

**TESTING THE PRE-HOLIDAY EFFECT ON STOCK RETURNS AT  
THE NAIROBI SECURITIES EXCHANGE**

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## **DECLARATION**

This research project is my original work and has not been presented in any other university for award of a degree.

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This research project has been submitted for presentation with my approval as the University supervisor

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## **DEDICATION**

I dedicate this project to my mother Mtwere Abdallah, my sister Munaa Hemed, my brothers and all my family members who believed in the pursuit of academic excellence. I also would like to thank my friends for their support and encouragement; I could not have completed this project without their assistance and tolerance. God bless them all.

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## **ABBREVIATIONS AND ACRONYMS**

ADRs- American Depository Receipts

CAPM- Capital Asset Pricing Model

CEE- Central and Eastern European

CNY- Chinese New Year

EMH – Efficient Market Hypothesis

NASI – NSE All Share Index

NSE – Nairobi Securities Exchange

NYSE – New York Stock Exchange

## **ABSTRACT**

The main objective of the study was to test the pre- holiday effect on stock market returns at the Nairobi Securities Exchange. The stock market returns were computed for five days before the holidays and five days after the holidays. The results were further analyzed by calculating expected returns and subsequently computing the abnormal returns. This study adopted a descriptive research design. The data used in this study constituted daily stock returns of companies listed continuously at NSE from 1<sup>st</sup> January 2010 to 31<sup>st</sup> December 2013. Secondary data was obtained from the records at the NSE for the four year period from 2010 to 2013. The data included daily prices and market indexes from the Nairobi Securities Exchange. The daily return for each firm was obtained. An event study methodology was adopted to test the pre- holiday effect on stock market returns at the Nairobi Securities Exchange. The finding indicated existence of pre-holiday effect at the Nairobi Securities Exchange. In conclusion, consistent with the existing findings, pre- holiday effect exhibited at the Nairobi Securities Exchange is accompanied by fluctuations in stock return. The presence of pre- holiday effect on stock return indicate stock market inefficiency and therefore, NSE as a regulator of Kenya's Securities market need to take steps in order to increase the informational efficiency of the stock market operation. This will enable investors to reap fully benefits of investing at NSE.

# CHAPTER ONE: INTRODUCTION

## 1.1 Background of the study

Financial market anomalies refer to the patterns in security returns that violate and are inconsistent with the traditional finance models and the market efficiency (Kuhn, 1970). These are empirical results that are inconsistent with the maintained theories of asset-pricing behavior (Schweret, 2002). Holiday effect on the other hand refers to differences between stock returns of the days that precede or follow the public holidays and the rest of the working days (Dumitriu, Nistor, & Stefanescu, 2012).

The study was based on the efficient market hypothesis formulated by Fama (1970), The Capital Asset Pricing Model by Sharpe (1964) and the Random Walk Theory. EMH posits that an efficient market is one whose stock prices will always reflect fully the available information. Therefore, it would be impossible to outperform the market since the prices already reflect and incorporate all the relevant information (Fama, 1965) and that there should be no abnormal returns on special occasions. The EMH classifies market efficiency into three categories: the weak form which states that the stock returns are serially uncorrelated and have a constant mean, semi strong where stock prices instantaneously reflect any new publicly available information and strong form of efficiency where prices reflect all available public and private information. The Capital Asset Pricing Model by Sharpe (1964) offers a powerful means of predicting and measuring risk and in explaining the relationship between expected return and risk. However, the study will be anchored on the efficient market hypothesis.

The NSE is the leading securities exchange in East Africa and one of the largest stock exchanges in Africa with the fourth largest trading volume across the continent. The NSE comprises of 4 major investments segments namely; Main Investment Market segments (requires a company to have a minimum of 1000 shareholders), Alternative Investment Market segment (which requires a company to have a minimum of 100 shareholders), Fixed Income Securities Market segment and the Growth Enterprise Market Segment which was recently introduced to cater for small and medium sized firms. Over the years vast changes have taken place at the NSE including trading automation, increased listings among others resulting to increased efficiency and effectiveness in trading of securities (NSE, 2014).

### **1.1.1 The Pre-holiday Effect**

The phenomenon of abnormal returns around public holidays is known as the holiday effect as it has been well documented in both developed and emerging markets (Dodd & Gakhovich, 2011). Lakonishok and Smidt (1988) studied returns one day before and after holiday in US and found significant abnormal returns before holiday. Post-holiday returns were however insignificant until 1952 and were positive and significant from 1952 to 1986. Ariel (1990) examined intraday market returns and documented a significant preholiday effect. Over the pre-holiday period stock prices increased and had a much higher frequency of positive returns, particularly in the last hour.

According to Pettengil (1989) abnormal pre-holiday returns have been documented across different sizes of companies and across countries, further Lakonishok and Smidt (1988) argue that unlike some other anomalies, the pre-holiday effect seems to be persistent over

time. Moreover, general argument and observation has been that investors trade and react positively in trading during the period before holidays and that after holiday they are psychologically affected and therefore their returns remain low (Zafar, Urooj, Chughtai, & Amjad, 2012). Dodd and Gakhovich(2011) investigated the holiday effect in 14 CEE markets where they found the presence of holiday effect in the CEE region with a number of countries showing abnormal pre- holiday returns. They also documented abnormal post-holiday returns.

### **1.1.2 Stock Returns**

Stock returns refer to gain or loss on investment which is sensitive to both fundamental and expectations in the market (Lee, 1998). Gartner (1995) defines it as a gain or loss of security in a particular period consisting of income and capital gains relative on an investment and it is usually presented in form of a percentage. According to Reilly and Brown (2003) stock return is the compensation for the time, the expected rate of inflation and the uncertainty of the return after investing in stocks.

Stock returns are measured as the continuously compounded daily, weekly, monthly or annual percentage change in the share price of a stock. The usual sources of income for stocks include dividends, returns on capital and capital appreciation. There are two methods that are usually used to calculate returns; simple returns and continuously compounded (logarithm) returns (Lee, 1998).

### **1.1.3 Pre- Holiday Effect and Stock Returns**

Over the years, evidence has shown that returns observed on days preceding a public holiday are, on average, higher than returns on other trading days (Ariel, 1990; Vergin & McGinnis, 1999). Lokonishok and Smidst (1988) documented in the study that they

conducted that the pre- holiday returns were twenty three times higher than the average returns on the other ordinary days. These results were confirmed by several other studies, such as Pettengill (1989) and Ariel (1990) who found that abnormal pre- holiday returns have been observed across different sizes of companies and across country and that over the pre- holiday period stock prices increased and had much higher frequency positive returns respectively.

Significant pre-holiday returns also exist in other markets. Meneuand Pardo (2004) find significant pre-holiday effects in Spain, Cao et al. (2009) find significant pre-holiday effects in the New Zealand market and finally Picou (2006) examined the holiday effect internationally by examining six major exchanges, US, Australia, Hong Kong, UK, Japan and Canada. The study found that the holiday effect still existed and there were some commonality for the holiday relation among six exchanges.

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

NSE has been the subject to significant changes in the process of developing the Kenya capital market in the recent years. Developments of capital markets are crucial for capital accumulation, efficient allocation of resources and promotion of economic growth of a country. Since its incorporation NSE has witnessed an increase in the number of securities brokers, introduction of investment banks, establishment of custodial institutions and credit rating agencies and an increase in the number of listed companies over time. Securities traded include, equities, bonds and preference shares. These developments have had effects on how trading takes place at the NSE.

Whether the NSE is efficient and an event such as holiday can impact the stock prices at the NSE is a question which has attracted numbers of researchers. It is interesting and

practical to find out the different factors which can affect the price of the stock. This is meaningful not only to the researchers but also the market players and involvers who would like to understand and perceive the rhythm of the market prices. It helps the investors to seize the opportunity for arbitrage or set up investment strategies successfully. The NSE has been one of the most popular investment avenues in Kenya and has also become an integral and significant part of Kenya economy. Given that it is an emerging market, it is important to test the theory of efficient market within the empirical work and to determine whether this securities market is efficient or not completely efficient.

In 2014, NSE underwent demutualization which marked a great milestone not only for the Exchange but Kenya's Capital Markets as a whole. Demutualization meant commitment to transparency and good corporate governance by NSE and as demutualized entity the ownership of the NSE is separate from the right to be a Trading Participant (a stockbroker or investment bank); members of the Kenyan investing public can now own shares in the NSE. The process builds investor confidence in the business as market operators and places the NSE in a better position to facilitate Kenya's capital market becoming the gateway of East and Central Africa.

## **1.2 Research Problem**

According to EMH, stock prices of securities fully reflect all available market information about the securities and as a result investors cannot earn abnormal profits. However, the market anomalies that have been studied have proved variations in volatility of stock returns. This denies the weak form of EMH inferring that the market is inefficient. If the investors and other market participants can identify a pattern in the returns volatility then it would be easier to make investment decisions based on return and risk of the stocks. Over

the years, evidence has shown that returns observed on days preceding a public holiday are, on average, higher than returns on other trading days (Ariel, 1990; Vergin & McGinnis, 1999).

The Nairobi Securities exchange consists of different players trading within the market and ranging from individuals, institutional investors and analysts who time to time make errors and these errors have an influence on the security price. Mispricing of assets in the market is persistent due to several reasons including, the limits to arbitrage, and existing models of psychology and descriptive power of stock returns. Also investors' misperception has effect on the price of the asset considered even after giving room for risk and this was witnessed at the time when Safaricom went public. These overreactions witnessed raise questions with regard to the efficiency of the NSE market hence makes this study worth undertaking.

Chan, Khanthavit, and Thomas (1996) studied holiday effect by distinguishing between state holidays and cultural holidays in Malaysia, India, Singapore and Thailand. Except for Thailand the result showed that the other three countries had significant abnormal returns during pre-holiday periods for cultural holidays and all four countries did not have abnormal pre-holiday returns for state holidays. Alagidede (2012) investigated the existence of two anomalies in African stock returns: the month of the year and the pre-holiday effects, and their implications for stock market efficiency. The study documented high and significant returns in days preceding a holiday in South Africa. The results indicated that the month of the year effect is prevalent in African stock returns.



Locally, Rasungu (2005) studied the impact of the holiday effect on the common share returns of companies listed on the NSE during the period 1st January 1998 to 1st December 2002 and the results did not find existence of the holiday effect in the NSE, Osman (2004), studied whether the stock returns at the NSE exhibit holiday effects. The study used a regression model to carry out the analysis and the findings were, the holiday effects do not have a significant impact on stock returns and Ndonga (2014), studied the relationship between holiday effect and stock market volatility case of NSE. The study findings indicated the existence of holiday effect at the Nairobi Securities Exchange and that the holiday effect is accompanied by stock return volatility.

From the review of the studies above there is still no consensus as to whether the pre-holiday effect exists at the NSE. Moreover, the studies done have used regression model in determining the existence of holiday effect at the NSE and the period considered was too short that will not be able to fully display the economic effects. Therefore, this study aimed at filling this gap by adopting a different methodology, event study methodology was adopted and a market model was used in determining the expected returns and finally abnormal returns were computed to test the existence of pre- holiday effect at the NSE. The study also considered a window period that is longer compared to prior studies in seeking to answer the following question: Do the returns on common stocks at the NSE reflect the pre- holiday effect?

### **1.3Objective of the study**

The objective of the study was to test the pre- holiday effect on stock returns at the Nairobi Securities Exchange.

#### **1.4 Value of the study**

Academicians will benefit from this research by helping them to narrow down on their research gaps in the course of their undertaking of research in this similar area of financial market anomalies. They will also benefit by adding knowledge to the already existing theory.

The government may also use the information and results of the study in formulating policies and regulations such as tax regulations that may affect business organizations due to such an anomaly (pre-holiday effect). Top management will also benefit from the findings as the findings may help them in making decisions on investment by timing the market during the holiday period for them to earn high returns if the returns could be predicted. Portfolio managers can use the information to know when to buy or sell stocks.

The study could provide information to consultants and stock brokers which will help them provide quality services to their clients. It could also prove useful to individual private investors who after studying the pre-holiday effect can choose when to buy or sell stocks. The information on the anomaly also opens up possibility of traders to formulate profitable trading rules based on the observed patterns.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

This chapter reviewed literature on testing the holiday effect. Specifically, the chapter addressed the theoretical framework guiding the study, empirical literature and summary of literature review.

### **2.2 Theoretical Review**

Various finance theories have tried to explain the behavior of stock market. This section therefore examined theoretical foundation where the following theories have been discussed: Efficient Market Hypothesis, Capital Asset Pricing Model and the Random Walk Theory.

#### **2.2.1 The Efficient Market Hypothesis (EMH)**

The efficient market hypothesis (EMH) maintains that market prices fully reflect all available information. Developed independently by Samuelson and Fama in the 1960s, the EMH states that in an informational efficient market, price changes must be unforecastable if they are properly anticipated, that is, if they fully incorporate the information and expectations of all market participants. Fama (1970) made a distinction between three forms of EMH; the weak form, the semi-strong form and the strong form. The strong form of efficiency suggests that securities prices reflect all available information and private information. The semi strong form of EMH asserts that the security prices reflect all publicly available information. There are no undervalued or overvalued securities and when new information is released, it is fully incorporated in the price. The weak form of the hypothesis puts forward that past prices on returns reflect future prices of securities.

According to Fama, Fisher, Jensen and Roll (1969) EMH is an investment theory which states that it is impossible to “beat the market” because stock market efficiency causes existing securities prices to always incorporate and reflect all the relevant information. This means that stocks trade at their fair value and thus it is impossible for investors to either purchase undervalued stocks or sell stocks for inflated prices.

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

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

The capital asset pricing model is based on two parameter portfolio analysis model developed by Markowitz (1952). This model was simultaneously and independently developed by William Sharpe (1964) which marked the birth of asset pricing theory. CAPM offers powerful and intuitively pleasing predictions about how to measure risk and the relationship between expected return and risk. The capital asset pricing model forms it bases on a set of assumptions that it normally employs and these include; investors being risk averse who have preferences for expected return and a dislike for risk, existence of a riskless asset, investors being able to lend or invest at riskless rate and also borrow at the riskless rate, all investments are perfectly divisible, all investors have homogenous expectations with regard to investment horizons and the market has no imperfections with no uncertainty about expected inflation.

One of the most important outcome of CAPM assumptions is that all investors hold a portfolio which is a combination between riskless portfolio and market portfolio and if CAPM holds investors can hold a diversified portfolios and systematic risk will be the only risk of importance to investors while the unsystematic risk will be reduced to zero by holding a diversified portfolio. Ideally this will mean that there will be no identifiable inefficiency in the market and all securities will lie along the market security line. This model is relevant to this study since it provides the basis for determining the expected returns for the stock.

### **2.2.3 Random Walk Theory**

Bachelier (1900) was the first to suggest that asset prices in an efficient market are well described by random walk and therefore they could be normally distributed. This argument gave birth to the random walk hypothesis in which changes in asset prices do not display any pattern. Later study by Cowles and Jones (1937) proved that US stock prices and also share these characteristics. Samuelson (1965) proofed that properly anticipated prices fluctuate randomly. Fama (1995) observed that the theory implies that a series of stock price changes has no memory; the past history of the series cannot be used to predict the future in a meaningful way. He further noted the future path of the price level of a security is no more predictable than the path of a series of cumulated random numbers.

Fama (1995) argues that the theory of random walks in stock market prices presents important challenges to both the chartist and the proponent of fundamental analysis. He observed that there is no real value in market analysis for the chartist and for the fundamental analysis; if the

random walk theory is valid then stock prices at any point in time will represent good estimates of intrinsic or fundamental values. The fact that imperial studies confirmed the presence of financial market anomalies such semi-monthly effect contract the theory of random walks.

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

Different empirical studies have identified that stock returns of any given firm are may be affected by multiple factors. These among others include:

#### **2.3.1 Market Anomalies**

Dyl and Maberly (1988) presented the information flow hypothesis which stated that information flow over the weekend is the cause of Monday effects hence the cause for negative returns on Monday. Banz (1981) and Reinganum (1981) investigated the impact of size on expected returns. The studies found a significant negative relationship between size of a firm and the expected returns. According to Banz, this was due to insufficient information on small firms leading to limited diversification hence higher risk adjusted return on these small stocks.

Other anomalies include the January effect, neglected firm effect, The Low PE ratio effect, Low-Priced Stocks, Market overreaction, The January and The Weekend effect.

#### **2.3.2 Leverage**

Asset returns have also been related to debt to equity ratio of assets. Bhandari (1988) investigated expected returns against leverage of a firm as measured by its Debt to Equity ratio (D/E). The study found that on controlling for size and beta, D/E was positively related to expected returns. The study concluded that beta along with D/E was able to capture the risk better.

## **2.4 Empirical Review**

Aligadede (2013) investigated the existence of two anomalies in African stock returns: the month of the year and the pre-holiday effects, and their implications for stock market efficiency. The study extended the traditional approach to modeling anomalies and examined the mean and the variance of returns. The study documented high and significant returns in days preceding a holiday in South Africa. The results indicated that the month of the year effect is prevalent in African stock returns.

Wu (2013) studied the returns of Chinese shares during the Chinese New Year. The study used unique sample to offer a direct test of the CNY effect. The average daily returns in three event windows: one week prior to the CNY, the holiday week, and one week after the CNY were computed. Using all Chinese ADRs completed from 1993 to 2011, the findings indicated a positive holiday effect during the CNY festival. Moreover, the Chinese ADRs had significantly higher average returns in the week prior to the festival, but lower average returns in the post-festival week than the rest of the year.

Picou (2006) sought to investigate the existence of an international stock market anomaly. The study tested for holiday anomalies over a ten year period and examined six major international indices using dummy variables. Regression with continuous data and simple regression analysis with discrete data points were used. The study found the existence of the ex-post-holiday anomaly for all exchanges tested and for the international effect of the ex-post-holiday reaction.

Meneu and Pardo (2004) investigated the existence of a pre-holiday effect in the most important individual stocks of the Spanish Stock Exchange that also traded in both the New York Stock Exchange and the Frankfurt Stock Exchange. Study results showed high abnormal returns on the trading day prior to holidays that are not related to any calendar anomaly.

Mghendi (2014) sought to test the existence of small firm effect on stock market returns at the Nairobi Securities Exchange. The study adopted a descriptive research design and it used secondary data from the Nairobi Securities Exchange collected using data collection sheets which were edited, coded and cleaned. F-test, a non-parametric test of differences was used in the study as a test of significance. It was noted that monthly returns had varying degrees but small sized firms displayed a more positive influence on the monthly returns for the six year period at the NSE. The study concluded that small sized firms have a significant positive influence on the monthly returns of companies listed at the NSE thus showing the existence of small firm effect.

Osman (2004) investigated whether the stock returns at the NSE exhibit holiday effect. The study used regression analysis to find out if the stock returns around the public holidays were higher compared to the returns of other days of the week. T-test was applied to assess the significance of the coefficients derived from the regression equation and one of the coefficients of the regression equation registered significance. The study showed that holidays do not have a significant impact on stock market activity at the Nairobi Stock Exchange hence there is no holiday effect at the Nairobi Stock Exchange.



Rasugu (2005) studied the impact of the holiday effect on the common share returns of companies listed on the NSE during the period 1st January 1998 to 1st December 2002. Daily mean returns of the days preceding holidays and other non-pre-holiday days were compared. Results showed that on a trading day prior to public holidays mean returns are 1.6 times returns of other days. A comparison of pre-holiday and post-holiday mean returns produced similar results. Individual mean returns on six days surrounding holidays also showed that pre-holiday days have lower mean returns. The results therefore did not support the existence of the holiday effect in the NSE.

Ndonga (2014) examined whether there is a relationship between holiday effect and the stock return volatility at the Nairobi Securities Exchange. This study examined pre-holiday, post-holiday and normal day's returns and how they affect volatility of returns at the NSE. The data used in the study constituted daily stock returns of 50 companies listed continuously at NSE from 1st Jan 2011 to 31st December 2013. Secondary data was obtained from the records at the NSE for the three year period from 2011 to 2013. A regression model was adopted to determine holiday effect on stock market volatility using the volume weighted average price. The findings indicated existence of holiday effect at the Nairobi Securities Exchange and that the holiday effect is accompanied by stock return volatility with highest volatility experienced during post-holiday returns and lowest volatility is experienced on pre-holiday returns.

## **2.5 Summary of Literature Review**

Pre-holiday effect on stock market returns has been expansively documented for different securities markets in the world and results generated differed from country to country and from one stock market to another. The differences in results could have been brought about due to the period that the studies were carried out or even the choice of methodology by different researchers in their undertaking of the studies hence there is need to carry out more research in this area.

Aligadede (2013), Rasugu (2005) and Osman (2004) documented the non- existence of holiday effect at the NSE while Ndonga (2014) acknowledged the existence of holiday effect at the NSE. Menue and Pardo (2004) and Wu (2013) confirmed the existence of pre-holiday effect at Spanish Stock Market and China respectively. Finally, Picou (2006) documented the existence of holiday effect for the six major exchanges, US, Australia, Hong Kong, UK, Japan and Canada he had considered and more precisely is that the post-holiday returns were higher than those of the pre-holiday.

While some studies showed non- existence of pre-holiday effect, other studies presented existence of pre- holiday effect. The inconsistency of the results and findings of the studies done maybe due to methodologies adopted, period considered during the undertaking of the study and how the window period was defined. This study therefore intended to extend the findings of previous studies by adopting a different methodology in analysis and by considering a longer window period all the same to establish whether NSE exhibits pre-holiday effect.

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

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

### **3.2 Research Design**

The study adopted a descriptive research design. According to Mugenda and Mugenda (2003), a descriptive research design determines and reports things the way they are. Creswell (2003) also observed that a descriptive research design is used when data is collected to describe persons, organizations, settings or a phenomenon. The research design was ideal for this study as it was carried out on firms listed at the NSE and data was readily available for comparison and there was no manipulation of the data.

### **3.3 Population of the study**

The total population consisted of all the 62 companies listed at the equity section of the NSE as at 31 December 2013 (See appendix I). The study was a census study but only those companies that were continuously listed and were actively participating in the market within the period were considered.

### **3.5 Data Collection**

The data contained a series of daily stock prices for companies that constitute the NASI Index over the period 1<sup>st</sup> January 2010 to 31<sup>st</sup> December 2013 thus secondary data was used. This data was obtained from the Nairobi Securities Exchange library and from the respective companies.

### 3.6 Data analysis

To test for the pre- holiday effect on stock returns, an event study methodology was used. An event study examines the effect of some event or set of events on the value of assets. Event study is widely used in testing the efficiency of the market. The following steps were undertaken:

First, Preholiday was defined as the last five trading days before the public holiday and post-holiday was defined as the first five trading days after the public holiday. The daily stock prices for the window period defined that is for the five days prior to holiday, the holiday day and the five days after the holiday were then collected for the companies listed at the NSE as at 31st December 2013.

The actual returns on stocks for each day within the defined window period were computed as follows:

$$\text{Total Returns} = \frac{(P_1 - P_0) + D}{P_0 P_0}$$

Where;

$P_1$  = Closing price for each event day

$P_0$  = Opening price for each event day

D = Dividends

The expected returns on the other hand were computed using the market models for each holiday on each of the event day as follows:

$$R_{jt} = \alpha_j + \beta_j R_{mt}$$

Where;

$E(R_{jt})$  = Expected returns of stock j at event period t

$\beta_j$  = Securities specific intercept and slope coefficients

$R_{mt}$  = Market return measured by NSE- 20 Share Index at time t

$e_{ij}$  = The unpredictable component of the return

The models for each holiday were derived using SPSS and expected returns for each day within the window period were computed.

Finally, the abnormal returns were determined using the following formula:

$$AR_{jt} = R_{jt} - E(R_{jt})$$

Where;

$AR_{jt}$  = Abnormal returns of stock j at time t

$R_{jt}$  = Actual returns of stock j at time t

$E(R_{jt})$  = Expected returns of stock j at time t

### **3.6.1 Operationalization of Study Variables**

In order to test the pre-holiday effect, the study analyzed the effect of public holidays, that is; Easter, 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 Day (25<sup>th</sup> December) and Boxing Day (26<sup>th</sup> December). These calendar holidays were taken as they are.

Preholiday was defined as the last five trading days before the public holiday and post-holiday was defined as the first five trading days after the public holiday.

### **3.6.2 Tests of Significance**

To test the significance of abnormal returns the standardized t-test following Patell (1976) and Dodd and Warner (1983) were used. The following hypothesis was tested:

$H_0$ : Pre- holiday effect does not exist at the NSE.

$H_1$ : Pre- holiday effect exists at the NSE.

The analysis of abnormal returns was done using the SPSS computer program.

## CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

### 4.1 Introduction

This chapter presents results of the analysis and findings of the study with reference to the objective of the study. The chapter is organized as follows; section 4.2 gives a summary of descriptive analysis of the Abnormal Returns, section 4.3 provides results of the data analysis and includes relevant tables that help to explain the results of the analysis and section 4.4 which presents the t-test that describes the main findings of the study.

### 4.2 Descriptive Statistics

**Table 4.1: Summary of Descriptive Statistics of Abnormal Returns**

	N	Mean		Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
ABR	60	-.0539	.02572	.19922	.040	-1.489	.309	5.312	.608
Valid N (listwise)	60								

Source: Research Data

Table 4.1 above shows the descriptive statistics of the abnormal returns. The abnormal returns had a mean of -0.0539; the standard error was 0.02572, and a skewness of -1.489. The abnormal returns had a standard deviation of 0.19922, a variance of 0.40 and a kurtosis of 5.312.

### 4.3 Data Analysis, Results and Discussion of Findings

**Table 4.2: Coefficients of Regression Model for Easter Holiday**

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	.000	.000		.795	.484
RM	-.004	.010	-.240	-.428	.698

a. Dependent Variable: AR

The expected returns for Easter Holiday were calculated using the following model for each day in the event window:

$$R = -0.240 R_m$$

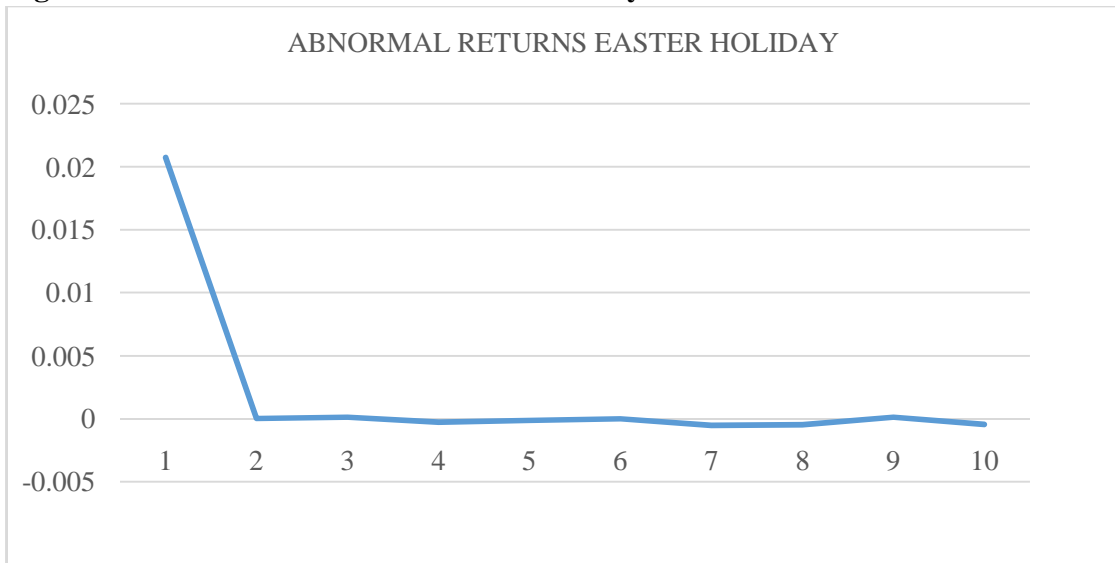
**Table 4.3: Summary of Actual, Expected, Abnormal and Cumulative Abnormal Returns for Easter Holiday**

ACTUAL RETURNS	EXPECTED RETURNS	ABNORMAL RETURNS	CUMULATIVE ABNORMAL RETURNS
0.020977093	0.000216	0.020761093	0.020761093
0.00004064	0.00001272	0.00002792	0.020789013
0.0001351	0.0000096	0.0001255	0.020914513
-0.000284	-0.00000048	-0.00028352	0.020630993
-0.0001274	0.000000048	-0.000127448	0.020503545
0	0.0000048	-0.0000048	0.020498745
-0.00004816	0.00048	-0.00052816	0.019970585
-0.0004632	0.0000144	-0.0004776	0.019492985
0.0001473	0.0000216	0.0001257	0.019618685
-0.0004202	0.0000216	-0.0004418	0.019176885

Source: Research Data



**Figure 1: Abnormal Returns for Easter Holiday**



Source: Research Data

From table 4.3 and Figure 1 above, the abnormal returns were positive in the first pre-holiday day and remains zero until the event day and immediately after the holiday.

**Table 4.4: Coefficients for regression model Christmas and Boxing Days**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	.000	.000		.709	.529
	RM	.001	.004	.129	.226	.836

a. Dependent Variable: AR

The expected returns Christmas and Boxing days were calculated using the following model for each day in the event window:

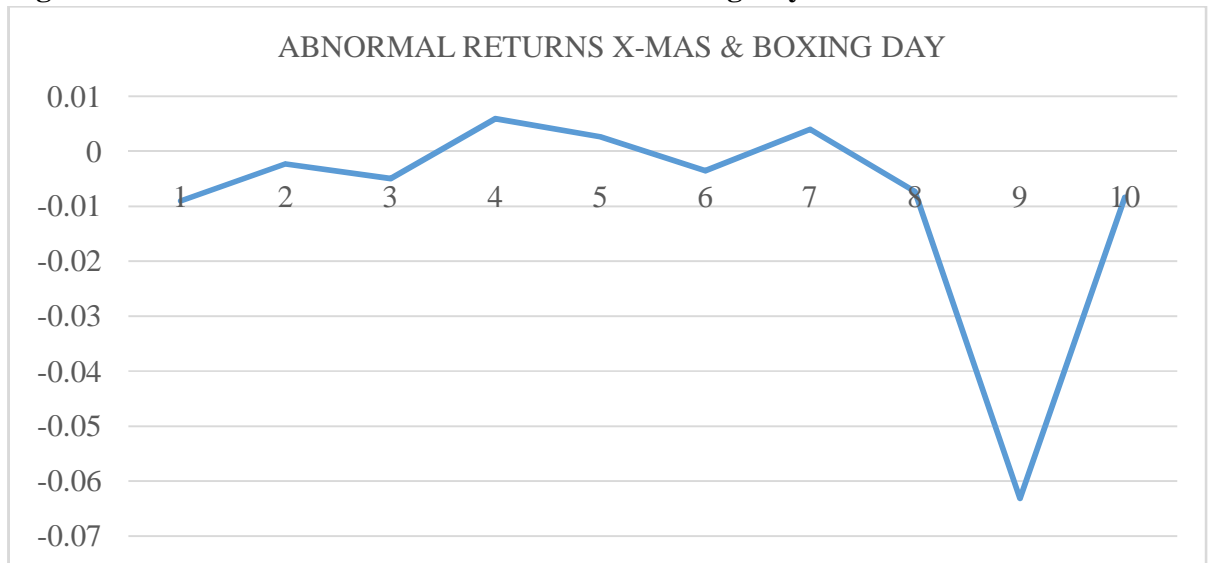
$$R = 0.129R_m$$

**Table 4.5: Summary of Actual, Expected, Abnormal and Cumulative Abnormal Returns for Christmas and Boxing Days**

ACTUAL RETURNS	EXPECTED RETURNS	ABNORMAL RETURNS X-MAS & BOXING DAY	CUMULATIVE ABNORMAL RETURNS
0.001881	0.010881	-0.009	-0.009
-0.003592	-0.0013231	-0.0022689	-0.0112689
-0.00493	0	-0.00493	-0.0161989
0.0007198	-0.0052367	0.0059565	-0.0102424
0.002903	0.0002584	0.0026446	-0.0075978
0.003172	0.006674	-0.003502	-0.0110998
0.001929	-0.002102	0.004031	-0.0070688
0.000225	0.007522	-0.007297	-0.0143658
-0.06106	0.002102	-0.063162	-0.0775278
-0.002412	0.005909	-0.008321	-0.0858488

Source: Research Data

**Figure 2: Abnormal Returns for Christmas and Boxing Days**



Source: Research Data

From table 4.5 and Figure 2 above, the abnormal returns were positive two days before the event day. Zero abnormal returns were witnessed during the event day and negative

abnormal returns immediately after the holidays, then positive abnormal returns were witnessed two day after holiday.

**Table 4.6: Coefficients for regression model Mashujaa Day**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	-.023	.013		-1.734	.181
	RM	-4.478	21.026		-.122	.845

a. Dependent Variable: AR

The expected returns Mashujaa day were calculated using the following model for each day in the event window:

$$R = -0.023 - 0.122R_m$$

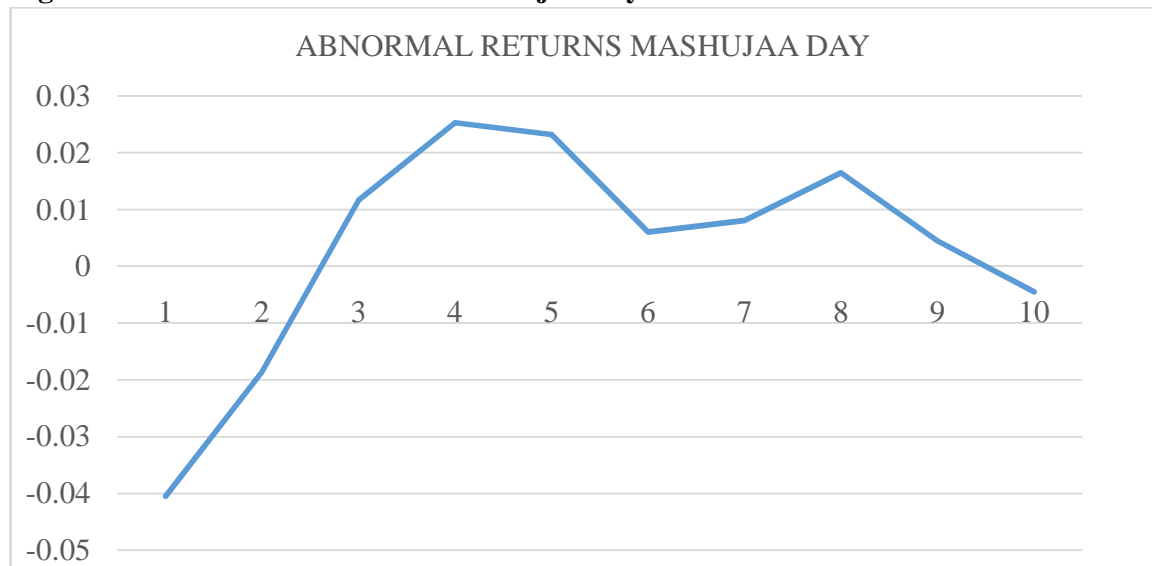
**Table 4.7: Summary of Actual, Expected, Abnormal and Cumulative Abnormal Returns for Mashujaa Day**

ACTUAL RETURNS	EXPECTED RETURNS	ABNORMAL RETURNS	CUMULATIVE ABNORMAL RETURNS
-0.062402	-0.021891	-0.040511	-0.040511
-0.040884	-0.022351	-0.018533	-0.059044
-0.010819	-0.022515	0.011696	-0.047348
0.0022945	-0.022998	0.0252925	-0.0220555
-0.0025412	-0.025764	0.0232228	0.0011673
-0.018924	-0.024949	0.006025	0.0071923

-0.01559	-0.023674	0.008084	0.0152763
-0.007779	-0.024261	0.016482	0.0317583
-0.017489	-0.021936	0.004447	0.0362053
-0.029311	-0.024827	-0.004484	0.0317213

Source: Research Data

**Figure 3: Abnormal Returns for Mashujaa Day**



Source: Research Data

From table 4.7 and Figure 3 above, the abnormal returns were negative before the event day for two days. Thereafter, positive abnormal returns were witnessed just before the event day and immediately after the event day.

**Table 4.8: Coefficients of Regression Model for Jamhuri Day**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.559	.578		.967	.405
RM	-4.890	12.887	-.214	-.379	.730

a. Dependent Variable: AR

The expected returns Jamhuri day were calculated using the following model for each day in the event window:

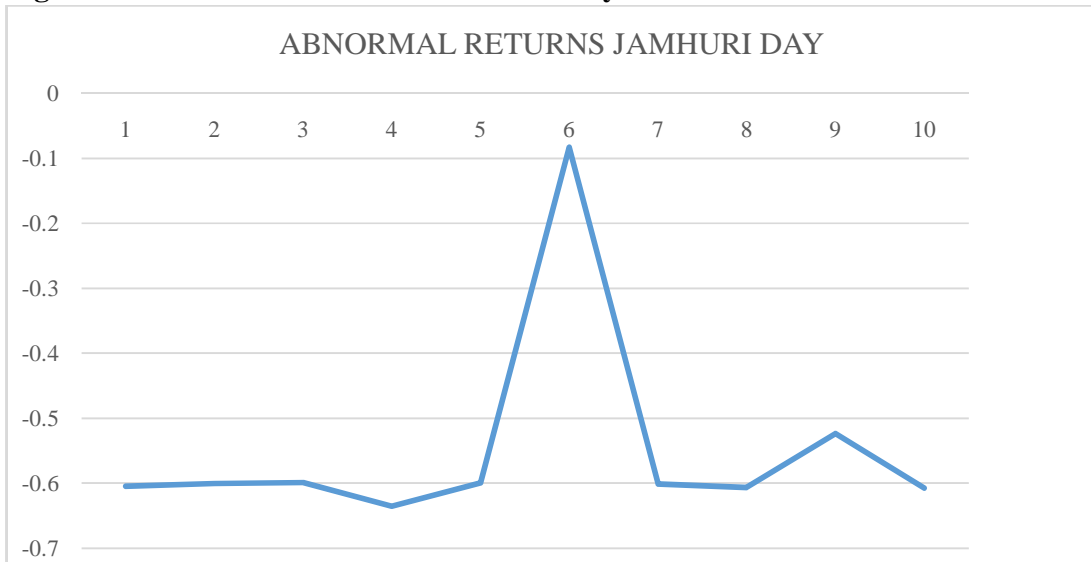
$$R = 0.599 - 0.214R_m$$

**Table 4.9: Summary of Actual, Expected, Abnormal and Cumulative Abnormal Returns for Jamhuri Day**

ACTUAL RETURNS	EXPECTED RETURNS	ABNORMAL RETURNS	CUMULATIVE ABNORMAL RETURNS
-0.007838	0.597055	-0.604893	-0.604893
-0.00044172	0.6001383	-0.60058002	-1.20547302
0.0008982	0.599851	-0.5989528	-1.80442582
-0.036397	0.598965	-0.635362	-2.43978782
-0.00059094	0.599003	-0.59959394	-3.03938176
0.5162724	0.599329	-0.0830566	-3.12243836
-0.005926	0.595582	-0.601508	-3.72394636
-0.0086342	0.597818	-0.6064522	-4.33039856
0.077441	0.600867	-0.523426	-4.85382456
-0.0067493	0.601028	-0.6077773	-5.46160186

Source: Research Data

**Figure 4: Abnormal Returns for Jamhuri Day**



Source: Research Data

From table 4.9 and Figure 4 above, the abnormal returns were negative before and even after the event day.

**Table 4.10: Coefficients of the Regression Model for Madaraka Day**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	.001	.002		.554	.618
	RM	.124	.202	.334	.613	.583

a. Dependent Variable: AR

The expected returns Madaraka day were calculated using the following model for each day in the event window:

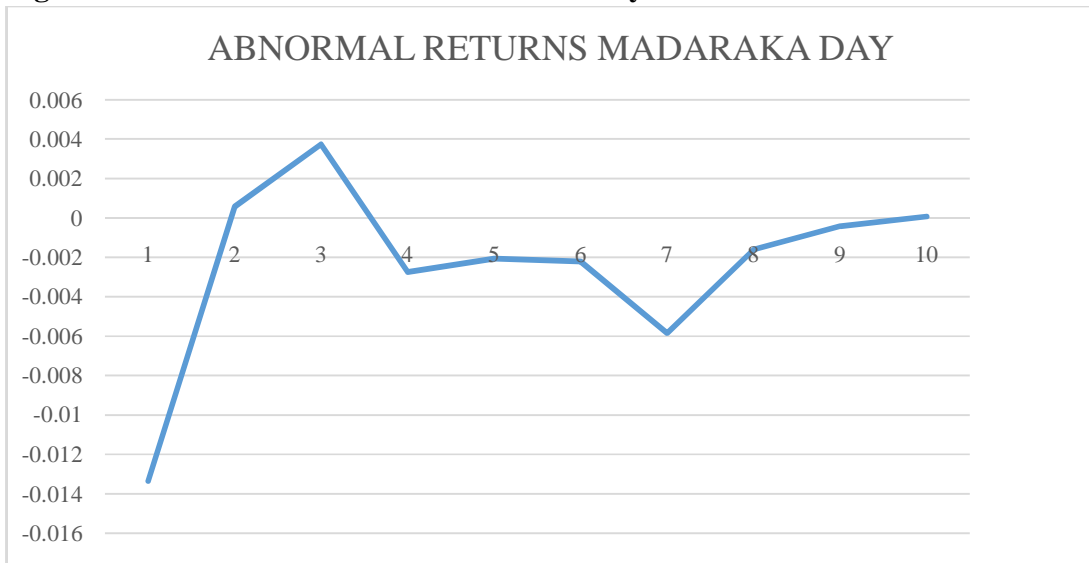
$$R = 0.001 + 0.334R_m$$

**Table 4.11: Summary of Actual, Expected, Abnormal and Cumulative Abnormal Returns for Madaraka Day**

ACTUAL RETURNS	EXPECTED RETURNS	ABNORMAL RETURNS MADARAKA DAY	CUMULATIVE ABNORMAL RETURNS
-0.008214	0.005156	-0.01337	-0.01337
-0.0003951	-0.0009599	0.0005648	-0.0128052
0.0035824	-0.00014527	0.00372767	-0.00907753
-0.00087854	0.00187823	-0.00275677	-0.0118343
-0.00097758	0.00109154	-0.00206912	-0.01390342
-0.0030521	-0.00083906	-0.00221304	-0.01611646
-0.001239	0.0046143	-0.0058533	-0.02196976
0.0023604	0.0039739	-0.0016135	-0.02358326
-0.0003154	0.00012314	-0.00043854	-0.0240218
-0.00006933	-0.00012894	0.00005961	-0.02396219

Source: Research Data

**Figure 5: Abnormal Returns for Madaraka Day**



Source: Research Data

From table 4.11 and Figure 5, the abnormal returns were negative before the holiday period; they become positive two days before the holiday, negative again a day before the holiday and become zero during the event day. Moreover, two days after the event day abnormal returns were negative after which they become negative later.

**Table 4.12: Coefficients of the Regression Model for Labor Day**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	
	B	Std. Error	Beta			
1	(Constant)	.000	.000		.370	.736
	RM	.094	.211	.250	.447	.685

a. Dependent Variable: AR



The expected returns for Labor Day were calculated using the following model for each day in the event window:

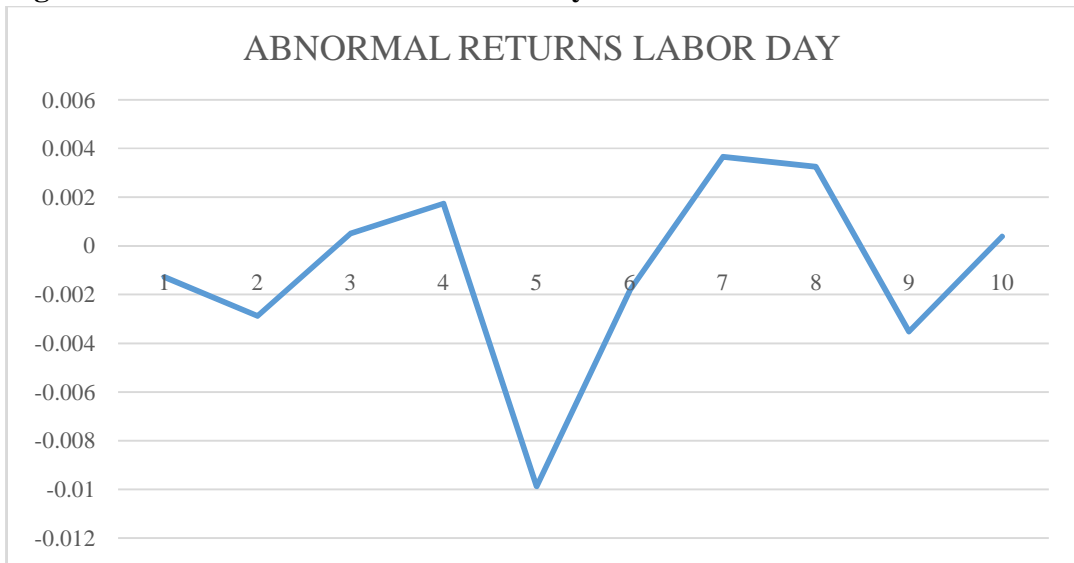
$$R = 0.250R_m$$

**Table 4.13: Summary of Actual, Expected, Abnormal and Cumulative Abnormal Returns for Labor Day**

ACTUAL RETURNS	EXPECTED RETURNS	ABNORMAL RETURNS LABOR DAY	CUMULATIVE ABNORMAL RETURNS
-0.0012795	-0.000003817	-0.001275683	-0.001275683
-0.0028352	0.00004138	-0.00287658	-0.004152263
-0.00048386	-0.00099462	0.00051076	-0.003641503
0.00040637	-0.00132979	0.00173616	-0.001905343
-0.0075956	0.0022728	-0.0098684	-0.011773743
-0.0042015	-0.0023694	-0.0018321	-0.013605843
0.0014729	-0.0021807	0.0036536	-0.009952243
0.0046319	0.001381	0.0032509	-0.006701343
0.0004816	0.0039931	-0.0035115	-0.010212843
0	-0.00038487	0.00038487	-0.009827973

Source: Research Data

**Figure 6: Abnormal Returns for Labor Day**



Source: Research Data

From table 4.13 and Figure 6, the abnormal returns were negative before the event day, they become positive two days before the holiday and also deep further to negative a day before the event day. Positive abnormal returns however are witnessed during the first three days immediately after the event day, it again goes to negative and finally picks again and positive abnormal returns are witnessed.

**Table 4.14: Summary of Descriptive Statistics for Cumulative Abnormal Returns**

Descriptive Statistics											
	N	Minimum	Maximum	Mean		Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
CUM ABR	60	-5.46	.04	-.5169	.16811	1.30214	1.696	-.2602	.309	5.819	.608
Valid N (listwise)	60										

Table 4.14 above shows descriptive statistics of cumulative abnormal returns. The cumulative abnormal returns had a mean of -0.5169; the standard error was 0.16811, and a skewness of -2.602. Moreover, the cumulative abnormal returns had a standard deviation of 1.30214, variance of 1.696 and a kurtosis of 5.819. the mean cumulative abnormal returns of -0.5169 suggests that, on average the pre- holiday effect will have a negative effect on stock returns over and above the market return.

#### **4.4 Test of Significance of Abnormal Returns**

The study was anchored on EMH hence the following hypothesis was used:

H<sub>0</sub>: Pre- holiday effect does not exist at the NSE.

H<sub>1</sub>: Pre- holiday effect exists at the NSE.

**Table 4.15: T-test Statistic for Abnormal Returns**

	Test Value = 0					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
ABR	-2.097	59	.040	-.05393	-.1054	-.0025

Source: Research Data

The results showed that the abnormal returns had a t- value of -2.097 and a significance of 0.040. Since the p- value is less than 0.05, the effect is significant. The null hypothesis was rejected and the study concluded that the abnormal returns during the event window were significant and therefore there exists pre- holiday effect at the NSE.

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

### **5.1 Introduction**

This chapter presents a summary of findings to the study and in the process, draws conclusions based on the findings. The chapter subsequently, makes recommendations arising from the conclusions of the study and makes suggestions for further research in connection with certain specific areas of this study.

### **5.2 Summary of Findings**

The objective of the study was to test the pre- holiday effect on stock market returns at the Nairobi Securities Exchange. The study used event study methodology to test the pre- holiday effect on stock market returns at the Nairobi Securities Exchange. The cumulative abnormal returns had a mean of -0.5169 a standard deviation of 1.30214 and a variance of 1.696. The negative mean cumulative returns implies that pre- holiday has a negative effect on stock returns.

Labor Day, Madaraka Day, Mashujaa Day, Christmas and Boxing Day recorded positive abnormal returns in most of the days before and after the holiday. Easter and Jamhuri Day however, recorded negative abnormal returns. In all the holidays also, fluctuations in abnormal returns were witnessed with pre- holiday days and post- holiday days reporting both positive and negative abnormal returns.

The results also showed that the abnormal returns had a t- value of -2.097 and a significance of 0.040. Since the p- value was less than 0.05, the effect was found to be significant hence the study concluded that there exist pre- holiday effect at the Nairobi Securities Exchange.

### **5.3 Conclusion**

The study thus concludes that there exists pre- holiday effect at the Nairobi Securities Exchange. From the findings as presented, it was found that abnormal returns do exist around the holiday periods and the mean abnormal returns were significant at 5% significance level.

The negative mean cumulative abnormal returns also suggests that, on average the pre-holiday effect had a negative effect of stock returns hence the returns will decrease over and above the market return.

### **5.4 Recommendations**

The study findings indicate that the pre-holiday anomaly exists at the Nairobi Securities Exchange. It is for this reason that the study recommends the regulator to come up with more procedures which will improve the efficiency of the stock market. The government should put in place more directives and guidelines that will ensure the stock market becomes a fair playing ground with minimal cases of exploitation.

The pre- holiday effect pattern might enable the investors to take advantage of the regular shifts in the market by designing trading strategies, which account for such predictable pattern. The investors can buy securities and wait to sell them around holidays when the security prices are high hence making an arbitrage profits.

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

This research was carried out following a Kenyan perspective and only applicable to its culture and way of life of her citizens. Therefore a major limitation is that it may not be applicable to other countries due to cultural differences and background.

This study also does not differentiate between institutional traders and individual traders and their effect on the trades. Institutional traders have more market information than individual investors. They can carry out research to obtain more market information to base their investment decisions.

### **5.6 Suggestions for Further Studies**

This study covered a period of four years from 1st January 2010 to 31st December 2013. It is possible that a longer period could have an impact on the findings of this study. It is important to conduct a similar study that covers a longer period example fifteen years and also use a different market index such as NSE 20 share index to see if the same findings could be arrived at.

A similar study in market anomalies should also be carried out in fixed income instruments to find out if holiday effect anomaly exists. Trading in fixed income instruments like Treasury Bills and Treasury Bonds is different from the way equity instruments are traded.

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## APPENDICES

### Appendix I: Study Population as at 31<sup>st</sup> December 2013

S. NO	Company Name	S. NO	Company Name
1	A.Baumann& Co Ltd	32	Kenya Airways Ltd
2	ARM Cement Ltd	33	Kenya Commercial Bank Ltd
3	B.O.C Kenya Ltd	34	Kenya Orchards Ltd
4	Bamburi Cement Ltd	35	Kenya Power & Lighting Co Ltd
5	Barclays Bank of Kenya Ltd	36	Kenya Re Insurance Corporation Ltd
6	British American Tobacco Kenya Ltd	37	Liberty Kenya Holdings Ltd
7	British-American Investments Co.(Kenya) Ltd	38	Longhorn Kenya Ltd
8	Car & General (K) Ltd	39	Marshalls (E.A.) Ltd
9	Carbacid Investments Ltd	40	Mumias Sugar Co. Ltd
10	Centum Investment Co Ltd	41	Nairobi Securities Exchange Ltd
11	CFC Stanbic of Kenya Holdings Ltd	42	Nation Media Group Ltd
12	CIC Insurance Group Ltd	43	National Bank of Kenya Ltd
13	Crown Paints Kenya Ltd	44	NIC Bank Ltd
14	Diamond Trust Bank Kenya Ltd	45	Olympia Capital Holdings Ltd
15	E.A.Cables Ltd	46	Pan Africa Insurance Holdings Ltd
16	E.A.Portland Cement Co. Ltd	47	Rea Vipingo Plantations Ltd
17	Eaagads Ltd	48	Safaricom Ltd
18	East African Breweries Ltd	49	Sameer Africa Ltd
19	Equity Bank Ltd	50	Sasini Ltd
20	Eveready East Africa Ltd	51	Scangroup Ltd
21	Express Kenya Ltd	52	Standard Chartered Bank Kenya Ltd
22	Flame Tree Group Holdings Ltd Ord	53	Standard Group Ltd
23	Home Afrika Ltd	54	The Co-operative Bank of Kenya Ltd
24	Housing Finance Co. Kenya Ltd	55	The Limuru Tea Co. Ltd
25	Hutchings Biemer Ltd	56	Total Kenya Ltd
26	I&M Holdings Ltd	57	TPS Eastern Africa Ltd
27	Jubilee Holdings Ltd	58	Uchumi Supermarket Ltd
28	Kakuzi Ltd	59	Umeme Ltd
29	Kapchorua Tea Co. Ltd	60	Unga Group Ltd
30	KenGen Co. Ltd	61	Williamson Tea Kenya Ltd
31	KenolKobil Ltd	62	Trans-Century Ltd