behaviors of different investors in the market.

In Kenya, the NSE is the only body which undertakes the functions of the stock market. Among many other objectives and roles, are promotion and improvement of a culture of thrift, and/or saving by according alternative premise for investment and helps to transfer the savings to investment in high-yielding enterprises and listed stocks. The NSE is currently trading its shares at a rate of more than 100 million shares monthly, giving it a critical role in Kenya's economic growth (Olweny & Omondi, 2017). There are approximately 12 public holidays in Kenya. NSE being the only securities exchange in Kenya offers a good platform to investigate the holiday anomaly and its influence on stock market returns.

### **1.1.1 Holiday Effect**

Lucey (2005) defines holiday effect as the tendency of share returns to fully show steady trends around holidays with higher and consistent returns on days just before major holidays. Holiday anomalies refer to patterns of return in financial securities such as stocks, bonds and even derivatives that coincide with holidays in a year. The holiday anomalies occur either one day before the holiday or one day after the holiday in what is referred to us as pre-holiday anomalies and post-holiday anomalies respectively (Mehran, Meisami & Busenbark, 2012). According to Dodd and Gakhovich (2011) holiday effect occur when abnormal stock returns are earned around holidays. The

development whereby stock returns are higher on a day before a holiday is referred to as the holiday effect (Rowjee, 2014).

Conducting research on holiday anomaly is important as it is in contrast to established theories of market efficiency which are the efficient market hypothesis and the random walk hypothesis. Malkiel (2003) states that efficiency in the capital markets refers to the incorporation of all the information and expectation of the market players into the prices of the financial assets. If the markets are efficient, investors cannot attract abnormal returns from their investment strategies (Latif, Arshad, Fatima & Farooq, 2011). The presence of holiday anomaly which are patterns in stock returns during holidays would enable investors to earn an abnormal return and therefore it is a contradiction to market efficiency (Ricciardi & Simon, 2000).

The holiday effect can be measured by first determining the level at which stocks traded on normal days without the influence of holidays. The holiday effect is then determined by established the existence of any abnormal returns either pre or post-holiday (Kamau, 2016). Some researchers have taken as many as five days pre-holiday and five days post-holiday such as Kamau (2017) while others such as Hemed (2015) have considered one day pre and one day post-holiday. The presence of the holiday anomaly is indicated by higher risk adjusted excess returns by the pre or post-holiday return as compared to the other days (Rowjee, 2014). This study will measure holiday effect using an event study methodology where the event window will be 11 days broken as 5 days before the event date and 5 days after the event date. The holiday effect will then be determined by the existence of any abnormal returns either pre or post-holiday.

### **1.1.2 Stock Market Returns**

According to Mun, Thing and Siong (2008), stock market return is a parameter used to measure profits from an investment within the time frame of ownership of stocks. It could either be dividends earned or capital gains by stock market investors. According to Jordan and Fischer (2002), stock market return refers to the driving force or the key reward in investment undertakings. Investors utilize it to assess the alternative investments options they could venture into. In addition, the return is divided into two parts, namely the fundamental portion of periodic cash receipts on investments or dividends and the price fluctuations of the invested asset.

Based on information availability, stock returns assess the efficiency and efficacy of stock market in the allocations of shares and equities. The influence the demand and supply of stocks (Taofik & Omsola, 2013). Shares and stock markets are largely information sensitive which influence prices in one way or the other. Stock market are applicable in forecasting about the future trends and development in the market (Širucek, 2013). Firms and corporation gain greater profitability and lead to economic growth when the amount of stock returns is greater (Aliyu, 2011). Thus, uncertainty of stock market returns is a crucial component of economic growth. Inconsistent economic patterns make a nation's investment and consumption difficult (Erdugan, 2012).

According to Mugambi and Okech (2016), stock return is the loss or gain in the value of a share over a specific time frame represented in percentage form. It entails capital gains and other incomes accrued by the investor from the stock performances and often measured using market indexing. Market capitalization is one of the measurements of stock performance; It measures stock market size and liquidity of the stock market which is the ease with which the investors can buy or sell securities. Others include

Turnover ratio; an index that compares the level of transaction costs and market liquidity rating and the All Share Index; which is a stock market indicator of performance and market condition (Daferighe & Sunday, 2012). The current study used NASI to measure stock market return.

### **1.1.3 Holiday Effect and Stock Market Returns**

Market efficient theories assert that it is impossible to exhibit superior returns in a market since current prices reflect all the available information. On the contrary, holiday effect implies that an investor can make superior returns from trading on specific days. The CAPM proposes that the risk of a specific stock is the sole determinant of the expected rate of return of that stock, (Lintner, 1965; Mossin, 1966; Sharpe, 1964). The implication of the CAPM is that investors would not add anything to predicting the expected rate of return to a stock by analyzing the calendar (Bachrach & Galai, 1979).

The EMH states that outperforming the stock market is an impossibility since the market efficiency will ensure that share prices reflect all the relevant information (Fama, Fisher, Jensen & Roll, 1969). This hypothesis implies that an investor would not outperform the market by concentrating on holiday anomalies since the price already incorporates the relevant information. Ross (1976) in his Arbitrage Pricing Theory (APT) begins with the assumption that there should be an absence of arbitrage opportunities in an efficient financial market. Ross's model assumes the presence of a number of sources of systematic risk (firm-specific) which cause variations in expected return values. Accordingly, the APT implies that since the level of a share price is independent of the firm's specific factors, holiday anomaly would not help in exhibiting



superior returns. In conclusion, the various theories that relate to the relationship of holiday anomaly and stock returns do not support the holiday effect.

Mehran, Meisami and Busenbark (2012) argue that different holidays have different meaning to the individuals who participate in them and therefore cause the market participants to act differently when trading in stocks depending on the type of holiday that they are celebrating. In their study on the US stock market, they found out that the returns were high during the joyous holiday while the returns were negative in the holiday with a solemn demeanor. Mehran et al. (2012) argument was confirmed by the results of another study by Shan (2013) who found out that secular holiday had significantly higher pre-holiday returns as compared to the pre-holiday return of the religious holidays.

#### **1.1.4 Nairobi Securities Exchange**

The NSE is one of the renowned exchanges in Africa and its root goes back to the 1920s when a group of traders came together and organized an informal agreement of shares' trading. Before rebranding to NSE it was known as Nairobi Stock Exchange, an association of stockbrokers whose interest was to develop and regulate securities trading in East Africa. The NSE was incorporated in the year 1991 as a private limited company by shares and started operating by introducing a floor trading system. In 2014 the NSE offered its share to the public in the Initial Public Offer (IPO) after successfully completing the process of demutualization. A number of development have occurred in the Kenya capital markets that has led to ease in trading of securities. Among the development is the enacting of the Capital Market Authority Act (Cap 495A), that enabled the start of the Capital Market Authority which is mandated in regulating the operations in the capital market. In the year 2004 November the central depository

system was automated and this enabled the electronic clearing and settlement of trades on the NSE. As per the NSE there are 65 firms that are listed (NSE, 2019).

NSE has developed by leaps and bounds. To improve the efficiency Kenyan Capital markets in Kenya and thus ensuring no market anomaly at the NSE, capital market authority was formed in March 1990. CMA is tasked with the responsibility of ensuring growth and development of capital markets in Kenya, ensuring fairness and efficiency by developing effective regulations that encourages innovations while safeguarding the integrity of the capital markets. To further enhance the operations of NSE, the Central Depository and Settlement Corporation limited (CDSC) was formed under the companies act in 1999. CDSC is tasked with the responsibility of operating a central depository system to provide centralized clearing, depository and settlement services for all securities listed at the bourse (Ibalai, 2017).

The deployment of the Automated Trading System (ATS) in September 2006 at NSE was a milestone to achieving enhanced operational efficiency, transparency and reduced cost of transactions. Automation has enhanced market integrity and spurred investor confidence (Capital Markets Authority, 2007). The ATS has module that hosts trading immobilized corporate bonds and treasury bonds. Along with other statistical reports, automated trading wiped out human interference in the conducting of end-day processes including calculating closing prices and share indices. From automation of trading the exchange was now able to lengthen the trading session from two hours (10:00 am – 12:00 pm) to three hours (10:00 am – 1:00 pm). In February 2008, NSE announced a further extension of trading session by two hours (9.00am to 3.00pm). In addition, settlement and clearing cycle was reduced from T+7 to T+3 days (NSE, 2019).

## **1.2 Research Problem**

In an efficient market, securities prices fully indicate all the information available at any time (Fama, 1970). According to Malkiel (2003), in an efficient market, information is quickly incorporated into the securities prices and therefore investors cannot beat the market using past stock price behavior to predict future prices. From ensuing empirical studies, some researchers have come out strongly to support the EMH while some have come out strongly to oppose the EMH. Those who oppose the EMH have argued that security market anomalies do exist in the market. Holiday anomaly is one of the predominant anomalies identified and studied in previous empirical studies (Marrett & Worthington, 2009).

The NSE has witnessed massive changes which have revolutionized the manner in which business is conducted. The market has witnessed technological changes which have increased the efficiency and effectiveness in trading, trading hours have been increased and the number of listed firms continues to rise. Stock returns at the NSE have been increasing with a reduction in returns occurring during extreme market conditions for instance during times of global financial crisis or election period which affect major stock brokerage firms (CMA, 2017). Being the sole securities exchange in Kenya, NSE provides a suitable context to establish whether the assertion of holiday anomaly exists in the Kenyan stock market.

Empirical studies in the international context exist. Cao, Premachandra, Bhabra and Yih (2009) did a study on the holiday anomaly on the shares traded in the New Zealand stock market. The study found out that the pre and post-holiday return was 10.26 times the average return of other trading days. This implied presence of holiday anomaly in the market. The holiday anomaly was also found to be present by Chia et al. (2015) in

the Hong Kong stock market for the Chinese New Year. In a study conducted by Gnanasekar and Rajesh (2016) to investigate the holiday effect on the Indian stock markets, it was discovered that the Sensex and the NIFTY 50 indices had significantly high abnormal returns on pre and post-holidays as compared to the normal trading days. These findings are however opposed by King and Park (2014).

Locally, Omar (2015) tested for the presence of the pre-holiday anomaly in the Nairobi Securities Exchange using the 65 listed firms from 2010 to 2014. The research found out that the returns for the pre-holiday and post-holiday were significantly higher as compared to the returns on the normal trading days and therefore the research was able to establish the presence of pre-holiday anomaly in the NSE. The findings of this study were confirmed by the findings of Kamau (2016) and Kamau (2017) who investigated the NSE for the presence of the holiday anomaly. These findings are however opposed by the research done by Rasugu (2005) and Osman (2007) who did not find presence of holiday anomaly in the NSE. The lack of consensus on the existence of holiday anomaly at the NSE motivates the current study. Further, this study seeks to go further and rank the holidays. The study attempts to answer the research question; does holiday effect affect stock market returns at the NSE?

### **1.3 Research Objective**

To determine the existence of holiday effect on stock market returns at the Nairobi Securities Exchange

### **1.4 Value of the Study**

The study's findings will be of great importance to the researchers in future as it will act as a reference point. In addition, the findings could also be of paramount importance to researchers and academician as far as identification of research gaps is concerned in

topics relates to the current one on top of it being a basis to review empirical literature by future researcher.

This research will also be of benefit to current and potential investors at the NSE. This study is important as it will assist them to know whether buying and selling shares around holidays can earn them higher returns than buying stocks on other normal days. If the holiday effect exists in NSE market, then investors can compose be trading shares around the holiday periods.

This study will also be of significance to regulatory bodies such as CMA and the government in the formulation and implementation of regulations and policies governing operations of the securities market. As a regulator through the CMA, the government should put into consideration the holiday effect when formulating policies that affect the listed companies.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

A review of theories on which this study is based will be presented in this section. Additionally, prior research on this subject and related areas will be presented. Other discussions in this chapter will cover the determinants of stock market returns, conceptual framework showing how the variables under study relate and summary of the literature under review.

### **2.2 Theoretical Framework**

Theoretical framework provides a foundation for understanding the theoretically expected relationship among the study variables. The theories selected for this study are the efficient market hypothesis, capital asset pricing model and the behavioral finance theory.

#### **2.2.1 Efficient Market Hypothesis**

Fama (1970) who is one of the proprietors of EMH propagated the view that the trading value for stocks refers to its fair value and subsequently, investors cannot obtain underestimated stocks or inflate prices of stocks in sale arrangements. As per the above, premised upon that, specialist market timing or stock selection does not lead in the overall market being outperformed, so the only way a financier would find advanced earnings is by accidental or by buying dangerous savings. According to EMH, there exist three methods of effectiveness: Weak form efficiency results whereby securities prices (bonds, property, stocks) replicate all historical public information. Second is the semi-strong efficiency which emanates where stock prices replicate historically openly accessible information such that charges vary rapidly to replicate release of new info.

Lastly is the strong method of effectiveness which proclaims that securities' prices reflect historical, private and public information.

While the EMH has earned numerous validations, various criticisms have been brought forth. Contenders of the EMH further cite occurrences such as the 1987 security exchange where Dow Jones Industrial Average (DJIA) fell by approximately 20% in a single day which contends that stock costs largely stray from the normal. Contenders have questioned the faith in reasonable marketplaces for most of the 2000s currency connected emergencies (Asava, 2013). Consequently, the defenders of the hypothesis have conveyed that marketplace aptitude is not meant for having no unsteadiness around the coming future, it is a depiction of the realm which may not normally persist unbroken, and the marketplace is largely effective for speculation resolutions for most persons (Asava, 2013).

The efficient market hypothesis is simply used where there are competing portfolios in the economy. It further assumes there exist no additional costs on purchasing and selling (Lawrence, McCabe & Prakash, 2007). The major factor considered when making investment decisions is the present stock returns a factor expected to continue for unforeseeable future. There are factors which make it difficult for this model to hold such as the market fluctuation and economic instability (Lawrence, McCabe & Prakash, 2007). The implication here is that the market should not have any anomaly especially the holiday anomaly if the markets are efficient as advocated by the efficient market hypothesis. The study is relevant to the current study as it posits that in an efficient market, holiday effect and other market anomalies should not exist.

### **2.2.2 Capital Asset Pricing Model**

CAPM as its commonly known was put forward by Sharpe (1964) and Lintner (1965) states that the returns of a portfolio are directly correlated to the risks associated with it expressed in beta. For the model to work, it has to conform to the linear function developed (Akkaya & Cimen, 2013). Each stock is matched with its corresponding beta co-efficient when the investor intends to identify the returns expected from a particular portfolio. Returns are thus determined by the prevailing economic conditions, which are the proxies towards attaining efficient market (Drogalas Stergios, Bakas & George, 2007). Risks associated with a portfolio are major factors, which influence whether an investor is going to invest in that particular portfolio or not.

The CAPM expresses a positive association amongst an asset's returns and its systematic risk as measured by beta. The resulting regression line that describes this relationship is known as the security market line (Akkaya & Cimen, 2013). CAPM assumes a well hedged portfolio where all the unsystematic risks are eliminated through portfolio building leaving the systematic risks as the only relevant risk which is measured using the beta coefficient. The theory therefore reveals that there exist a direct association linking returns to risks associated with a portfolio. This theory has been criticized for assuming only one source of risk while in reality there are numerous sources of risk as shown later by the arbitrage pricing theory (Ross, 1976). The theory is applicable to this study since it recognizes that there exists some systematic risk that influences stock market returns. It is therefore worthwhile to investigate whether holiday effect and other macro-economic variables selected as control variables such as economic growth, interest rates and inflation have an influence on stock market returns.



### **2.2.3 Behavioral Finance Theory**

Behavioural finance was brought to the lime light in the 20<sup>th</sup> century, with Kahnemann and Tversky (1974) alluding the biases and behaviours which prevent human beings from being rational. They labeled these as representation, availability bias and anchoring. These inculcate stereotypic tendencies in individuals forcing them to make decisions based on whimsical beginnings and attain the likelihood of an occurrence based on previous events. According to behavioural finance, stock prices are influenced by emotions, heuristic errors and biases, social influence and frame dependence, and thus not be the true value (Chandra, 2008).

Behavioural finance critics largely support the EMH. Fama (1998) documented that despite the existence of market anomalies that cannot be solved using the modern financial models, EMH cannot be fully dismissed for behavioral finance. He also established that behavioural finance describes the consolidation of market anomalies that occur as a result of market efficiency. Critics of behavioural economics noted that heuristics are short-term justifications that can be solved in the long run. They often state that behavioural economics are subjected to looking for failures of cognition and computation. Individuals are known to react to new information evaluating the broad dimension of other underlying matters thus resulting to non-proportional changes in stock prices. Alternatively, individuals have a negative perception against a particular security would not invest despite underlying positive information. The theory relates to the study in that it identifies probabilistic prejudices as factors that prevent investors from behaving rationally and influencing the stock price and the returns of the stock in effect.

## **2.3 Determinants of Stock Market Returns**

Stock market returns is an area of immeasurable significance to the stock market investors reason being which it directly impacts their wealth. Following are factors perceived to play quite a significant role in the general stock volatility.

### **2.3.1 Holiday Effect**

According to Mehran et al. (2012) the demeanor, attitude, mood and daily experiences of an individual is affected by the holidays that they observe. The behavior of the investor is governed by the moods which can in turn determine stock market returns and liquidity. The investors can get positive moods before the holidays which can affect their trading patterns and hence lead to change in stock return (Shankar & Kallarackal, 2016). Therefore emotions play an important role in financial markets. Behavioral finance theory therefore explains the reason for the existent of stock return anomalies and more especially the holiday anomaly.

Mehran, Meisami and Busenbark (2012) argue that different holidays have different meaning to the individuals who participate in them and therefore cause the market participants to act differently when trading in stocks depending on the type of holiday that they are celebrating. In their study on the US stock market, they found out that the returns were high during the joyous holiday while the returns were negative in the holiday with a solemn demeanor. Mehran et al. (2012) argument was confirmed by the results of another study by Shan (2013) who found out that secular holiday had significantly higher pre-holiday returns as compared to the pre-holiday return of the religious holidays.

### **2.3.2 Economic Growth**

According to Osoro and Ogeto (2014), an economy that is growing reports positive GDP that increases the need for loans. Any economic output growth will increase anticipated cash flows and consequently cause an increase in share prices with a reverse effect in the recession (Kirui, Wawire & Onono, 2014). The empirical literature available indicates that the financial systems of developed countries including the stock market are extremely efficient (Beck, Demirgüç-Kunt & Levine, 2003). Stock market growth is in addition positively associated to economic stability and fiscal and monetary policy. Higher-income nations have generally advanced capital markets, as opposed to low-income ones (Cull, 1998).

GDP reports are of great interest to the investors because the overall health of the economy can be ascertained using this measurement. The economic growth health has a long-run effect of having corporate with high profits and better stock market performance whereas the short run effects are trends that are unpredictable even when the economic growth is positive (Beck et al., 2003).

### **2.3.3 Inflation Rate**

Tucker (2007) describes inflation as the general rise price levels of services or goods in any given economy. Inflation is relatively general and is not specific to a type of product or a service. Sloman and Kevin (2007) state that inflation can take two forms either rise in the demand of goods or the cost-push type of inflation. A rise in market demand would cause a Demand-pull inflation which results into higher prices and relative increases in output for a given economy. Cost push inflation on the other hand would result from increases in production costs which would affect firms who would

ultimately transfer these costs to the consumers through increased prices of goods (Hendry, 2006).

As a result of high inflation rates there are higher prices that are likely to slow down business and decrease earning for companies. Interest rates also tend to rise as result of high prices. Fama (2000) argued that real economic activity is negatively correlated to inflation that would consequently positively relate to the performance of a market. Therefore, the stock index ought to correlate with the expected inflation negatively, and with short term interest rates acting as a substitution same to the IFE.

#### **2.3.4 Interest Rates**

The interest rate serves as an income function and it mainly helps in the mobilization of financial resources and ensures efficient resource utilization so as to bring economic development (Osoro & Ogeto, 2014). The annual price charged on a borrower by a lender so as to avail loans to the borrower in form of the percentage of the sum of the loaned amount is called the interest rate. The neo-classical theory of interest rate suggests that, the loans' investment cost for the business persons becomes costly when the interest rates increase leading to a shrink in the investment opportunities in an economy (Barnor, 2014).

The neoclassical theory that explains rates of interest states that, the loans' investment cost for the entrepreneurs becomes expensive when the interest rates increase leading to a shrink in the investment opportunities in an economy (Barnor, 2014). The rate of interest is assumed to be the capital cost and the decisions of investors are influenced by changes in interest rates (Olweny & Omondi, 2010). Rehman, Fauziah and Sidek (2009) state that increased discount rates and interest rates will lower the cash flows'

present value leading to increased opportunity costs of holding cash, the interest rates level, which finally results to stocks being substituted for bonds.

### **2.3.5 Unemployment Rate**

Assume that the stock and labor markets are in equilibrium. On the other hand, assume that there is an unfavorable shock on the demand for labor which leads to a decline in wages and salaries and increased unemployment holding all other factors constant. Increased unemployment translates to decline in disposable income for the affected employees and thus a fall in demand for shares. Durability of stocks means that the short run supply of stocks is fixed therefore stock prices will decline in this scenario (Vermeulen & Ommeren, 2005). In short, share prices decrease as the money supply increases, *ceteris paribus*.

According to Brueckner and Zenou (1999) and Zenou and Smith (1995), unemployment and share prices exhibit a negative association. Both theoretical and empirical literature purport that the thriving of a nation is directly linked with the economy, this includes variables including unemployment, GDP, inflation, remittances, money supply, interest and exchange rate. The share price movements are influenced by variations in economic aspects and these fundamentals' affect future prospects (Gazi, Uddin & Mahmudul, 2010).

### **2.3.6 Money Supply**

Money supply entails a country's legal tender together with all other liquid instruments in circulation within the economic at specified duration of time. It would comprise of the money in different forms such as notes and coins, cash and bank balance in current and saving accounts as well as short-term investments. Money supply affects a country's economy largely and it is therefore imperative for a monetary authority to

ensure there is regulation of the amount circulating by implementing monetary policies (Osamwonyi, 2003).

Tobin (1969) discovered a clear connection of the variations amongst the monetary policy and the stock market. The study stressed on significance of stock returns as a linkage of the economic effects. A strong linkage of stock returns and economy was revealed. Additionally, Tobin discovered that there emerged deficits in budgets due to growth in money supply that consequently influenced the stock returns. This implied a positive association between money in circulation and stock market returns.

### **2.3.7 Exchange Rates**

This is the conversion rate of one currency into another (Mohan & Chitradevi, 2014). Changes in exchange rate influence commodity prices, which consequently creates competition between the foreign and domestic producers. A rise in the domestic currency's value increases the price of domestic goods compared to the foreign goods which shifts demand to foreign goods from domestic goods. An appreciation of currency in a county that is dependent on exports reduces her exports' competitiveness which negatively influences the domestic stock market (Kirui et al., 2014).

A rise in the currency of a country lowers the imported goods' cost, which encourages the production of inputs in the market of the emerging economies (Kuwornu, 2012). Accordingly, the depreciation of the domestic currency against foreign currencies, under elastic demand reduces the price of exports thus increasing the volume of the exports of the country (Kuwornu, 2012). The micro economic perspective holds that rate of foreign exchange affects the firm value whereas the macro -economic perspective holds that it affects the economy as a whole. As such, the volatility of

exchange rate volatility affects the financial sector of country, precisely the stock market (Obura & Anyango, 2016).

## **2.4 Empirical Review**

Research has been carried out in both the local scene and the global scene to upkeep the association amongst holiday effect and stock market returns but these studies have produced inconsistent results.

### **2.4.1 Global Studies**

Mehran, Meisami and Busenbark (2012) carried out a study to examine the impact that the nine Jewish holidays had on the US stock market returns. They collected the data of the S&P 500 for 20 years from 1990 to 2009 from Yahoo Finance which they then adjusted for dividends and stock splits. They then computed the daily market returns and then placed it into two classifications: The Jewish holiday and non-holiday. They then used regression and event study to measure the abnormal returns on the Jewish holidays and the windowed periods during the day. They discovered that there was an increase in the daily returns in the nine Jewish holidays which was 32 times greater than the other trading days of the year. They also discovered that joyous holidays had a significantly positive relationship with the stock market returns while the solemn holidays had a significantly negative returns. Using the Fama-French four-factor model, they were able to determine that the Jewish holiday impacted all the stocks regardless of momentum or book-to-market.

In a study for the holiday effect on the stocks of Hong Kong Stock, Chia et al. (2015) found existence of pre and post-holiday anomaly. This study collected data from Hong Kong stock market between the time frame January 1998 and July 2012. The returns were then examined using the OLS regression and GARCH-M model to test for the

anomaly and also for the volatility of returns. The results from the study showed that there were significantly higher returns on the two trading days before and after the Chinese New Year holiday. This implied that pre and post-Chinese New Year effect was present. The pre-holiday effect was also found to be stronger than the post-holiday effect.

In a study carried on different cultural New Year holidays around the globe in order to investigate whether they had an effect on the stock returns, Bergsma and Jiang (2016) found out that stock markets outperform on the days that surrounded a cultural New Year. The study used data from 11 key international markets which celebrated six cultural New Year holidays that did not occur on January. The study found out that on average the stock earned 2.5% higher abnormal returns in all the markets in the month of cultural New Year in comparison to the other months of the year. Their study suggest that the positive holiday moods and the cash infusions that occur prior the cultural new year cause the stock prices to rise hence the higher returns in the months with the cultural New Year.

A study conducted by Shankar and Kallarackal (2016) on the Indian BSE Sensex indices from December 2009 to December 2015 showed presence of pre and post-holiday anomaly. The study considered the six public holidays celebrated in India. They used the Wilcoxon signed-rank test of parametric in order for them to compare the two related samples and assessed whether their population mean rank differed. They were able to find from their results that there was significant pre and post-holiday anomaly in the Sensex index returns.

In a study conducted by Gnanasekar and Rajesh (2016) to investigate the holiday effect on the Indian stock markets, it was discovered that the Sensex and the NIFTY 50 indices



had significantly high abnormal returns on pre and post-holidays as compared to the normal trading days. The data for the study was collected from the official website of NSE and the BSE and was for the period from 1st April 2006 to 31st March 2016. The data was analyzed and tested using descriptive statistics OLS regression and GARCH model.

#### **2.4.2 Local Studies**

Hemed (2015) focused on the pre-holiday effect and stock market returns at the NSE in the four year period from 2010 to 2013. An event study approach was adopted. Descriptive research design utilizing 5 pre-event days was used. The study used the daily stock prices and market return model to compute the normal return, expected return as well as the abnormal return. The research established the occurrence of holiday effect with statistically significant abnormal returns

Atala (2015) explored the Muslims holidays' effect on stock returns of companies quoted at the NSE. The study used the event methodology for a two year time frame between 2011 and 2013. Within the five day event window period, the survey used 30 surrounding days before and after the holiday. For the comparison or event period, normal returns, expected return as well as the abnormal returns were assessed from daily prices with the aid of the comparative period return approach which produces the estimates of firm-specific expected returns. The holiday effect of the holiday was evaluated using statistical differences amongst the average daily returns in the event period and mean daily return in the period contrasted. The survey revealed that holiday effect linked with 60 % of the Muslim holidays researched..

Omar (2015) investigated the Nairobi Securities Exchange for the presence of holiday anomaly for seven public holidays. The seven public holidays which were considered

were: New Year, Easter, Labour Day, Mashujaa Day, Madarake day, Jamhuri Day and Christmas holiday. The study considered the returns of five days before the holiday and five days after the holiday. The returns for both the pre-holiday and post-holiday were significantly high as compared to the returns of the other days. The research therefore established that the NSE exhibited both pre-holiday and post-holiday anomalies for the year 2010 to 2014. The research also established that there are no significant disparities between the pre and the post-holiday anomalies on the returns of the shares traded in the NSE.

Kamau (2016) sought to investigate the existence of the holiday effect on stock returns at the NSE. Daily stock market returns were computed for five days before the holidays and five days after the holidays. The results were further analyzed by computing the annual return and cumulative annualized preholiday and post-holiday returns and subsequently computing the abnormal returns. Secondary data used in this study consisted daily NASI indices extracted from the NSE for the period 1st March 2008 to 31<sup>st</sup> August 2016. This study utilized a descriptive research design and used the Wilcoxon signed rank test procedure to compute the annualized cumulative returns for holidays at the NSE. The results of the joint Wilcoxon signed rank test for all holidays show that while trading at the NSE, trading in shares five days before and five days after a holiday consistently over a period of time can enable an investor to make higher profits.

Kamau (2017) investigated the impact of all the eight Kenyan holidays on holiday anomaly. The research used the closing share prices derived from the NSE website between the time frame 2010 and 2015. The study established that holiday anomaly was influenced by the eight holidays differently. The state holidays produced higher

return than the religious holidays. The survey further sought to ascertain the sectors in the NSE that were more likely to experience holiday anomaly. An equality of mean test was undertaken to establish the variation between the mean returns for different sectors. The findings revealed that there was no single sector that was more prone to the holiday anomaly than the other.

## **2.5 Summary of the Literature Review and Research Gaps**

This section has largely focused on the theories that inform the study. The theories are; efficient market hypothesis, CAPM model and behavioural finance theory. The section further focuses on the major stock market returns' determinants. The reviewed empirical literature highlights the studies that have been carried out on the subject.

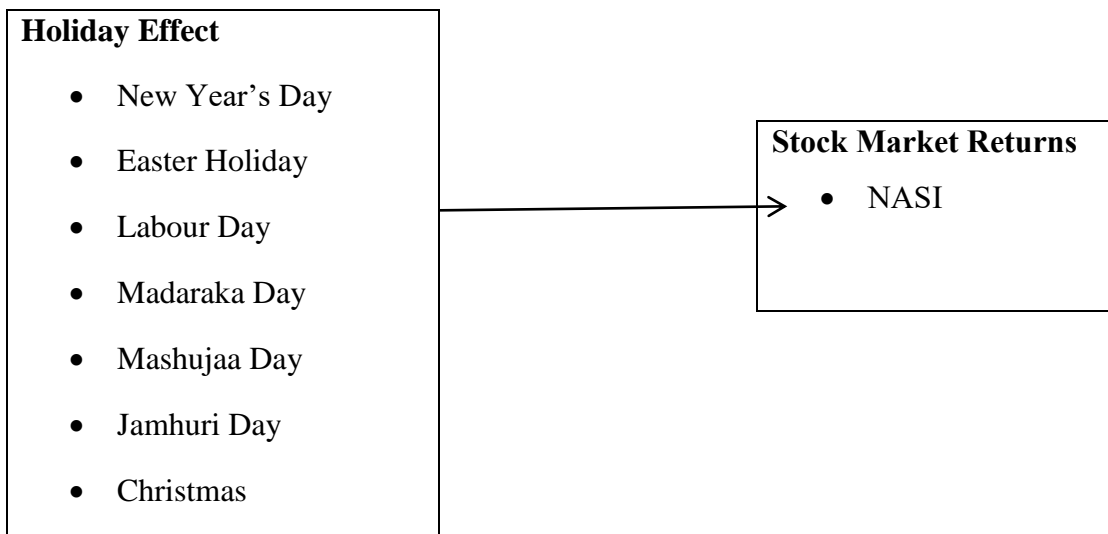
From the empirical review, it is evident that the holiday anomaly is one of the most researched anomaly as different authors have researched different markets to identify whether it is present. Studies carried out in Kenya by Omar (2015) and Kamau (2016) have shown presence of holiday anomaly. These studies however did not investigate how the different holidays affect the stock market returns. There is therefore a research gap on how these different holidays affect the stock market return. Further, there is no consensus on the existence of holiday effect at NSE as some studies such as Rasugu (2005) and Osman (2007) finds no evidence of holiday effect at NSE.

## **2.6 Conceptual Framework**

This is framework showing the anticipated association between the variables of the study. The independent variable is holiday effect classified into 7 public holidays in Kenya. Stock market returns was the dependent variable as measured by NASI.

**Independent variable**

**Dependent variable**



**Figure 2.1: The Conceptual Model**

**Source: Researcher (2020)**

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

To ascertain how stock market returns at the NSE are affected by holiday effect, a methodology was essential in outlining how the study was done. The sections included in this chapter are; the design, data collection, diagnostic tests and analysis.

### **3.2 Research Design**

This study employed a mixed research design. Event study methodology was used for the purpose of identifying the susceptibility of the seven holidays to the holiday anomaly in the NSE. A descriptive research design was then employed for the purpose of describing the attributes of the various variables under study. This design was adopted because the researcher needed to know the status of the affair as they are (Khan, 2008). This research strategy was suitable for the research as the investigator was acquainted with the spectacle under exploration though need to recognize more with regard to nature of associations amongst the study sub variables (Cooper & Schindler, 2008).

### **3.3 Target Population and Sample Design**

As indicated by Burns and Burns (2008), population denotes the individuals, objects or subject of interest that the study aims on examining. The population of the current study consisted of all the 63 firms listed at the NSE that was actively trading between 2014 and 2019. Because of the comparatively small population a census was done of all firms.

### **3.4 Data Collection**

Secondary data was used in undertaking this study. The law requires the quoted firms

to publish their reports with the Capital Markets Authority (CMA). The data mainly relate to stock prices of listed firms and NASI share index figures for related stocks on a daily basis, as tabulated and stored by the NSE, for the period around the selected event dates. The event period consisted of eleven (11) days (5 days before a given holiday, day of holiday, and 5 days after the holiday). The data was gathered for the last 5 years from 2014 to 2019.

### **3.5 Diagnostic Tests**

To determine the viability of the study model, several diagnostic tests were done, which included normality test, test for Multicollinearity, test for homogeneity of variances and the autocorrelation test. Normality tests the presumption that the residual of the response variable have a normal distribution around the mean. The test for normality was done by the Shapiro-wilk test or Kolmogorov-Smirnov test. In the case where one of the variables was not normally distributed it was transformed and standardized using the logarithmic transformation method. Autocorrelation measures how similar a certain time series is in comparison to a lagged value of the same time series in between successive intervals of time. This was measured by the Durbin-Watson statistic and in case the assumption was violated the study employed robust standard errors in the model (Khan, 2008).

Multicollinearity occurs when an exact or near exact relation that is linear is observed between two or several predictor variables. Variance Inflation Factors (VIF) and the levels of tolerance were used. Any multicollinear variable should be dropped from the study and a new measure selected and substituted with the variable which exhibits multicollinearity. Heteroskedasticity tests if the variance of the errors from a regression is reliant on the independent variables. The study assessed for heteroskedasticity using the Levene test and in case, the data fails the assumption of homogeneity of variances the

study used robust standard errors in the model (Burns & Burns, 2008).

### **3.6 Data Analysis**

The data analysis used was quantitative in nature analyzed using the event study methodology. The event is the specific holiday in this case and the event day represents the day of the holiday and is symbolized as  $t=0$ . The event window was 11 days broken as 5 days before the event date and 5 days after the event date i.e (+5, -5) days. The estimation period for the study was 5 days ahead of the occasion window as well as 5 days post-event period to avoid overlapping of data.

To fully assess the effect of an event, MaCkinlay (2009), indicates that normal and abnormal returns need to be calculated. Actual returns are returns that would be expected if the event does not occur while the abnormal returns are the actual returns minus the expected returns of the asset over the event window. In this study, the focus was to find out the effect of a holiday on stock returns. The study used statistical methods to compute the abnormal returns (AR) from the daily data after which the results were analysed to obtain the Cumulative Abnormal Returns (CAR).

#### **3.6.1 Measuring Daily Movements**

The daily stock price movement at one particular stage was computed by subtracting the previous stock price from the actual stock price and dividing the difference by the previous stock price.

Stock Price Movement = (Actual stock price – Previous stock price)/ Previous stock price

Where the actual stock price was the average price of the lowest and highest stock price at a given day as obtained from the securities exchange.

The study used the NASI share index as a benchmark to compute the expected returns for firms listed at the NSE. Studies done by Mghendi (2014), Kiano (2015) and Chia et al. (2015) stated that the market model rated as the best tool. Abnormal returns (AR) were calculated using the market model to yield the CAR and SCAR.

### 3.6.2 Abnormal Returns

The following formula was used to calculate the abnormal returns

$$AR_{it} = R_{it} - (\alpha_i + \beta_i R_{mt})$$

Where;

$AR_{it}$  = Abnormal return of stock  $i$  at time  $t$

$R_{it}$  = Return of stock at time  $t$

$R_{mt}$  = market return at time  $t$

$\alpha$  and  $\beta$  = constants

### 3.6.3 Cumulative Abnormal Returns

The cumulative abnormal returns were computed as:

$$CAR_{i,t} = \sum_{t=1}^n AR_{it}$$

Where;

$CAR_{i,t}$  – cumulative abnormal return on stock  $i$  attained in the event window  $n$ ,  $n$  –

The event window

### 3.6.4 Standardized Cumulative Abnormal Returns

The Standardized cumulative abnormal returns (SCAR) were calculated as:

$$SCAR_{iT} = \frac{(CAR_{it})}{\sigma(CAR_{it})}$$

Where;



$\sigma$  (CAR<sub>it</sub>) - The standard deviation of CAR's adjusted for forecast error.

### 3.6.5 Operationalization of Study Variables

Variable	Measurement	Supporting Literature
Stock market returns	NASI	Daferighe and Sunday (2012)
Holiday effect	Event period	MaCkinlay (2009)

### 3.6.6 Tests of Significance

T-test statistic was used to measure the statistical significance of the ARs and CARs, and SCARs reported during the event window at 5% significance level. T-test statistic assumes a normal distribution of data. The test was also used to establish significance of individual variables in the regression model. F test was used to test the significance of the overall regression model.

## CHAPTER FOUR: DATA ANALYSIS, RESULTS AND FINDINGS

### 4.1 Introduction

This section presents the analysis, findings and interprets the secondary data collected from CBK and KNBS. The research studied how holiday effect influences stock market returns at the NSE. The objective was addressed using an event study methodology. The event is the specific holiday in this case and the event day represents the day of the holiday and is symbolized as  $t=0$ . The event window was 11 days broken as 5 days before the event date and 5 days after the event date i.e (+5, -5) days. The estimation period for the study was 5 days ahead of the occasion window as well as 5 days post-event period to avoid overlapping of data.

### 4.2 Descriptive Analysis

Descriptive statistics were applied to give deeper insight on the data patterns. The statistics produces a representation of the mean, minimum and maximum values of variables presented including the standard deviations. Table 4.1 below displays the characteristics of each variable.

**Table 4.1: Descriptive Statistics for NASI Pre and Post-Holiday**

	NASI normal	NASI Pre-holiday	NASI Post-holiday
N Valid	1191	33	33
Missing	0	1158	1158
Mean	.0005891	.0016039	.0028852
Std. Deviation	.00670729	00426060	.00761770
Skewness	-.021	-1.385	2.700
SE of skewness	.071	.409	.409
Kurtosis	3.756	2.587	5.152
SE of Kurtosis	.142	.798	.798
Range	.07307	.01978	.03832

**Source: Research Findings (2020)**

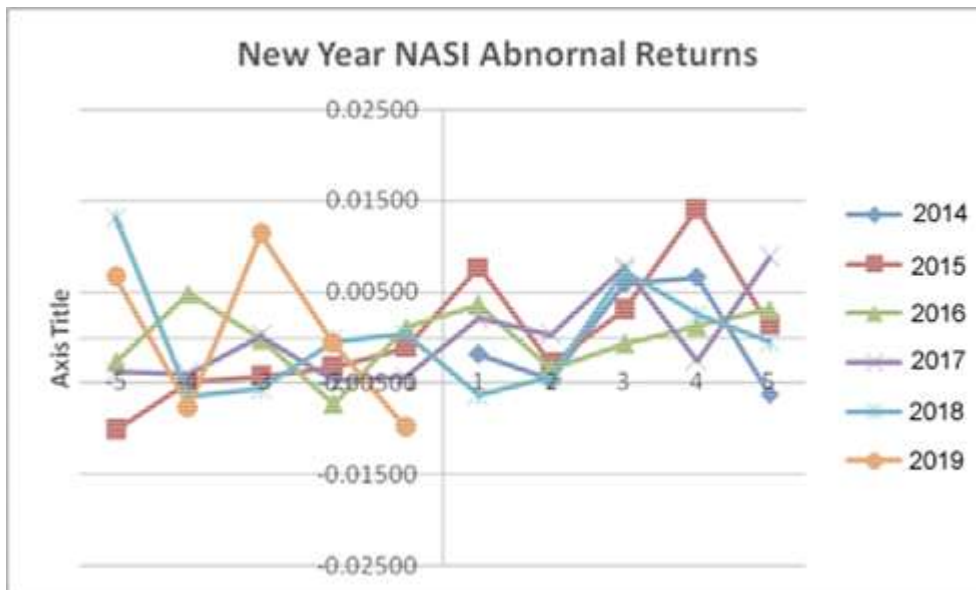
Table 4.1 above presents that the average post-holiday NASI returns is 0.0028852 (0.2 percent) and is greater than the average pre-holiday NASI returns at 0.0016039 (0.16 percent). On average, the normal days average returns are 0.0005891 (0.058 percent). The post-holiday NASI returns are positively skewed at 1.929 with a kurtosis of 5.152. The Pre-holiday NASI returns are negatively skewed at -1.385 with a kurtosis of 2.587 and the normal days returns are negatively skewed at -0.021 with a kurtosis of 3.756.

### **4.3 Individual Holidays Effect**

The study examined the Pre and Post - effects of seven public holidays in Kenya, that is New year (1<sup>st</sup> January), Easter holidays, Labour day (1<sup>st</sup> May), Madaraka day (1<sup>st</sup> June), Mashujaa day (20<sup>th</sup> October), Jamhuri day (12<sup>th</sup> December), Christmas holidays (25<sup>th</sup> and 26<sup>th</sup> December).

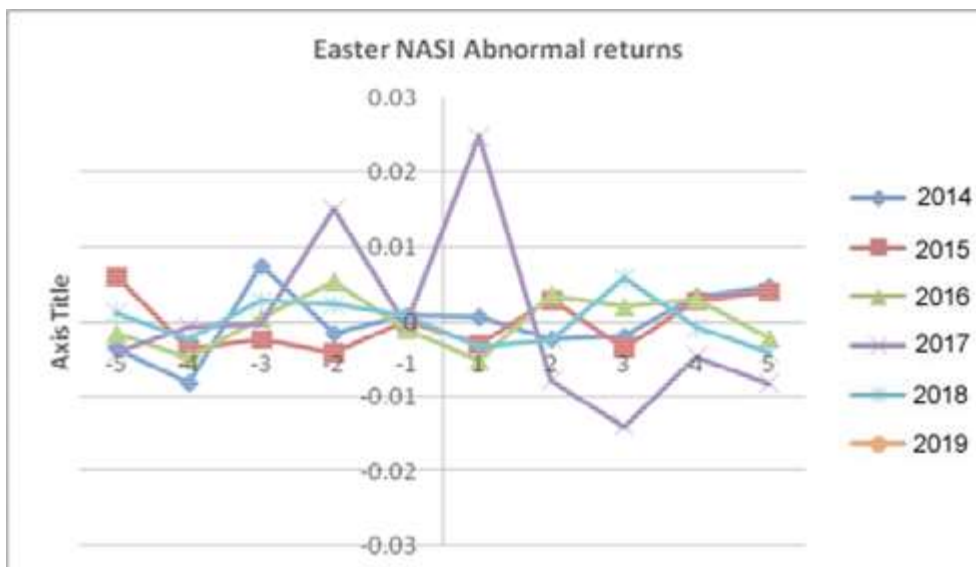
#### **4.3.1 New Year Effect**

As indicated in figure 4.1, the pre new year and post New Year abnormal returns are not consistent over the years with increases and subsequent declines. However, except in year 2018, in 2015, 2016 and 2017, the levels of abnormal returns one day after the holiday are relatively higher than the last day to the holiday.



**Figure 4.1: New Year Effect**

#### 4.3.2 Easter Holiday Effect



**Figure 4.2: Easter Holiday Effect**

As indicated in figures 4.2, a day prior to the Easter holidays, except for 2015 and 2018, the abnormal returns decline and rise on the day after the holiday. For the years 2015 and 2018, the abnormal returns increases and declines on a day after the holiday. A day prior to the holiday in all the years, the abnormal returns are minimal and swings in subsequent days after the holiday to positive and negative levels.

### 4.3.3 Labour Day Effect

Figure 4.3 shows that the NASI abnormal returns swing around the Labour Day holidays. In the years 2015, 2017 and 2018, the one day post-holiday abnormal returns are greater than the one day preholiday abnormal returns.

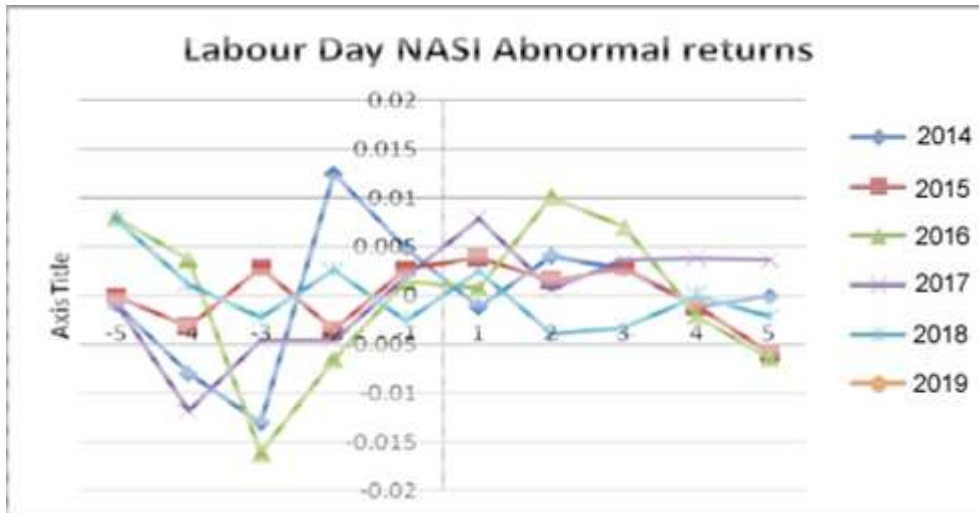
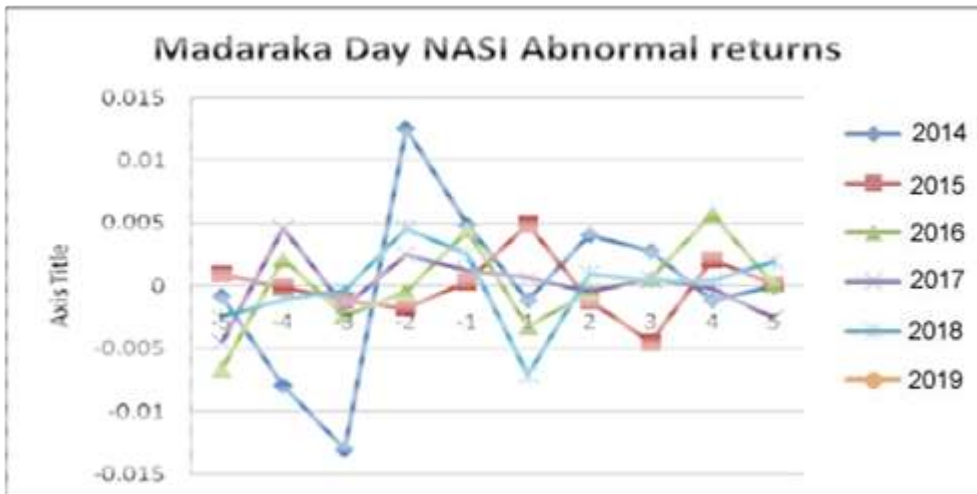


Figure 4.3: Labour Day Effect

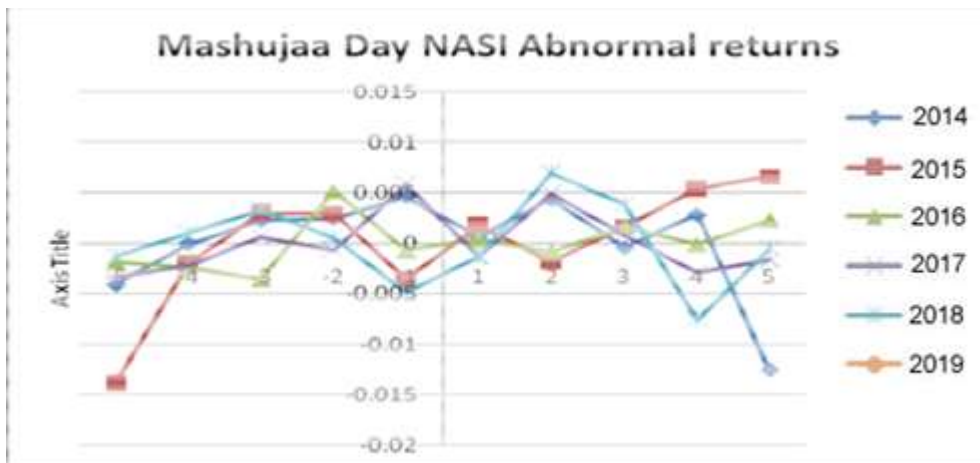
### 4.3.4 Madaraka Day Effect

Figure 4.4 above shows the NASI abnormal returns trend during the Madaraka day holiday period. The one day post Madaraka day NASI abnormal returns for 2015 increases as compared to the pre Madaraka day NASI abnormal returns. For 2014, 2016, 2017 and 2018, the one day post Madaraka day NASI abnormal returns decline as compared to the pre Madaraka day NASI abnormal returns.



**Figure 4.4: Madaraka Day Effect**

#### 4.3.5 Mashujaa Day Effect

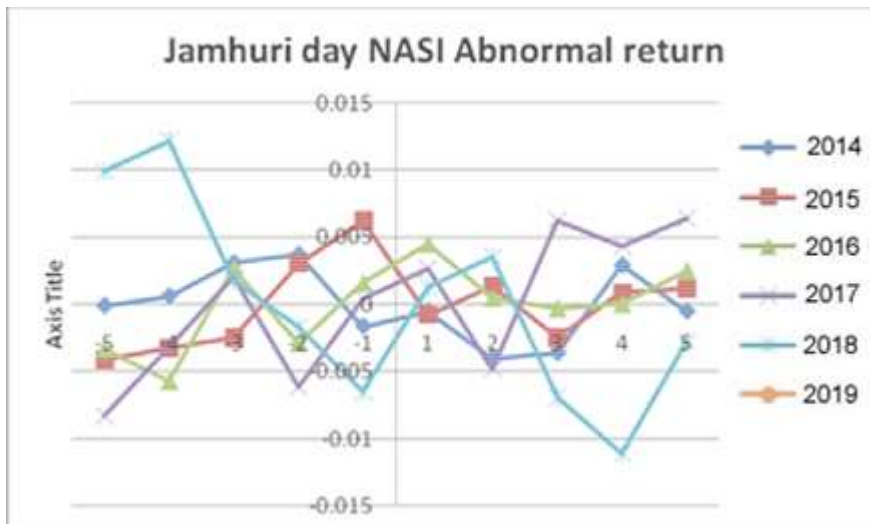


**Figure 4.5: Mashujaa Day Effect**

Figure 4.5 shows that the 2015, 2016 and 2018 post mashujaa day NASI abnormal returns exceed the pre Mashujaa day NASI abnormal returns. However, in 2017, and 2014, the Pre mashujaa day NASI abnormal returns exceed the post mashujaa day NASI abnormal returns. The abnormal returns however swing between the positive and the negative over the years.

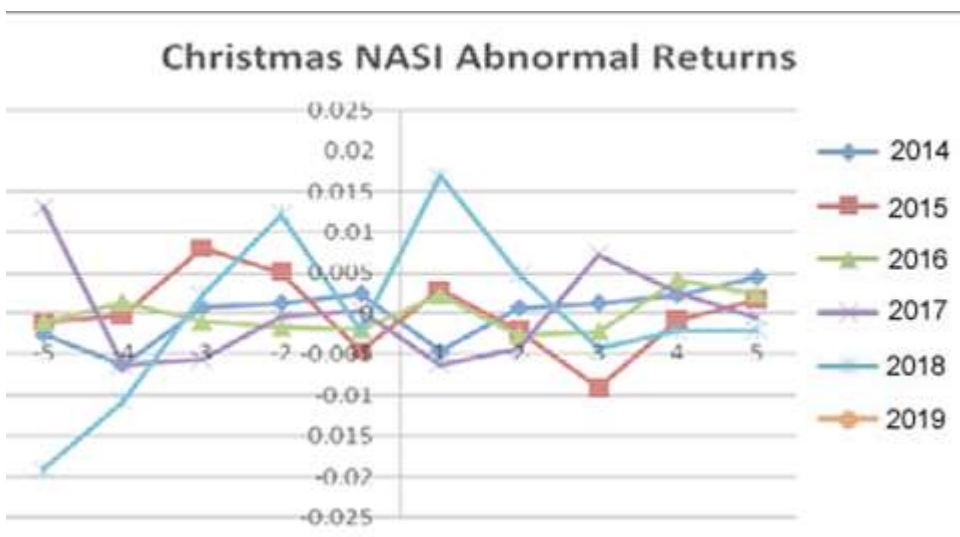
#### 4.3.6 Jamhuri Day Effect

Figure 4.6 shows that the NASI post-holiday abnormal returns for 2014, 2016, 2017 and 2018 are greater than the NASI pre-holiday abnormal returns.



**Figure 4.6: Jamhuri Day Effect**

#### 4.3.7 Christmas Holiday Effect



**Figure 4.7: Christmas Holiday Effect**

As indicated in Figure 4.7, the pre-Christmas NASI abnormal returns for 2014 and 2017 are greater than the post-holiday abnormal returns. The 2018, 2016 and 2015 post-Christmas NASI abnormal returns are greater than the preholiday abnormal returns.

#### 4.4 T-test on Abnormal Returns

Tables 4.3 below presents the descriptive statistics as the number of observations (N), the mean and the standard deviation for the New year, Easter, Labour day, Madaraka day, Mashujaa day, Jamhuri day and Christmas abnormal returns (AR) using NASI. As

indicated in table 4.2 for the NASI abnormal returns (AR), for the new year AR, the standard error of the sample mean is 0.0008, for the Easter AR, the standard error of the sample mean is 0.0008, for the Labour day AR, the standard error of the sample mean is 0.0007, for the Madaraka day AR, the standard error of the sample mean is 0.0005, for mashujaa day AR, the standard error of the sample mean is 0.0005, for the Jamhuri day AR, the standard error of the sample mean is 0.0006 and for Christmas AR, the standard error of the sample mean is 0.0008. These sample mean standard errors are relatively small implying the likelihood that the sample mean is close to the population mean.

**Table 4.2: T-test on Abnormal Returns**

	<b>One-Sample Statistics</b>			
	N	Mean	Std. Deviation	Std. Error Mean
New Year	50	.000000	.0057248	.0008096
Easter	50	.000000	.0059364	.0008395
Labour Day	50	.000000	.0055819	.0007894
Madaraka day	50	.000000	.0039452	.0005579
Mashujaa day	50	.000000	.0041659	.0005891
Jamhuri Day	50	.000000	.0044819	.0006338
Christmas	50	-.000083	.0058959	.0008338

**Source: Research Findings (2020)**

#### 4.5 T-test on Cumulative Abnormal Returns

The descriptive statistics of number of observations (N), the mean and the standard deviation for the New year, Easter, Labour day, Madaraka day, Mashujaa day, Jamhuri day and Christmas cumulative abnormal returns (CAR) using NASI are presented in tables 4.3 below

**Table 4.3 T-test on Cumulative Abnormal Returns**

	<b>One-Sample Statistics</b>			
	N	Mean	Std. Deviation	Std. Error Mean



New Year	50	.000061	.0074830	.0010583
Easter	50	.000116	.0080509	.0011386
Labour Day	50	.000216	.0084285	.0011920
Madaraka day	50	.000006	.0053005	.0007496
Mashujaa day	50	.000118	.0055807	.0007892
Jamhuri Day	50	-.000139	.0071072	.0010051
Christmas	50	-.000288	.0088226	.0012477

**Source: Research Findings (2020)**

As indicated in Table 4.3 above, the standard error of the mean new year NASI cumulative abnormal returns is 0.0010, the standard error of the Easter NASI cumulative abnormal returns is 0.0011, the standard error of the mean Labour day NASI cumulative abnormal returns is 0.0011, the standard error of the mean Madaraka day NASI cumulative abnormal returns is 0.0007, the standard error of the mean Mashujaa day NASI cumulative abnormal returns is 0.0007, the standard error of the mean Jamhuri day NASI cumulative abnormal returns is 0.0010 and the standard error of the mean Christmas NASI cumulative abnormal returns is 0.0012.

**Table 4.4 T-test on NASI Pre and Post-Holiday Abnormal Returns**

	One-Sample Statistics			
	N	Mean	Std. Deviation	Std. Error Mean
NASI preholiday	33	.001604	.0042606	.0007417
NASI postholiday	33	.002885	.0076177	.0013261

**Source: Research Findings (2020)**

Table 4.4 shows that the mean NASI preholiday abnormal return is 0.001604 with a standard deviation of 0.0042606 and a standard error mean of 0.0007417. The mean NASI post-holiday abnormal return is 0.002885 with a standard deviation of 0.0076177 and a standard error mean of 0.0013261. These small values of standard errors imply no discrepancies between the pre and post-holiday abnormal returns at the NSE.

#### **4.6 Discussion and Interpretation of Research Findings**

The researcher sought to establish whether the holiday effect exists at the NSE. An event study methodology was employed. Seven public holidays were selected and they were namely the New year (1<sup>st</sup> January), Easter holidays, Labour day (1<sup>st</sup> May), Madaraka day (1<sup>st</sup> June), Mashujaa day (20<sup>th</sup> October), Jamhuri day (12<sup>th</sup> December), Christmas holidays (25<sup>th</sup> and 26<sup>th</sup> December). Secondary data was collected from CMA and NSE for a period of five years. The event window was 5 days pre-holiday and 5 days post-holiday. NASI was used in computing abnormal and cumulative abnormal returns. The results were presented in tables and figures.

The study finds that the average post-holiday, pre-holiday and normal day NASI returns are 0.2%, 0.16% and 0.058% respectively. Non parametric tests of the holiday effect establishes that the trading day before the holiday has a higher proportion of positive returns than normal days which evidence a pre-holiday effect. Further, post- holiday effect is evidenced as the proportion of positive returns a day after the holiday is greater than the normal trading days returns.

The results are in agreement with Omar (2015) who investigated the Nairobi Securities Exchange for the presence of holiday anomaly for seven public holidays. The seven public holidays which were considered were: New Year, Easter, Labour Day, Mashujaa Day, Madarake day, Jamhuri Day and Christmas holiday. The study considered the returns of five days before the holiday and five days after the holiday. The returns for both the pre-holiday and post-holiday were significantly high as compared to the returns of the other days. The research therefore established that the NSE exhibited both pre-holiday and post-holiday anomalies for the year 2010 to 2014. The research also established that there are no significant disparities between the pre and the post-holiday anomalies on the returns of the shares traded in the NSE.

The results also concur with Kamau (2016) who sought to investigate the existence of the holiday effect on stock returns at the NSE. Daily stock market returns were computed for five days before the holidays and five days after the holidays. The results were further analyzed by computing the annual return and cumulative annualized preholiday and post-holiday returns and subsequently computing the abnormal returns. Secondary data used in this study consisted daily NASI indices extracted from the NSE for the period 1st March 2008 to 31<sup>st</sup> August 2016. This study adopted a descriptive research design and used the Wilcoxon signed rank test procedure to compute the annualized cumulative returns for holidays at the NSE. The results of the joint Wilcoxon signed rank test for all holidays show that while trading at the NSE, trading in shares five days before and five days after a holiday consistently over a period of time can enable an investor to make higher profits.

## **CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS**

### **5.1 Introduction**

In this section, a summary of findings from the previous section is provided, conclusions are derived, limitation that were encountered on the overall study explained. Additionally, this chapter gives recommendation to decision maker as well as the policy makers Finally, the researcher offers suggestions on areas that can be covered by other scholars in further research studies.

### **5.2 Summary of Findings**

The main purpose of this study was to investigate the existence of the holiday effect at the Nairobi Securities Exchange (NSE) with specific objectives of establishing the: existence of Pre-holiday effect at the NSE, existence of Post-holiday effect at the NSE. This descriptive study considered seven public holidays in Kenya namely; New year (1st January), Easter holidays, Labour day (1st May), Madaraka day (1st June), Mashujaa day (20th October), Independence day (12th December) and Christmas holidays (25<sup>th</sup> and 26th December). Data on NASI for a five year period (2014 to 2019) was useful in deriving the daily returns at the NSE which was categorized accordingly as normal day returns, Pre-holiday returns and Post-holiday returns. Generally, the average post-holiday returns are greater than the average preholiday returns which are greater than the average normal day returns.

Non parametric test conducted on NASI returns establish that the trading day before the holiday has a higher proportion of positive returns than for the normal days. This finding evidence existence of the preholiday effect at the NSE. The study also establishes the post-holiday effect at the NSE explained by the finding that the

proportion of positive returns a day after the holiday is greater than the normal trading days returns.

T-tests on abnormal returns (AR) and cumulative abnormal returns (CAR) in the holiday period establish that the sample mean standard errors are relatively small implying the likelihood that the sample means is close to the population mean the NASI returns. This therefore implies that none of the seven holidays generate abnormal or cumulative abnormal returns than the other holidays. Further T-tests on abnormal returns amongst the pre and post-holiday periods for NASI establish relatively small mean standard errors which confirm that the sample means are close to the population and as such, there are no notable discrepancies on the abnormal returns between the days.

### **5.3 Conclusion**

Non parametric tests results confirm the existence of the preholiday effect at the NSE. This imply that one day prior to the holiday, the investor tend to earn abnormal returns on trading at the stock exchange. The returns are positively influenced by the existence of a pre-holiday. The relationship is established as statistically significant. It is also observed that the proportion of positive returns on post holidays is greater in the non-parametric test thereby confirming the existence of post-holiday effects at the NSE.

To examine the existing disparities between pre-holiday and post-holiday abnormal returns at the NSE, T-tests established that the standard error mean are relatively small for NASI abnormal returns. This finding confirms that though the post-holiday abnormal returns tend to decline to normal days levels, there are no significant discrepancies on the immediate trading day after the holiday.

#### **5.4 Recommendations**

Establishment of pre-holiday effects suggests some levels of market efficiency comparable to developed markets findings. This could be supported by aligning the trade regulations, rules and policies of the NSE in a manner that promotes price discovery in the markets and facilitates ease of asset allocation and transactions over.

The study findings of existence of post-holiday effect at the NSE confirm the improvement in the levels of efficiency at the NSE. Efforts should be made to improve on this through market based price discovery that are not influenced by the individual and institutional investors behavior and trading strategies

The study findings and literature suggest that the NSE is weak form efficient implying that market prices and hence returns are determined by trends in asset prices ñ past prices. The NSE should focus on improving efficiency so that market prices and returns should reflect all available private and public information which characterize strong form market efficiency.

#### **5.5 Limitations of the Study**

The period selected in this study was 5 years that is from July 2014 to June 2019. There is no proof that alike outcome will remain the same in a longer period. More so, the findings might not even hold for the period beyond 2019. An extended period will lead to the results being reliable since it will include cases of major economic changes like recessions and booms.

The quality of data was the greatest limitation of this study. This is because it cannot be determined accurately that the secondary data represent the situation as it is in the ground. It is has only been assumed that the data is accurate. This is usually a general problem when dealing with secondary data. The research used secondary data, which

was in the public domain had already been obtained, unlike the first-hand information associated with primary data. The study additionally did not exhaust the entire factors affecting corporate taxes of listed firms greatly because of availability of data limitation.

This study focused on some factors that are hypothesized to influence stock market returns at the NSE. Precisely, the study focused on holidays as the explanatory variable. In reality however, there are other variables that are likely to influence stock market returns some which are internal such as management efficiency and leverage while others are not under the control of management like political stability, growth rate, balance of trade, and public debt among others.

This study relied purely on secondary data. The limitation of using secondary data is that it does not capture qualitative aspect of a research which can also have a significant influence on research findings. If the study had considered some qualitative aspects by conducting interviews or focus group discussions, the findings would have been more comprehensive.

In achieving the analysis of the data, the study used an event study methodology. Because of the restrictions involved when using the model like erroneous and deceptive outcomes that lead to the value of the variable changing, it was therefore not possible the findings of the study to be generalized with accuracy. More so the result could be different if more days were added in the event window. Hence the model was another limitation.

## **5.6 Suggestions for Further Research**

The basis of the research was on holiday effect and stock market returns and reliance was placed on secondary data. A similar study that places reliance on primary data

collection methods such as in depth questionnaires and interviews extending to all the quoted firms on the influences of holiday effect on stock market returns would be more revealing since it would complement the current study.

The study did not exhaust all the predictor variables that influence the returns of the stock market at the NSE and hence recommends that additional studies be carried out to include additional variables like economic growth, balance of payments, institutional quality, inflation, financial development, efficiency of management, performance of the industry, firm characteristics, political stability and others. Identifying how each variable influences stock market returns at the NSE will allow policy makers to identify the best tool for controlling returns.

The concentration of the study was on the past five years because it was the most current and readily available data. Additional studies in the future may cover a much larger range for example from 1970 to date which will be helpful in approving or disapproving findings of the study. The advantage of a longer study is that it will enable the researcher to capture effects of business cycles such as booms and recessions.

The study limited itself making a focus only on the NSE. The study advises that additional studies be done on other regions for example East African stock market. In addition, there are also control variables that can also affect stock returns such as economic growth, FDI, foreign remittances among others and therefore the need to conduct studies on the effect of these predictor variables on stock market returns.

Finally, this study was based on an event study methodology, which has its own limitations such as inability to take into account other control variables that can influence stock market returns. Future researchers should focus on other models in exploring the various relations between holiday effect and stock market returns.





## REFERENCES

- Akkava, G. C., & Cimen, A. (2013). Calendar anomalies at Borsa Istanbul. *International Journal of Economics and Finance Studies*, 5(1), 141-148
- Alivu, S. U. R. (2011). *Does inflation has an impact on stock returns and volatility. evidence from Nigeria and Ghana*. Bayero University, Kano-Nigeria
- Asava, I. K. (2013). Implications of voluntary disclosure on stock market performance. *Journal of Accounting Research*, 12(1), 25-43.
- Atala, M.M. (2015). *The effect of Muslim holidays in stock returns of listed companies at the Nairobi Securities Exchange*. Unpublished MBA research project, University of Nairobi
- Baker, M., Greenwood, R. & Wurgler, J. (2009). Catering through nominal share prices. *Journal of Finance*, 64(6), 2559–2590
- Beck, T., Demirgüç-Kunt, A., & Levine, R. (2003). A new database on financial development and structure. *World Bank Economic Review*, 14, 597-605.
- Bergsma, K., & Jiang, D. (2016). Cultural New Year holidays and stock returns around the world. *Financial Management*, 3-35.
- Burns, N. & Burns, S. (2008). *The practice of nursing research: Conduct, critique and utilization: 5<sup>th</sup> Edition*: St Louis, Elsevier Saunders
- Cao, X. L., Premachandra, I. M., Bhabra, G. S., & Tang, Y. P. (2009). Firm size and the pre- 48 holiday effect in New Zealand. *International Research Journal of Finance and Economics*, 32, 171-187.
- Chandra, R. (2008). *Investment Analysis 3/E*. New York, NY: Tata McGraw-Hill Education.
- Chia, R. C. J., Lim, S. Y., Ong, P. K., & Teh, S. F. (2015). Pre and Post Chinese New Year holiday effects: Evidence from Hong Kong stock market. *The Singapore Economic Review*, 60(04), 155-173.
- Cooper, R., & Schindler, S. (2008). *Business research methods*. New York: McGrawhill
- Daferighe, E. & Sunday, C. S. (2012). The impact of inflation on stock market performance in Nigeria. *American Journal of Social and Management Sciences*, 3 (2), 76-82
- Dodd, O., & Gakhovich, A. (2012). The holiday effect in Central and Eastern European financial markets. *Investment management and Financial Innovations*, 8(4), 29-35.
- Drogalas, G., Stergios, A., Bakas, G., & George, E. (2007). *Seasonality in stock markets: the Day of the Week Effect*. University of Macedonia

- Erdugan, R. (2012). *The effect of economic factors on the performance of the Australian stock market*. Unpublished Dissertation. Victoria University, Melbourne
- Fama, E. F. (1965). Behaviour of stock-market prices. *Journal of Business*, 38(1), 34-105.
- Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *Journal of Finance*, 25, 383-417
- Fama, E. F. (1981). Stock returns, real activity, inflation, and money. *The American Economic Review*, 71(4), 545-565.
- Fama, E. F. (1998). Stock returns, real activity, inflation, and money. *The American Economic Review*, 71(4), 545-565.
- Fields, M. J. (1934). Security prices and stock exchange holidays in relation to short selling. *The Journal of Business of the University of Chicago*, 7(4), 328-338.
- Gazi, S., Uddin, W. & Mahmudul, A. (2009). Relationship between interest rate and stock price: Empirical evidence from developed and developing countries, *International Journal of Business and Management*, 4(3), 43-51
- Hemed, S.S. (2015). *Testing the pre-holiday effect on stock returns at the NSE*. Unpublished MBA research project, University of Nairobi.
- Hendry, D. F. (2006). *Modeling UK Inflation, 1875-1991*. Economics Department, Oxford UK, 27(2), 63-72.
- Kahneman, A. & Tversky, D. (1974). Judgment under Uncertainty: *Heuristics and Biases Science*, 18(5), 41-57.

- Kallarackal, T. K. (2016). A Study of holiday effect on sensex returns in the Indian market. *International Journal of Research in Finance and Marketing*, 6(11), 63-68.
- Kamau, S. N. (2016). *The Holiday Effect on stock returns at the Nairobi Securities Exchange*. (Unpublished master's thesis). University of Nairobi, Nairobi, Kenya.
- Khan, J. A. (2008). *Research Methodology*. New Delhi. APH Publishing Corporation
- Kiano, G. M. (2015). *The low share price effect on the Nairobi Securities Exchange*. Unpublished MSc Project. University of Nairobi
- King, C. W., & Park, J. (2014). Holiday effects and stock returns: Further evidence. *Journal of Financial and Quantitative Analysis*, 29(01), 145-157.
- Kirui, E., Wawire, H. W. & Onono, P. (2014). Macroeconomic variables, volatility and stock market returns: A case of Nairobi Securities Exchange, Kenya. *International Journal of Economics and Finance*, 6 (8), 214-228
- Kuwomu, J. K. M. (2012). Effect of macroeconomic variables on the Ghanaian stock market returns: A co-integration analysis. *Agris on-line Papers in Economics and Informatics*, 4 (2), 1-12

- Latif, M. Arshad, S. Fatima, M. & Farooq, S. (2011). Market efficiency, market anomalies, causes, evidences, and some behavioral aspects of market anomalies. *Research Journal of Finance and Accounting*, 2(9), 1-13.
- Li, K., Sarkar, A., & Wang, Z., (2003). Diversification benefits of emerging markets subject to portfolio constraints, *Journal of Empirical Finance*, 10(2), 57– 80.
- Lintner, J. (1956). Distribution of incomes of corporations among dividends, retained earnings and taxes. *American Economic Review*, 46 (2), 97-113.
- Lucey, B. M. (2005). Are local or international influences responsible for the pre-holiday behaviour of Irish equities?. *Applied Financial Economics*, 15(6), 381-389.
- Mackinlay, A. (2009). Event studies in economics and finance. *Journal of Economic Literature*, 35, 13–39
- Malkiel, B. G., & Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *The Journal of Finance*, 25(2), 383-417
- Marrett, G. J., & Worthington, A. C. (2009). An empirical note on the holiday effect in the Australian stock market, 1996–2006. *Applied Economics Letters*, 16(17), 1769-1772.
- Mehran, J., Meisami, A., & Busenbark, J. R. (2012). L'Chaim: Jewish holidays and stock market returns. *Managerial Finance*, 38(7), 641-652.
- Mghendi, F. (2014). *Testing the small firm effect on stock market returns at the NSE.* Unpublished MBA project, University of Nairobi.
- Mohan, C. & Chitradevi, N. (2014). Impact of inflation and exchange rate on stock market performance in India. *Indian Journal of Applied Research*, 4 (3), 230-232

- Mohan, C. & Chitra Devi, N. (2014). Impact of inflation and exchange rate on stock market performance in India. *Indian Journal of Applied Research*, 4 (3), 230-232
- Mugambi, M. & Okech, T. C. (2016). Effect of macroeconomic variables on stock returns of listed commercial banks in Kenya. *International Journal of Economics, Commerce and Management*, 4 (6), 390-418
- Mun, H. W., Siong, E. C. & Thing, T. C. (2008). Stock market and economic growth in Malaysia: Causality Test. *Asian Social Science*, 4 (4) 365 - 380.
- NSE (2019) website <https://www.nse.co.ke/media-center/press-release.html> retrieved July 11, 2017
- Obura, J. M. & Anvango, C. (2016). Moderating effect of interest rates on relationship between foreign exchange rate fluctuation and performance of Nairobi Securities Exchange Market. *Universal Journal of Accounting and Finance*, 4 (2), 27-34
- Olweny, T. & Omondi, K. (2016). The effect of macro-economic factors on stock return volatility in the Nairobi Stock Exchange. *Economics and Finance Review*, 1(10), 34-48.
- Omar, R. (2015). *Investigation of the Holiday effect at the Nairobi Securities Exchange*. (Unpublished master's thesis). University of Nairobi, Nairobi, Kenya. |
- Osamwonyi, I. O. (2003). Forecasting as a tool for securities analysis, A paper presented at a three-day workshop on introduction to securities analysis. Organized by Securities and Exchange Commission, Lagos, August 17th.
- Osman, A.M. (2007). *Study of holiday effect at the NSE*. Unpublished MBA research project, University of Nairobi.
- Osoro, C. & Ogeto, W. (2014). Macro-economic fluctuations effects on the financial performance of listed manufacturing firms in Kenya. *The International Journal of Social Sciences*, 20 (1), 26-40
- Pal, K. & Mittal, R. (2011). Impact of macroeconomic indicators on Indian capital markets. *Journal of Risk Finance*, 12 (2): 84-97
- Pan, M. S., Fok, R. C. W., & Liu, Y. A. (2007). Dynamic linkages between exchange rates and stock prices: Evidence from East Asian Markets. *International Review of Economics and Finance*, 16 (1) 503-520.
- Rasugu, N. C. (2005). *The existence of the holiday effect in the Nairobi Stock Exchange*. Unpublished MBA Research Project, School of business, University of Nairobi.
- Rehman, A. A., Sidek, N. Z. M. & Fauziah, H. T. (2009). Macroeconomic determinants of Malaysian stock market. *African Journal of Business Management*, 3(3), 95- 106.

- Ricciardi, V., & Simon, H. (2000). What is behavioral finance? *Business, Education and Technology Journal*, 1-9.
- Riro, G. K. & Wambugu, J. M. (2015). A test of asset-pricing models at the Nairobi Securities Exchange. *Research Journal of Finance and Accounting*, 6, 27-36
- Ross, S. A. (1976). *The arbitrage pricing theory approach to strategic portfolio planning*. Macmillan Publishers.
- Rowjee, (2014). *Calendar effect on the nine economic sectors of the Johannesburg stock exchange*. Unpublished MBA Thesis University of Witwatersrand, Johannesburg.
- Shan, Y., Taylor, S., & Walter, T. (2013). Fundamentals or managerial discretion? The relationship between accrual variability and future stock return volatility. *Abacus*, 49(4), 441-475
- Sharpe, W. F. (1964). Capital asset prices: A theory of market equilibrium under conditions of risk. *Journal of Finance*, 19(3), 425-442.
- Širucek, M. (2013). *The Impact of the money supply on stock prices and stock bubbles*. Mendel University
- Sloman, A.N & Kevin, J. (2007). *Economics for Business*. Prentice Hall, Financial Times.
- Taofik, M. I. & Omosola, M. A. (2013). The relationship between stock return and inflation in Nigeria. *European Scientific Journal*, 9 (4), 146 – 157
- Thomas, D. B. (2006). *Money, Banking and Financial Markets*. Thomson- South.
- Tobin, J. (1969). Liquidity preference as behavior towards risk, *The Review of Economic Studies*, 25, 65-86.
- Tucker, C. (2007). Stock market fluctuations and the term structure. Board of Governors of the Federal Reserve System, *Finance and Economics Discussion Series*, 96(03), 12-17
- Zenou, Y. & Smith, T.E. (1995). Efficiency wages, involuntary unemployment and urban spatial structure, *Regional Science and Urban Economics*, 25, 821-845.

## APPENDICES

### Appendix I: Firms Listed at the NSE

	<b>COMPANY</b>	<b>SECTOR</b>	<b>YEAR OF LISTING</b>
1	<u>Deacons (East Africa)</u>	Consumer Services	2016
2	<u>Nairobi Business Ventures</u>	Consumer Services	2016
3	<u>Stanlib Fahari I-REIT</u>	Financials	2015
4	<u>Atlas African Industries</u>	Industrials	2014
5	<u>Flame Tree Group Holdings</u>	Basic Materials	2014
6	<u>Kurwitu Ventures</u>	Financials	2014
7	<u>Nairobi Securities Exchange</u>	Financials	2014
8	<u>Home Afrika</u>	Financials	2013
9	<u>I&amp;M Holdings</u>	Financials	2013
10	<u>CIC Insurance Group</u>	Financials	2012
11	<u>Umeme</u>	Utilities	2012
12	<u>Britam (Kenya)</u>	Financials	2011
13	<u>TransCentury</u>	Industrials	2011
14	<u>Co-operative Bank of Kenya</u>	Financials	2008
15	<u>Safaricom</u>	Telecommunications	2008
16	<u>Kenya Re-Insurance Corporation</u>	Financials	2007
17	<u>Liberty Kenya Holdings</u>	Financials	2007
18	<u>Equity Group Holdings</u>	Financials	2006
19	<u>Eveready East Africa</u>	Consumer Goods	2006
20	<u>KenGen Company</u>	Utilities	2006
21	<u>WPP Scangroup</u>	Consumer Services	2006
22	<u>Mumias Sugar Co</u>	Consumer Goods	2001
23	<u>ARM Cement</u>	Industrials	1997
24	<u>TPS Eastern Africa</u>	Consumer Services	1997
25	<u>Kenya Airways</u>	Consumer Services	1996
26	<u>National Bank of Kenya</u>	Financials	1994
27	<u>Sameer Africa</u>	Consumer Goods	1994
28	<u>Longhorn Publishers</u>	Consumer Services	1993
29	<u>Crown Paints Kenya</u>	Basic Materials	1992
30	<u>HF Group</u>	Financials	1992
31	<u>Uchumi Supermarkets</u>	Consumer Services	1992
32	<u>KCB Group</u>	Financials	1989
33	<u>Standard Chartered Bank Kenya</u>	Financials	1988
34	<u>Total Kenya</u>	Oil & Gas	1988
35	<u>Barclays Bank of Kenya</u>	Financials	1986

36	<u>Jubilee Holdings</u>	Financials	1984
37	<u>Express Kenya</u>	Consumer Services	1978
38	<u>Olympia Capital Holdings</u>	Industrials	1974
39	<u>East African Cables</u>	Industrials	1973
40	<u>Nation Media Group</u>	Consumer Services	1973
41	<u>Carbacid Investments</u>	Basic Materials	1972
42	<u>Diamond Trust Bank Kenya</u>	Financials	1972
43	<u>Eaagads</u>	Consumer Goods	1972
44	<u>East African Breweries</u>	Consumer Goods	1972
45	<u>East African Portland Cement</u>	Industrials	1972
46	<u>Kapchorua Tea Kenya</u>	Consumer Goods	1972
47	<u>Kenya Power &amp; Lighting</u>	Utilities	1972
48	<u>Williamson Tea Kenya</u>	Consumer Goods	1972
49	<u>NIC Group</u>	Financials	1971
50	<u>Unga Group</u>	Consumer Goods	1971
51	<u>Bamburi Cement</u>	Industrials	1970
52	<u>Stanbic Holdings</u>	Financials	1970
53	<u>B O C Kenya</u>	Basic Materials	1969
54	<u>BAT Kenya</u>	Consumer Goods	1969
55	<u>Centum Investment</u>	Financials	1967
56	<u>Limuru Tea</u>	Consumer Goods	1967
57	<u>Sasini</u>	Consumer Goods	1965
58	<u>Sanlam Kenya</u>	Financials	1963
59	<u>KenolKobil</u>	Oil & Gas	1959
60	<u>Kenya Orchards</u>	Consumer Goods	1959
61	<u>Standard Group</u>	Consumer Services	1954
62	<u>Kakuzi</u>	Consumer Goods	1951
63	<u>Car &amp; General (K)</u>	Consumer Services	1940

**Source: Nairobi Securities Exchange (2020)**



## Appendix II: Research Data

### 1) New Year Data

NASI ABNORMAL RETURNS							NASI CUMULATIVE ABNORMAL RETURNS						
Days	2014	2015	2016	2017	2018	2019	Days	2014	2015	2016	2017	2018	2019
-5		-0.01012	-0.00268	-0.00373	0.01314	0.00667	-5		-0.01012	-0.00268	-0.00373	0.01314	0.00667
-4		-0.00485	0.00485	-0.00395	-0.00636	-0.00761	-4		-0.01497	0.00217	-0.00768	0.00679	-0.00093
-3		-0.00423	-0.00018	0.00019	-0.00562	0.01138	-3		-0.00908	0.00467	-0.00376	-0.01197	0.00377
-2		-0.00321	-0.00722	-0.00469	-0.00036	-0.00064	-2		-0.00744	-0.00740	-0.00450	-0.00598	0.01074
-1		-0.00106	0.00115	-0.00427	0.00042	-0.00981	-1		-0.00427	-0.00606	-0.00896	0.00006	-0.01045
1	-0.00183	0.00770	0.00364	0.00216	-0.00627		1	-0.00183	0.00664	0.00480	-0.00211	-0.00585	
2	-0.00462	-0.00283	-0.00340	0.00033	-0.00430		2	-0.00645	0.00487	0.00024	0.00249	-0.01057	
3	0.00594	0.00306	-0.00062	0.00769	0.00726		3	0.00132	0.00024	-0.00402	0.00801	0.00296	
4	0.00664	0.01416	0.00128	-0.00255	0.00254		4	0.01258	0.01723	0.00066	0.00514	0.00980	
5	-0.00613	0.00137	0.00317	0.00883	-0.00046		5	0.00051	0.01553	0.00445	0.00628	0.00208	

2) Easter Holiday

NASI ABNORMAL RETURNS						NASI CUMULATIVE ABNORMAL RETURNS					
Days	2014	2015	2016	2017	2018	Days	2014	2015	2016	2017	2018
-5	-0.0034	0.00622	-0.0015	-0.0041	0.00126	-5	-0.0034	0.00622	-0.0015	-0.0041	0.00126
-4	-0.0082	-0.0036	-0.0048	-0.0006	-0.0023	-4	-0.0116	0.00264	-0.0063	-0.0047	-0.001
-3	0.00757	-0.0023	0.00053	-0.0002	0.0028	-3	-0.0006	-0.0059	-0.0043	-0.0008	0.00052
-2	-0.0015	-0.0041	0.00543	0.0151	0.00234	-2	0.00604	-0.0064	0.00596	0.0149	0.00514
-1	0.00084	0.00014	-0.001	-0.0004	0.00088	-1	-0.0007	-0.004	0.00445	0.01466	0.00322
1	0.00071	-0.003	-0.0052	0.02488	-0.0034	1	0.00154	-0.0028	-0.0061	0.02444	-0.0025
2	-0.0022	0.00302	0.00364	-0.0078	-0.0025	2	-0.0015	6.5E-05	-0.0015	0.01707	-0.0059
3	-0.0019	-0.0034	0.00199	-0.014	0.00589	3	-0.0041	-0.0004	0.00563	-0.0218	0.00337
4	0.0034	0.00291	0.00305	-0.0046	-0.0007	4	0.00151	-0.0005	0.00504	-0.0186	0.00515
5	0.00477	0.00406	-0.0022	-0.0082	-0.0042	5	0.00817	0.00697	0.00086	-0.0128	-0.005

3) Labour Day

NASI ABNORMAL RETURNS						NASI CUMULATIVE ABNORMAL RETURNS					
Days	2014	2015	2016	2017	2018	Days	2014	2015	2016	2017	2018
-5	-0.00082	-6.2E-05	0.008021	-0.00072	0.007816	-5	-0.00082	-6.2E-05	0.008021	-0.00072	0.007816
-4	-0.00795	-0.00315	0.003701	-0.0118	0.001181	-4	-0.00877	-0.00322	0.011722	-0.01251	0.008998
-3	-0.01302	0.002822	-0.01612	-0.00462	-0.00229	-3	-0.02097	-0.00033	-0.01242	-0.01641	-0.00111
-2	0.012509	-0.00358	-0.00649	-0.00453	0.002632	-2	-0.00051	-0.00075	-0.02261	-0.00915	0.000346
-1	0.004836	0.002708	0.001431	0.001941	-0.00255	-1	0.017344	-0.00087	-0.00506	-0.00259	8.14E-05
1	-0.00115	0.003861	0.000774	0.007918	0.002544	1	0.003688	0.006569	0.002206	0.00986	-6.6E-06
2	0.004055	0.001511	0.010114	0.000662	-0.00387	2	0.002908	0.005372	0.010888	0.00858	-0.00132
3	0.002741	0.002873	0.007037	0.003638	-0.00334	3	0.006797	0.004384	0.01715	0.0043	-0.00721
4	-0.00114	-0.00113	-0.00207	0.003826	2.53E-05	4	0.0016	0.001742	0.00497	0.007464	-0.00332
5	-6.5E-05	-0.00585	-0.0064	0.003682	-0.00215	5	-0.00121	-0.00698	-0.00847	0.007508	-0.00213

4) Madaraka Day

NASI ABNORMAL RETURNS						NASI CUMULATIVE ABNORMAL RETURNS					
Days	2014	2015	2016	2017	2018	Days	2014	2015	2016	2017	2018
-5	-0.00082	0.001006	-0.00664	-0.00449	-0.00248	-5	-0.00082	0.001006	-0.00664	-0.00449	-0.00248
-4	-0.00795	-6.7E-05	0.002132	0.00459	-0.00102	-4	-0.00877	0.000939	-0.00451	9.6E-05	-0.0035
-3	-0.01302	-0.00114	-0.00234	-0.00174	-0.00035	-3	-0.02097	-0.00121	-0.0002	0.002852	-0.00136
-2	0.012509	-0.00178	-0.00042	0.002527	0.004614	-2	-0.00051	-0.00292	-0.00276	0.000789	0.004267
-1	0.004836	0.000363	0.004438	0.001181	0.002525	-1	0.017344	-0.00142	0.004014	0.003708	0.007139
1	-0.00115	0.004976	-0.00323	0.000629	-0.00707	1	0.003688	0.005338	0.001213	0.00181	-0.00454
2	0.004055	-0.00114	-0.00042	-0.00048	0.000927	2	0.002908	0.003841	-0.00365	0.000154	-0.00614
3	0.002741	-0.00445	0.000599	0.00055	0.000457	3	0.006797	-0.00558	0.000175	7.5E-05	0.001385
4	-0.00114	0.002078	0.005715	-0.00024	0.00039	4	0.0016	-0.00237	0.006314	0.000311	0.000848
5	-6.5E-05	0.000147	0.000164	-0.00253	0.001997	5	-0.00121	0.002225	0.005879	-0.00277	0.002388

5) Mashujaa Day

NASI ABNORMAL RETURNS						NASI CUMULATIVE ABNORMAL RETURNS					
Days	2014	2015	2016	2017	2018	Days	2014	2015	2016	2017	2018
-5	-0.0041	-0.01381	-0.00184	-0.00338	-0.00129	-5	-0.0041	-0.01381	-0.00184	-0.00338	-0.00129
-4	-7.3E-05	-0.002	-0.00241	-0.00226	0.000984	-4	-0.00417	-0.01581	-0.00425	-0.00564	-0.0003
-3	0.00222	0.002965	-0.00355	0.000634	0.00327	-3	0.002147	0.000965	-0.00596	-0.00162	0.004253
-2	0.0025	0.002944	0.005195	-0.00066	0.000551	-2	0.00472	0.005909	0.001646	-3.1E-05	0.00382
-1	0.004621	-0.00359	-0.00074	0.005838	-0.0049	-1	0.007121	-0.00064	0.004456	0.005173	-0.00435
1	0.000657	0.001773	0.000373	-0.00134	-0.00127	1	0.005278	-0.00181	-0.00037	0.004493	-0.00617
2	0.004371	-0.00185	-0.00087	0.004908	0.006972	2	0.005027	-7.7E-05	-0.0005	0.003563	0.005699
3	-0.00043	0.001619	0.001679	0.000863	0.003837	3	0.003937	-0.00023	0.000805	0.005772	0.010809
4	0.00282	0.005355	-0.00012	-0.00294	-0.00761	4	0.002387	0.006974	0.001554	-0.00207	-0.00377
5	-0.01258	0.006595	0.002289	-0.00165	-0.00055	5	-0.00976	0.01195	0.002165	-0.00459	-0.00815

6) Jamhuri Day

NASI ABNORMAL RETURNS						NASI CUMULATIVE ABNORMAL RETURNS					
Days	2014	2015	2016	2017	2018	Days	2014	2015	2016	2017	2018
-5	-9.3E-05	-0.0041	-0.00327	-0.00832	0.009932	-5	-9.3E-05	-0.0041	-0.00327	-0.00832	0.009932
-4	0.000626	-0.00319	-0.00567	-0.00315	0.012199	-4	0.000534	-0.0073	-0.00894	-0.01146	0.022131
-3	0.003094	-0.00243	0.002733	0.002115	0.001834	-3	0.00372	-0.00563	-0.00293	-0.00103	0.014033
-2	0.003705	0.003093	-0.00284	-0.00612	-0.00166	-2	0.006799	0.000661	-0.0001	-0.004	0.000175
-1	-0.00162	0.006286	0.001626	0.000427	-0.00649	-1	0.002081	0.009379	-0.00121	-0.00569	-0.00815
1	-0.0005	-0.00075	0.004542	0.002714	0.001305	1	-0.00212	0.005538	0.006168	0.003141	-0.00518
2	-0.00399	0.001376	0.000513	-0.00478	0.003556	2	-0.0045	0.000627	0.005055	-0.00207	0.004861
3	-0.00361	-0.00241	-0.00025	0.006308	-0.00686	3	-0.0076	-0.00104	0.000267	0.001525	-0.0033
4	0.002905	0.000918	7.31E-05	0.004341	-0.01108	4	-0.0007	-0.0015	-0.00017	0.010649	-0.01794
5	-0.00051	0.001217	0.002532	0.00646	-0.00274	5	0.002392	0.002135	0.002605	0.010801	-0.01382

7) Christmas Day

NASI ABNORMAL RETURNS						NASI CUMULATIVE ABNORMAL RETURNS					
Days	2014	2015	2016	2017	2018	Days	2014	2015	2016	2017	2018
-5	-0.00252	-0.00112	-0.00101	0.013144	-0.01911	-5	-0.00252	-0.00112	-0.001011984	0.013144	-0.01911
-4	-0.00625	-0.00022	0.001447	-0.00636	-0.01077	-4	-0.00878	-0.00135	0.000434938	0.006789	-0.02987
-3	0.0008	0.008041	-0.00092	-0.00562	0.002216	-3	-0.00545	0.007818	0.000528289	-0.01197	-0.00855
-2	0.001315	0.005086	-0.00167	-0.00036	0.012207	-2	0.002115	0.013127	-0.002586484	-0.00598	0.014422
-1	0.002449	-0.00457	-0.00188	0.000421	-0.00207	-1	0.003765	0.000514	-0.003550083	6E-05	0.010133
1	-0.00459	0.002957	0.002255	-0.00627	0.016908	1	-0.00214	-0.00161	0.000372541	-0.00585	0.014834
2	0.000687	-0.00207	-0.00263	-0.0043	0.004896	2	-0.0039	0.000886	-0.000373848	-0.01057	0.021804
3	0.001304	-0.00911	-0.00221	0.007255	-0.00428	3	0.001991	-0.01118	-0.004835391	0.002958	0.000617
4	0.00233	-0.00074	0.004223	0.002543	-0.00207	4	0.003634	-0.00985	0.002016279	0.009798	-0.00635
5	0.004476	0.001752	0.002391	-0.00046	-0.00207	5	0.006806	0.001013	0.006614396	0.002084	-0.00415