# The Influence of Muslim Holidays on Stock Returns of the Kenyan Listed Firms'

Mary M. Atala [1]     Eric E. Mang'unyi [2*]

1.PhD Student, School of Business, University of Nairobi, P.O. Box 30197 -00100, Nairobi-Kenya
2.School of Business, The Catholic University of Eastern Africa, P.O. Box 62157-00200, Nairobi-Kenya

**Abstract**
This research aims to show the connection between Muslim holidays[1] and stock returns. The 'event study methodology' was employed and using a Kenyan sample of 20 listed firm-year data observations for the years 2013–2014 of the Nairobi Securities Exchange (NSE) 20-share index price movements, the authors analyze the effects of Muslim holidays[2] on stock returns. The results show that six out of the ten holidays studied had a positive effect on stock returns. The findings demonstrate that Muslim holidays affect stock returns of companies listed at the NSE. It can be inferred from the findings that the stock market is influenced by investor sentiments and dispositions. The study showed that, at some point, when investors 'fail' to be rational, this causes a stock market anomaly at the NSE. The study points out a conspicuous and important gap in knowledge and suggests recommendations for regulatory authorities in the light of the findings.
**Keywords:** Efficient capital markets, investor rationality, Muslim holidays, market anomaly, stock market investment

## 1. Introduction

Consistent with the efficient market hypothesis, traditional finance assumes that investors are rational, in that, they correctly update their beliefs when new information is available to them (Pesaran 2005). Earlier researchers (for example, Fama, 1970) defines efficient market as a market with large numbers of rational profit maximizing individuals actively competing with each other and attempt to predict future market values of individual securities. Additionally, such a market has all important relevant information which is almost freely available to all investors. Reilly and Brown (2004) delineate efficient capital market as one in which security prices adjust rapidly on the arrival of new information and, as such, the current prices of securities reflect all information about the security. On the other hand, the afore-mentioned assumptions of rationality, and their corresponding implications for market efficiency, have come under attack recently (Lo, 2005). For example, Aduda, Oduor and Omwonga (2012) argue that people often suffer from cognitive and emotional biases and act in a seemingly irrational manner. Lo (2005) asserts that under uncertainty, various departures from market rationality occur in the form of specific behavioral biases that are seemingly ubiquitous to human decision making.

In the last decade, there has been a rapid growth and notable surge in demand for Islamic finance services and products across the world (Alrashidi, 2013). Newly created financial instruments such as Islamic bonds and Islamic mortgage ('*murabaha*') are increasingly common offerings in even the most traditional financial services organizations (Mitchell, Rafi, Severe & Kappen 2014). The afore-mentioned instruments have culminated to increased research on the Islamic calendar anomalies and its impact on the stock markets (Sultan & Malik 2013). Shah and Ahmed (2014) state that the Islamic calendar shows some impact on the life of Muslims, as a whole or individually hence, this have an effect on the daily business life in a country. For instance, during the month of Muharam and Ramadan people pay much attention towards rituals and faith thereby paying less attention on other activities.

Furthermore, some researchers such as Mitchell et al. (2014) have suggested that, intense religious observance during Ramadan leads to an increase in perceived social support and happiness among the observers and that this combination of psychological factors may affect investor sentiment and decision-making. Al-Hajieh, Redhead and Rodgers (2011) study posits that there is a significant and strong positive calendar effects on stock performance in respect to the whole period of Ramadan in most countries. The afore-mentioned researchers attribute the impact to synchronization-related herding effects amplifying the impact of the mood swings associated with this period. Białkowski, Etebari and Wisniewski (2012) in their study reiterate that stock returns during Ramadan are almost nine times higher and less volatile than during the rest of the year. They go on and say that these results are consistent with the notion that Ramadan positively affects investor psychology, as it promotes feelings of solidarity and social identity among Muslims world-wide, leading to optimistic beliefs that extend to investment decisions (Białkowski et al., 2012). It is against the above background that this study strives to understand the effect of Muslim holidays on stock performance.

---

[1] These are religious practices whose aim, like all other fundamentals of Islam, is to imbibe piety and self-righteousness, and promote the spirit of sacrifice for a right cause.
[2] In this study, the words holy day and holiday have been used interchangeably hence mean one and the same thing.

Although the literature on market anomalies issues including day of the week effect in the context of security and stocks is ever-increasing (Kiymaz and Berument 2003; Kulavi 2013; Oyori 2012), holiday effect (Dodd and Gakhovich 2011; Marrett and Worthington 2007; Osman 2007; Rasugu 2005), and turn of the month effect (Migiro 2010; Waithaka 2013; Ray 2012), little research pertains to effect of Muslim holy days on the stock marketing in a developing country such as Kenya. In order to address the aforementioned, this paper presents results of a study conducted to determine the relationship between Muslim holidays and stock market returns at the Nairobi Securities Exchange in Kenya.

## 2. Review of Literature
### 2.1 Muslim holy days – an overview
The Islamic year is based on a lunar calendar, referred to as the *Higri* or *Hijri* (Abadir & Spierdijk 2005). The *Hijri* calendar is used to determine Islamic holidays and festivities (Lee & Hamzah 2010). Over the years a *Hijra* calendar holiday changes month and day on the Gregorian calendar (Chowdhury & Mostari 2015). Muharram is the month with which the Muslims begin their lunar Hijrah (Usman, 2014) and is regarded as a solemn month due to the martyr of Hazrat Imam Husain (Shah, Shaikh & Bhatti, n.d). Another important festival is Eid-ul-Azha, also known as festival of sacrifice day (Chowdhury & Mostari, 2015). The symbolism is the attitude, a willingness to make sacrifices in peoples' lives in order to stay on a straight path (Khan & Mohyuddin, 2013). According to Chowdhury and Mostari (2015), it is in this period that huge sums of money are spent compared to other months. Ramadan is the ninth month of the Muslim calendar and the most celebrated holiday among billions of Muslims throughout the world (Bialkowsiki, Etabari & Wisniewski, 2010). During Ramadan, Muslims can experience a whole series of emotions for instance, the process of fasting is of particular significance here (Al-Hajieh et al., 2011; Bialkowsiki et al., 2010). Theoretically, as some researchers (Al-Hajieh et al., 2011) claim, the potential impact of Ramadan upon financial markets may be attributed to its effect on investors' reasoning and emotional state during this observant period. Eidul-Fitr, a three-day celebration holiday marks the end of Ramadan (Al-Hajieh et al., 2011) and symbolizes the breaking of the fasting period. Whereas Muslims celebrate with family and friends, they also observe this holiday by giving in charity to the needy (Al-Hajieh et al., 2011). It is interesting to examine the behavior of trading activity under these situations in a Kenyan securities exchange environment

### 2.2 Stock market anomalies/irregularities
Efficient market hypothesis is one of the important paradigms of traditional finance theories (Latif, et al., 2011). It asserts that financial markets are efficient, hence financial assets are correctly priced, and implying that one cannot consistently achieve returns in excess of the average market returns given the information available at the time the investment is made (Keitany & Lumumba, 2012). Despite early evidence that the stock market is rational hence efficient, there have been scores of studies that have documented long-term historical anomalies in the stock market that seem to contradict the Efficient Market Hypothesis (EMH) (Muimi & Aduda, 2011). These departures from EFH are called anomalies (Schwert, 2003). Anomalies in stock returns are abnormalities in behavior of stocks on the markets (Jilek, 2012). They indicate either market inefficiency (profit opportunities) or inadequacies in the underlying asset-pricing model (Schwert, 2003). Therefore, markets are not efficient at least not in the weak form denoting departures from underlying theory (Schwert, 2003).

### 2.3 Analysis on market anomalies
Financial market anomaly occurs when a performance of stock or a group of stocks deviate from the assumptions of efficient market hypotheses (Latif, Arshad, Fatma & Farooq, 2011). The existence of seasonality in stock returns violates the weak form of market efficiency because equity prices are no longer random and can be predicted based on past pattern (Ray, 2012). Calendar anomalies on the stock market include January effect, turn of the month effect, Monday effect, day of the week effect, weekend effect and holiday effect (Latif et al., 2011).

To understand market anomalies and their impact on different stock markets, numerous studies have been conducted with mixed findings. For example, a study by Hansen and Lunde (2003) on stock indices in Europe and the USA found that calendar effects are significant in most series, and primarily end of the year effects exhibit the largest anomalies. Tangjitprom (2011) study in Thailand, found that the calendar anomalies exist in Thai stock market. Findings of his study showed that return is abnormally high during the months of December and January as well as the return during the turn-of-month. Furthermore, the study also showed that the return is abnormally high on Fridays and abnormally low on Mondays (Tangjitprom, 2011).

Marrett and Worthington (2008) studied the effect of each day of the week on Australian daily stock returns. Their study found out that while the Australian market overall provides no evidence of daily seasonality, there was evidence of a small cap day-of-the-week effect with systematically higher returns on Thursdays and Fridays. The aforementioned authors further established that there is holiday effect at the market level with pre-holiday returns typically five times higher than other days (Marrett & Worthington, 2007). Balbina and Martins (2002) study revealed that the average returns on days after public holidays are lower than on days before public holidays while

Dodd and Gakhovich (2011) study in Central and Eastern European markets showed presence of the holiday effect with a number of countries showing abnormal pre-holiday returns. From the foregoing, it can be deduced that there is evidence of instability of stock returns during these holidays.

*2.4 Relationship between Muslim holidays and stock returns*

The debate on the relationship between Muslim holidays and stock returns is on-going. Researchers (Ramezani, Pouraghajan and Mardani, 2013, Al-Hajieh et al 2011; Bialkowsiki et al., 2010) argued that peoples' beliefs have a significant influence on lifestyle, culture, society and decisions-making including economic decisions. Since Muslim holidays are believed to imbibe piety and self-righteousness, an individual effect on stock returns can be considered in light of the effect of these religious observances on investor sentiments (Chowdhury & Mostari, 2015).

Several researchers have alluded to the significant disappearance and volatility of trading activity during Ramadan (Seyyed, Abraham & Al-Hajji, 2005; Mustafa, 2011). A study by Hasain (1998) in Pakistan found that there was no significant change on stock returns due to the holidays and concluded that the experienced volatility could have been as a result of low pace of economic activity. Shah, Shaikh and Bhatti (n.d) assert that given the gloomy investor mood during the month of Muharram, a negative effect on the returns of Muslim financial markets has been observed while Al-Ississ (2010) findings document statistically significant drops in the trading volume and changes in daily stock returns associated with religious experiences on these holy days. The more sacred days of Ramadan yield positive returns while Ashoura days yield a negative impact which was attributed to a positive mood during Ramadan and a negative mood during Ashoura (Al-Ississ, 2010). Bialkowsiki et al. (2010) investigation revealed that stock returns during Ramadan are almost nine times higher and less volatile compared to the year.

Through an investigation using five different models, Mustafa (2011) studied Islamic calendar consequence on the Karachi Stock Exchange between years 1991-2010 and found that there were some effects in all the models on the stock exchange during the Ramadan holiday while Muharram holiday effect was found in all models except one. Contrarily, a study by Shah and Ahmed (2014) concluded that Ramadan effect was not significant in Karachi Stock Exchange.

Having investigated holiday effect on the Kenyan Nairobi Securities Exchange (NSE), Rasugu (2005) and Osman (2007) support the existence of the holiday effect on stock returns. Kulavi (2013) argues that Monday is characterized by the highest volatility and coincides with the lowest trading volume hence low return, while Thursday is characterized by the lowest volatility coinciding with the highest trading volume and highest return. Similarly, Oyori (2012) concludes that the day-of-the-week effect exists on the NSE stock market sectors. Although earlier researchers (Daniel, 2003; Migiro, 2010) did not find turn of the month effect at the NSE, Waithaka (2013) affirms that an effect existed. Several researchers have differing opinions on the issue of holiday effect on stock returns in Kenya (Nyariki, 2014; Ndonga, 2014), and have alluded to existence of stock return volatility with high return volatility experienced on post-holiday returns whereas pre-holiday returns showed lower volatility than the normal day's return.

It is clear from the brief foregoing literature review that majority of the theoretical and empirical studies are mainly found outside Africa and in Muslims dominated cultures with a few having been done in Kenya. In this light, it is important to examine how Muslim holidays impact on stock returns in the Kenyan context.

## 3. Research Question

The main purpose of this research is to examine the connection between Muslim holidays and stock returns among firms listed on the Nairobi Securities Exchange. The study endeavored to recognize the effect of Islamic/Muslim holidays on stock returns performance, and determine if investors correctly update their information as and when it becomes available in the market. In order to address the aforementioned, this paper answers the following research question:
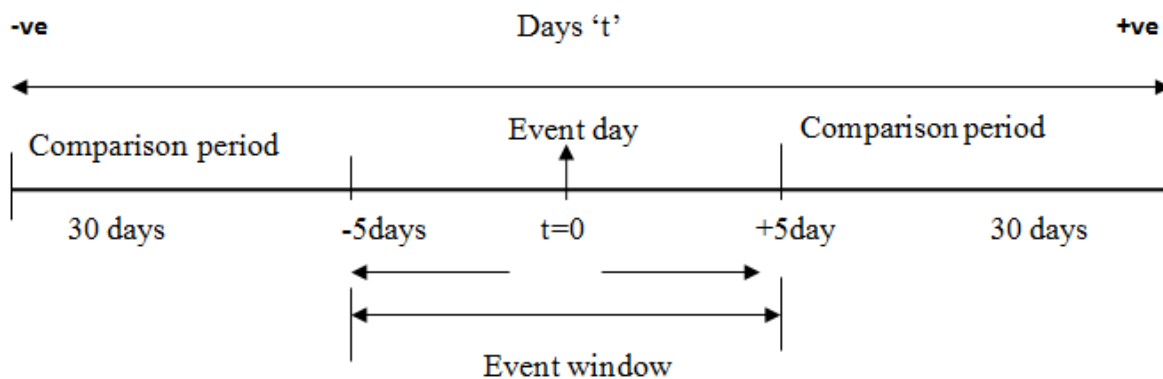
> ***RQ1:*** *What is the effect of Muslim holidays on stock returns of companies listed at the Nairobi Securities Exchange?*

## 4. Data and Methods

This study descriptive in nature employed the event study methodology which focuses on the abnormal return of stock prices on days around an event and then averages abnormal returns by day across multiple events (Mitchell et al., 2014, Bialkowski et al., 2012, Kabiru, Ochieng and Kinyua, 2015, Keitany & Lumumba 2012). The research population consisted of all companies quoted at the NSE as at 31st December 2014. The unit of analysis was the daily closing NSE 20-share index. The study covers a period of two years from 1st January 2013 to 31st December 2014. Secondary data was used where daily closing prices of NSE 20-share index for the aforementioned period was collected. This form of data collection is appropriate since the study compared past stock prices to test for any anomaly. The dates for the Muslim holidays over the years were collected and analyzed. Though the Muslim

calendar does not coincide with the Gregorian calendar, approximations for the dates were done and Islamic holidays were first converted to Gregorian calendar before analysis. All procedures before, during and after data collection were followed, thus data were collected via authorized staff. Comparison Period Return Approach (CPRA) was used in data analysis hence statistical differences of the mean daily returns of each event period and the mean daily return of the comparison period were computed using computer-aided statistical package – SPSS. The comparison period comprised 30 surrounding days before and after the event. Five holidays namely; Mawlid, Muharam, beginning of Ramadan, end of Ramadan, (Eid al Fitr), and Eid al Adha were studied hence a five-day window specification as illustrated (Figure 1) below was applied.

Figure 1: Five-day window



**Source:** Authors' conceptualization

*4.1 The Empirical (Market) Model and Data*

The main goal of this section is to analyze the effect of holidays on the returns. To achieve this, various models were used: first, the daily returns on the stock for the event window and comparison period were computed using the following equation:

$$R_x = \frac{P_x - P_{x-1}}{P_{x-1}},$$

where $R_x$ = daily market returns for day t, $P_x$ = market closing prices for day t, $P_{x-1}$ = market closing price for day t – 1 (previous day). The mean daily return was computed for both the event window and comparison periods.

In the second part of the analysis, we computed the abnormal return, which is the difference between the actual return and the normal returns which was estimated using the following equation:

$$AR_{i,t} = R_{i,t} - NR_{i,t},$$

where $AR_{i,t}$ is the abnormal index returns in period t; $R_{i,t}$ is the actual or observed index return in period t and $NR_{i,t}$ is the normal or expected index return in period t. In the final part, we computed normal returns using the mean adjusted returns. The following equation was estimated:

$$NR_{i,t} = \frac{1}{30}\sum_{-35}^{-6} R_{it} + \frac{1}{30}\sum_{6}^{35} R_{it}$$

The daily abnormal returns are summed over the event window to derive the cumulative abnormal returns (CARs). We used the following equation estimate:

$$CAR_{T1-T2} = \sum_{t=T1}^{T2} AR_{it}$$

The CAR helps to detect any positive or negative sudden changes in the event window, therefore assist in analyzing the impact of the event on returns.

**5. Results**

In this section, we present results following the event study methodology which allows us to analyze the effect of each Muslim holiday over the two years observed. Cumulative abnormal returns, which track the cumulative effect of an event over several days, are also typically used in event study methodology, and have been employed in this study to assist in analyzing the results (Keitany & Lumumba 2012, Sonjaya & Wahyudi 2016). In Tables 1 and 2, we present the results comparing normal returns and abnormal returns for the years 2013 and 2014 respectively.

**Table 1: Descriptive statistics for Muslim holidays on stock returns in 2013**

| Holy day | | Mean | Std. Dev. | Skewness | Kurtosis | Range |
|---|---|---|---|---|---|---|
| Muharram | $NR_{i,t}$ | 0.068094 | .50657423529 | .799 | 1.781 | 2.662136262 |
| | $AR_{i,t}$ | 0.1064254 | 0.43545973866 | -1.251 | 2.756 | 1.59025274 |
| Mawlid al Nabi | $NR_{i,t}$ | .2741102028 | 1.80799100313 | .131 | 12.326 | 16.11147149 |
| | $AR_{i,t}$ | -.546220130 | .994358987850 | -.389 | 1.521 | 3.88320171 |
| Start of Ramadan(July 9) | $NR_{i,t}$ | -.072459514 | .71500473999 | 3.897 | 25.121 | 5.78135695 |
| | $AR_{i,t}$ | .4767358256 | .47947024222 | -.089 | -.694 | 1.56601847 |
| End of Ramadan (Eid al-Fitr)-Aug. 8 | $NR_{i,t}$ | .0021242839 | .43822551510 | .089 | -.010 | 2.01657081 |
| | $AR_{i,t}$ | .08250019 | .263097178 | .611 | -.174 | .860115 |
| Eid al adha | $NR_{i,t}$ | .0447938877 | .52855785076 | 759 | 3.768 | 3.39949989 |
| | $AR_{i,t}$ | .06513439 | .391462846 | 1.193 | 1.406 | 1.362296 |

**Source:** Authors' own research.

A negative abnormal return indicates that the actual return is smaller than the expected return (Sonjaya and Wahyudi 2016). From Table 1 the normal returns for Muharram have a mean of 0.068 and a standard deviation of the 0.51 which indicates high volatility. The mean of the abnormal returns was 0.11 with a standard deviation of 0.44; the abnormal returns were just about 1.67 times the normal returns. The mean for normal returns for Mawlid al Nabi was 0.274 while the abnormal returns on the other hand had a mean of -.546. This indicates the actual returns were less than the expected returns. Descriptive statistics also showed that when Ramadan began in 2013, the normal returns had mean of -0.0724 and abnormal returns had 0.476. This showed that there was a positive impact on stock returns. Looking at Eid- ul-fitr markets seemed to have been very sensitive to any information coming in since the abnormal returns were significantly large compared to the normal returns. This can be seen from the high standard deviation for both the normal and abnormal returns at 0.438 and 0.263 respectively relative to means of 0.002 and 0.083 respectively. Statistics for Eid-al adha reveal that the normal returns had a mean of 0.04 and a standard deviation 0.53 while the abnormal returns had a mean of 0.065 and a standard deviation of 0.39 which is also relatively high. The abnormal returns were just about 1.625 times the normal returns.

**Table 2: Descriptive statistics for Muslim holidays on stock returns in 2014**

| Holy day | | Mean | Std. Dev. | Skewness | Kurtosis | Range |
|---|---|---|---|---|---|---|
| Muharram | $NR_{i,t}$ | .01655212 | .6162752769 | .484 | .963 | 3.2452227 |
| | $AR_{i,t}$ | -.18119142 | 502032624 | -.640 | .098 | 1.647369 |
| Mawlid | $NR_{i,t}$ | -.07348038 | .58487825 | -.300 | 1.700 | 3.435926 |
| | $AR_{i,t}$ | .56143311 | .60442656 | -.630 | -.256 | 1.901284 |
| Start of Ramadan (June 29) | $NR_{i,t}$ | .01235643 | .421875283 | .270 | -.148 | 1.994300 |
| | $AR_{i,t}$ | .05548968 | .546555381 | .352 | -.251 | 1.833419 |
| EidulFitr (End of Ramadan) | $NR_{i,t}$ | .09469950 | .418722612 | -.050 | .227 | 2.063766 |
| | $AR_{i,t}$ | .04760109 | .477343197 | .322 | -1.244 | 1.392400 |
| Eid al adha | $NR_{i,t}$ | .01528610 | .592797705 | .412 | 1.376 | 3.245223 |
| | $AR_{i,t}$ | .12830750 | .467640194 | .182 | -1.662 | 1.252028 |

**Source:** Authors' own research.

Table 2 shows that the normal returns for Muharram holiday have a mean of 0.165 while the abnormal returns have -.181. This indicates that the actual returns were lower than the expected returns. Muharram therefore, for the period under study has shown mixed results. This could be because Muharram is a solemn month for Muslims and is associated with negative valence (Shah, Shaikh and Bhatti n.d, Al-Ississ 2010). The aforementioned results are consistent with previous findings (for example, Ramezani et al., 2013) who found a negative and significant relationship between stock exchange index and Muharram among other months on the Iran stock exchange. Mawlid al Nabil's normal returns had a mean of -0.073. The abnormal returns on the other hand had a mean of 0.561. Thus, there was a significant positive impact on stock returns. When Ramadan began the mean was 0.01 for normal returns and 0.06 for the abnormal returns which imply a positive effect of the holiday on stock returns. On Eid- ul-fitr, Market statistics show that the normal returns had a mean of 0.095 while the abnormal returns had a mean of 0.047 meaning the sensitivity to incoming information was relatively lower. Normal returns for Eid-al adha had a mean of 0.015 and a standard deviation of 0.592. This is very high indicating the sensitivity of the market to changes in the information available in the market. Similarly, the abnormal returns had a mean of 0.128 and a standard deviation of 0.467 which also indicate high market sensitivity. We conclude that Eid-al adha positively affected returns thus an Eid-al adha effect on the stock market during year 2014.

From the above analysis of findings and after comparing the normal returns with the abnormal returns it is

evident that some Muslim holidays had an impact on the stock returns in that they led to higher returns around the event under investigation. These holidays include Muharram 2013, Mawlid al Nabi 2013, Mawlid al Nabi 2014, when Ramadan begins in 2013, when Ramadan begins in 2014, Eid- ul-fitr 2013, Eid-al adha 2013 and 2014.

*5.1 Comparative Graphical Analysis of Stock Behaviour for Years 2013 and 2014*
The following graphs exemplify how the stocks were behaving around the events.
In Figure 2, a review of the trends of holidays in year 2013 and 2014 as observed shows that in 2013, during Muharram holiday period surrounding the event day, daily returns were fluctuating but maintained a straight line. There was a sudden surge in the returns on the event day and soon after the returns go back to their position. A similar occurrence was observed during the same holiday in 2014 where it is observed that in the period surrounding the event day, daily returns were fluctuating but in a straight line. However, there is a sudden surge in the returns on the event day and soon after the returns go back to their position.

Mawlid al Nabi graph in 2013 illustrates that the daily returns just before the holiday were fluctuating down and just after the holiday the returns started to rise. On the other hand, in 2014 the returns were fluctuating upwards shortly before the event window and at the event widow the fluctuation increased but not in any general direction. With regards to Ramadan in 2013 it is observed that the returns were fluctuating upwards just before the beginning of Ramadan and thereafter shortly after Ramadan begins the returns started fluctuating in a downward trend. The returns in 2014 saw the event window changing although not in any general direction. Furthermore, there is reduction in fluctuation in the run up to the event and during the event day there is a big increase which is followed by a considerable decrease in fluctuations.
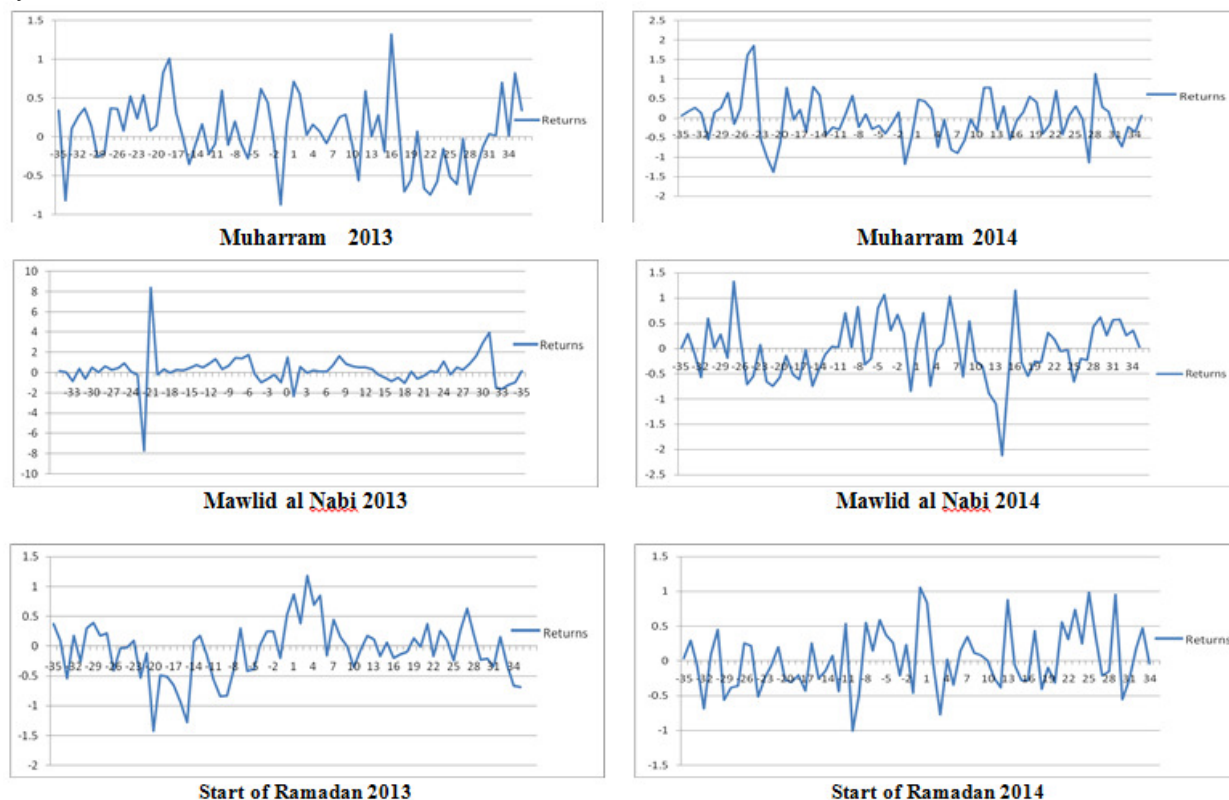


**Figure 2: Comparison of stock behaviour between holidays**

From Figure 3, Eid- ul fitr 2013 graph shows that the period before Eid- ul fitr, the returns were increasing but at a low pace, the returns after the holiday went slightly up and then took a general downward trend. On the other hand, in 2014 for a similar holiday mean daily returns were fluctuating but not in any general direction. There was a high volatility mean daily return in the entire event window during Eid-ul-adha 2013; however, there is a decreased fluctuation in stock returns. The returns just before the event window went down and slightly rose upwards after the event. The year 2014 saw the returns fluctuating shortly before the event period and dropping just to the run up of the event period. There is a high fluctuation in returns at the event window in a downward direction.
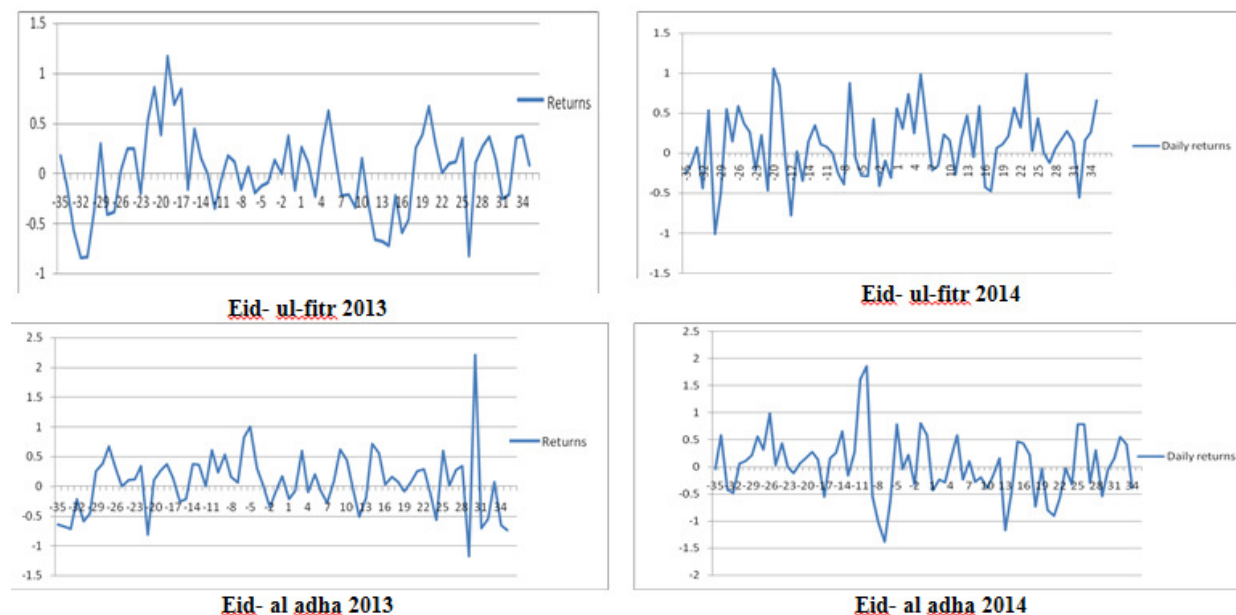
**Figure 3: Behaviour of stock during Eid- ul fitr and Eid-ul-adha**

*5.2 Analysis of Abnormal Returns*

The graph of cumulative abnormal returns for Muharram fig. 4a indicates a small surge on the event day. The results reveal that the Muharram 2013 holiday impacted stock returns negatively since the returns were less than expected. On the contrary, Muharram 2014 had some considerable impact on stock returns as seen in the sudden change of direction during the event day. The general impact on returns shows a negative trend. The cumulative abnormal returns during the Mawlid al Nabi (fig. 4c) indicate a general downward trend until the event day when they increase marginally and then suddenly drop. Thus, we conclude that this holiday had a significant effect on the stock returns that year. Figure 4d shows that there was a general positive impact on the returns; however the impact was not as big as there are no big leaps in the graph around the event day. A light decrease can however be observed as the general upward trend slightly bends at the event day and continues to rise again. The beginning of Ramadan (fig. 4e) shows minimal impact of the holiday on returns since the graph does not have sudden breaks. On the other hand, the beginning of Ramadan in 2014 (fig. 4f) indicates a very big impact on stock returns from the sudden change in returns just on the eve of the event day. The general trend in returns during the event period reveals that stock returns were fluctuating downwards at a low pace only to change direction to the positive all over a sudden followed by another sudden negative change shortly after
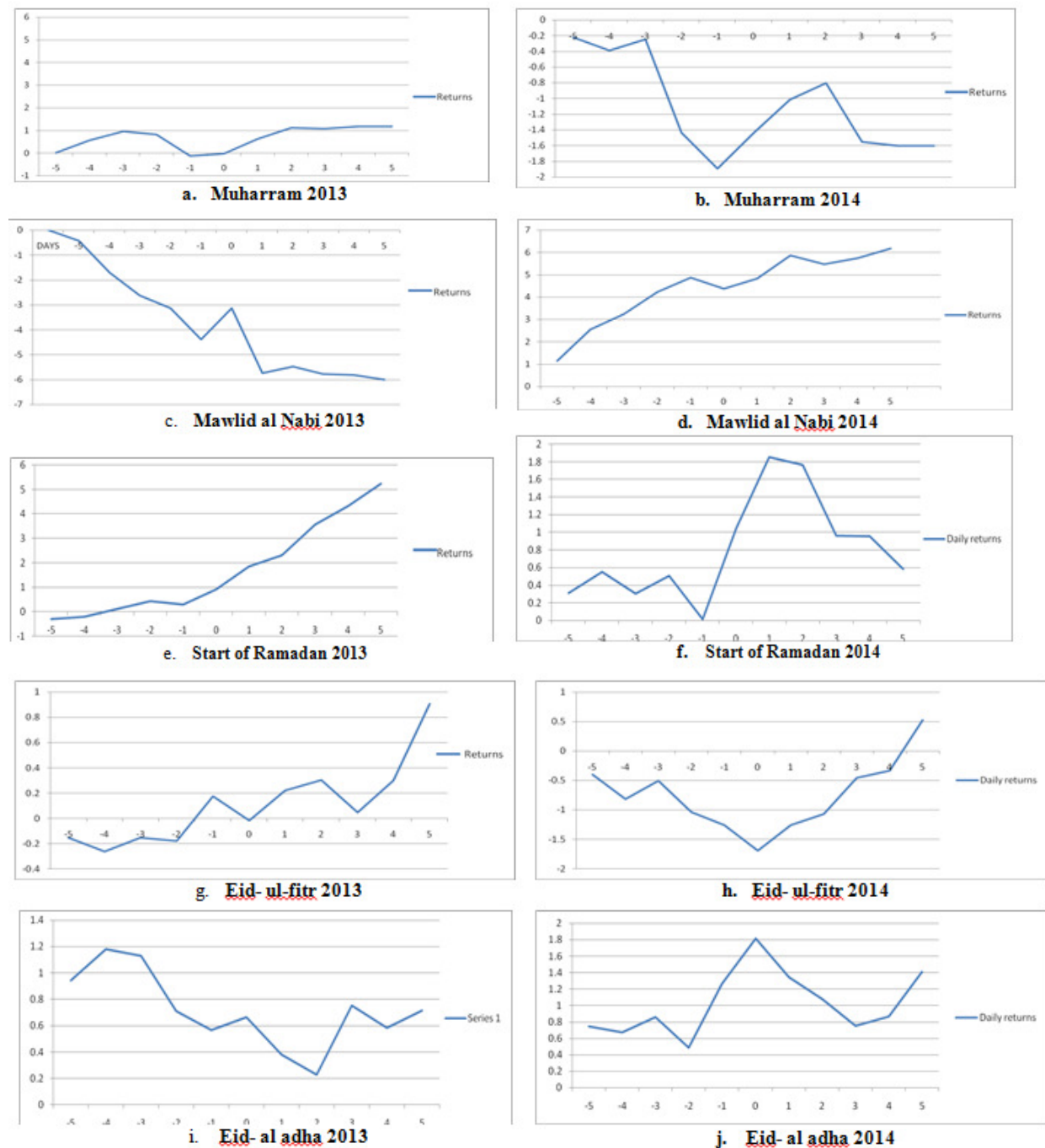
a. Muharram 2013

b. Muharram 2014

c. Mawlid al Nabi 2013

d. Mawlid al Nabi 2014

e. Start of Ramadan 2013

f. Start of Ramadan 2014

g. Eid- ul-fitr 2013

h. Eid- ul-fitr 2014

i. Eid- al adha 2013

j. Eid- al adha 2014

**Figure 4 Cumulative abnormal returns during the holidays**

During year 2013 Eid- ul-fitr holiday, it can be deduced from the graph that high fluctuation in the cumulative abnormal returns were observed before and after the event. After the holiday there seem to be a considerable increase in returns. Thus, this holiday had positive effect on the returns. Similarly, observations for the Eid ul fitr holiday in 2014 shows that there was a very big impact on stock returns. As can be seen in Figure 4h, the cumulative returns were generally decreasing only to suddenly change to a positive direction at the event window and progressively increase from there to the end of the event window. Finally, the cumulative abnormal returns for Eid- al adha 2013 (fig. 4i) shows a general downward trend. The holiday had some impact on the returns as there is a sudden change of direction in the returns just at the event day. For 2014, cumulative abnormal returns went up and down at the beginning of the event window. Shortly before the event day the returns suddenly changed to a positive direction to reach peak at the event day and suddenly change to negative direction to just before the end of the event period and started to increase again. Thus, we make the conclusion that in 2014, Eid- al adha holiday had an effect on stock returns at the NSE.

## 6. Discussion, Conclusions and Recommendations

*6.1 Discussion*

The study sought to understand the effect of Muslim holidays on stock returns on the NSE. It used time series data of daily closing prices of NSE 20-share index covering the period 2013 to 2014. To address the main research question, the study used ten observances /holidays. In general, some Muslim holidays impacted significantly on the stock returns while others did not. Muharram which is the Islamic New Year showed mixed results, in that in the 2013 the effect was not big while in 2014 it was significantly noticeable. This could be because this is a solemn month which is celebrated quietly besides being associated with negative valence for Muslims (Shah et al., n.d; Al-Ississ, 2010).

The daily returns of the pre-holidays and post-holidays are generally characterized by high volatility as seen in the fluctuations of returns. In 2013, Muharram had a small impact on stock returns where returns drop on the pre-event day and rise again but with small margins. Mawlid al Nabi 2013, beginning of Ramadan 2013 and Mawlid al Nabi 2014 results showed that these holidays did not impact greatly on the stock returns. However, Eid-ulFitr 2013, Eid-ul-adha 2014, Muhrram2014, beginning of Ramadan 2014, Eid-ul-fitr 2014 and Eid-ul-adha 2014 results showed there was a considerable change in daily stock returns brought about by these holidays.

*6.2 Conclusions*

This research utilized two-year data from the NSE in Kenya that cover the period between 2013 and 2014 to test the effect of Muslim holidays on stock returns performance, and determine if investors make practical decisions and correctly update their information as and when it becomes available in the market. An event study methodology employing the comparative period return approach was implemented. We found that four out of the ten Muslim holidays studied did not show much impact on daily stock returns while the remaining six holidays showed moderate impact. For example, we found that Muharram which is the Islamic New Year is celebrated quietly and may be that is why there was no impact felt for the year 2013. Similarly, Mawlid holiday did not affect stock returns as it was not so pronounced for the years 2013 and 2014. This finding suggests that investors are influenced by their attitudes and feelings since Muslim holidays are strict religious practices that greatly affect investor sentiments and moods (Al-Hajieh, Redhead and Rodgers 2011).

The beginning and end of Ramadan are highly publicized and so this have an impact on returns as Seyyed et al (2005) and Hasain (1998) found out. There is no much effect at the beginning of Ramadan in 2013 however; in 2014 it is characterized by a decrease in cumulative stock returns. This can be attributed to the fact that when Muslims start fasting, the general level of activity slows down possibly as a result of low levels of energy brought about by the fast (Ali, Akhter & Ashraf 2017).

Eid-ul-fitr which symbolizes the end of Ramadan has shown significant effect on returns for 2013 and 2014 (fig. 3g and 3h). This holiday's results reveal an increase in cumulative abnormal returns which can be attributed to 'happy investor moods' as they make decision to invest after they successfully complete their fast which they believe comes with a blessing (Al-Ississ, 2010). In the year 2013, Eid-ul-Adha holiday showed a reduction in cumulative returns few days to the event day. During this holiday, Muslims spend a considerable amount of money in purchasing items such as clothes and preparing feasts thus the reduction in returns could be as a result of people selling their shares so that they can have money to celebrate the holiday. In the year 2014 however, result show an increase in cumulative returns up to just after the event day and gradually start decreasing. This could be attributed to less cash held by people after spending during the aforementioned holiday thus the buying pressure at the exchange is not created. The aforementioned findings reveal that a stock market anomaly exists at the securities exchange.

*6.3 Recommendations*

With the existence of an anomaly at the NSE, this implies that investors can seize the opportunity and take advantage to make profitable trading. Since it is apparent that Muslim holidays affect stock returns of companies listed at the NSE, this means that the NSE stock market is far from being efficient and/or is inefficient. Therefore, the relevant regulatory authorities need to put measures and/or enhance processes in order to ensure the efficiency of the securities markets and meet investors' expectations.

## 7. Limitations and Proposal for Further Studies

The Islamic calendar dates are not fixed on the Gregorian calendar hence approximations were made for these dates and so this could have affected the findings. There could be an overlap of other empirical factors that affect the market which could have had confounding effects on the results. For example, the Islamic new year of 2014 fell on January 5; this can be affected by the January effect. Others fell at almost end months and Fridays which could be affected by the turn of the month and weekend effect. Other studies incorporating control for such aforementioned factors can therefore be explored. Additionally, the study only concentrated on two years which may not be long enough for robust results.

## References

Abadir, K. & Spierdijk, L. (2005), "The Festivity Effect and Liquidity Constraints: A Test on Countries with Different Calendars", Memorandum 1772, Department of Applied Mathematics, University of Twente, Enschede.

Aduda, J. & Muimi, P. (2011), "Test for Investor Rationality for Companies Listed at the Nairobi Stock Exchange", *Journal of Modern Accounting and Auditing,* 7(8), 827-840.

Aduda, J., Oduor, O. E. & Omwonga, M. (2012), "The Behavior and Financial Performance of Individual Investors in the Trading Shares of Companies Listed at the Nairobi Stock Exchange*", MSc Thesis,* University of Nairobi, Kenya.

Al-Hajieh, H. Redhead, K. & Rodgers, T. (2011), "Investor Sentiment and Calendar Anomaly Effects: A Case Study of the Impact of Ramadan on Islamic Middle Eastern Markets", *Research in International Business and Finance*, 25, 345– 356.

Ali I, Akhter W, and Ashraf, N (2017), "Impact of Muslim Holy Days on Asian Stock Markets: An Empirical Evidence. *Cogent Economics & Finance* 5(1), 1311096.

Al-Ississ, M. (2010), "The Impact of Religious Experience on Financial Markets", *Working paper,* 1-35, March 2010.

Alrashidi, F. M. F. E. (2013), "Comparison of the Performance of Islamic Mutual Funds vs. Ethical and Conventional Mutual Funds", *PhD Thesis*, Durham University, UK..

Balbina, M. & Martins, N. C. (2002, December), "The Analysis of Calendar Effects on the Daily Returns of the Portuguese Stock Market: The Weekend and Public Holiday Effects", Banco de Portugal, *Economic Bulletin and Financial Stability Report, 31-38,* Economic Research Department. https://www.bportugal.pt/en-US/BdP%20Publications%20Research/AB200212_e.pdf

Basu, S. (1978), "Investment Performance of Common Stocks in Relation to their Price Earnings Ratio: A Test of the Efficient Market Hypothesis", *The Journal of Finance,* 32(3).

Barberis, N. & Thaler, R. (2003), "A Survey of Behavioral Finance", *Handbook of the Economics of Finance*, chapter 18, G.M. Constantinides, M. Harris and R. Stulz (Eds).

Bialkowski, J., Etebari, A., & Wisniewski, T. P., (2010), "Piety and Profits: Stock Market Anomaly During the Muslim Holy Month. *Working paper* No. 52/2010, University of Canterbury, Christchurch, New Zealand.

Białkowski J., Etebari, A. &Wisniewski, T. P. (2012), "Fast Profits: Investor Sentiment and Stock Returns During Ramadan. *Journal of Banking & Finance*, 36, 835–845.

Chowdhury, T. S. & Mostari, S. (2015), "Impact of Eid-ul-Azha on Market Return in Dhaka Stock Exchange", *Journal of Business and Management*, 17(2), pp. 25-29.

Daniel, K. S. (2003), "Turn of the Month and January Effects on Stock Prices at Nairobi Stock Exchange", *MBA Dissertation*, University of Nairobi, Kenya.

Dodd, O. & Gakhovich, A. (2011), "The Holiday Effect in Central and Eastern European Financial Markets", *Investment Management and Financial Innovations*, 8(4), 29-35.

Fama, E. F. (1970), "Efficient Capital Markets: A Review of Theory and Empirical Work", *Journal of Business Finance*, 25(2), 383-417.

Hansen, P. R. & Lunde, A. (2003), "Testing the Significance of Calendar Effects", *Working Paper* No. 2003-03.

Herschberg, M. (2012), "Limits to Arbitrage: An Introduction to Behavioral Finance and a Literature Review", *Palermo Business Review No. 7.*

Husain, F. (1998), "A Seasonality in the Pakistani Equity Market: The Ramadhan Effect", *The Pakistan Development Review,* 37(1), 77-81.

Jensen, M. C. (2007), "Some Anomalous Evidence Regarding Market Efficiency", *Journal of Financial Economics,* 6(2/3), 95-101.

Jílek, L. (2012), "Analysis of Stock Market Anomalies: US Cross-Sectoral Comparison", *PhD Thesis,* Charles University in Prague, Faculty of Social Sciences Institute of Economic Studies.

Kabiru, J. N., Ochieng, D. E. & Kinyua, H. E. (2015), "The Effect of General Elections on Stock Returns at the Nairobi Securities Exchange", *European Scientific Journal,* 11(28), 1857-7881.

Keitany, K. & Lumumba J. B. (2012), "The Effect of Terrorism on Kenya's Securities Market: The Case of the Nairobi Securities Exchange", *MBA Thesis,* University of Nairobi, Kenya.

Khan, M. S. & Mohyuddin, A. (2013), "Symbolic Importance of Ritual of Sacrifice on Eid Ul Adha", *International Journal of Research in Applied, Natural and Social Sciences,* 1(3), 59-62.

Kiymaz, H. & Berument, H. (2003), "The Day of the Week Effect on Stock Market Volatility and Volume: International Evidence", *Review of Financial Economics*, 12, 363–380.

Kulavi, C. M., (2013), "The Day of the Week Effect and Stock Market Volatility: Evidence from Nairobi Securities Exchange", *MBA Thesis*, University of Nairobi, Kenya.

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(9/10).

Lee, M. H. &Hamzah, N. A. (2010), "Calendar Variation Model Based on Time Series on Regression for Sales Forecasts: The Ramadhan Effects", *Proceedings of the Regional Conference Statistical Sciences* (RCSS'10), 30-41.

Lo, A. W. (2005), "Reconciling Efficient Markets with Behavioral Finance", *The Adaptive Markets Hypothesis*, 7(2).

Malkiel, G.. M. (2003), "The Efficient Market Hypothesis and Its Critics", *Journal of Economic Perspectives,* 17(1), 59 – 82.

Marrett, G.. & Worthington, A. C. (2007), "An Empirical Note on the Holiday Effect in the Australian Stock Market 1996-2006", School of Accounting & Finance *Working Paper Series* No. 07/11, 2007, 1-10. University of Wollongong, Australia.

Migiro, J. O. (2010), "An Empirical Investigation of the Turn-of-the Month Effects for Companies Quoted at Nairobi Stock Exchange", *MBA Project,* University of Nairobi, Kenya.

Mitchell, M. C., Rafi, M. I. M., Severe S., & Kappen, J. A. (2014), "Conventional vs. Islamic Finance: The Impact of Ramadan upon Sharia-Compliant Markets", *Organizations and Markets in Emerging Economies*, 5, 1-9.

Mustafa, K. (2011), "The Islamic Calendar Effect on Karachi Stock Market", *Global Business Review,* 13(3), 562-574.

Ndonga, P. O. (2014), "The Holiday Effect and Stock Market Volatility: Evidence from Nairobi Securities Exchange", *MBA Thesis,* University of Nairobi, Kenya.

Nyariki, N. M (2014), "An Empirical Investigation of the existence of the Ramadan Effect at the Nairobi Securities Exchange", *MBA Thesis*, University of Nairobi, Kenya.

Osman, A. M. (2007), "Study of Holiday Effect at the Nairobi Stock Exchange", *MBA Thesis,* University of Nairobi, Kenya.

Oyori, E. K. (2012), "An Investigation on the Day of the Week Effect in the Nairobi Securities Exchange", *MBA Thesis,* University of Nairobi, Kenya.

Pesaran, M. H. (2005), "Market Efficiency Today", IEPR *Working Paper* 05/41.

Rasugu, N. C. (2005), "The Existence of the Holiday Effect in the Nairobi Stock Exchange", *MBA Thesis,* University of Nairobi, Kenya.

Ray, S. (2012), "Investigating Seasonal Behavior in the Monthly Stock Returns: Evidence from BSE Sensex of India", *Advances in Asian Social Science* 2(4).

Reilly, F. K. &. Brown, K. C. (2004), "*Investment Analysis Portfolio Management*", 9th Edition, South Western collage.

Shah, S. M. U. R. & Ahmed, S. N. (2014), "The Ramadan Effect on Stock Market", *European Academic Research,* 1(11).

Seyyed, F., Abraham, A. & Al-Hajji, M. (2005), "Seasonality in Stock Returns and Volatility: The Ramadan Effect", *Research in International Business and Finance,* 19(3), 374-383

Shah, N., Shaikh, N. S. & Bhatti, F. Z. (n.d), "An Investigation of Islamic Calendar Effects on Stock Returns: A Comparative Analysis of Islamic and Non-Islamic State", *MBA Thesis,* Isra University, Hyderabad..

Shefrin, H., Statman, M. (2011), "Behavioral Finance in the Financial Crisis: Market Efficiency, Minsky, and Keynes", in Rethinking the Financial Crisis, New York, NY: Russell Sage Foundation, 99-135.

Shiller, R. J. (2003), "From Efficient Markets Theory to Behavioral Finance", *Journal of Economic Perspectives,* 17(1), 83–104.

Sonjaya, A. R. & Wahyudi, I., (2016), "The Ramadan Effect: Illusion or Reality?", *Arab Economic and Business Journal*, 11, 55 – 71.

Schwert, G. W. (2003), "*Anomalies and Market Efficiency",* Handbook of the Economics of Finance, chapter 15, Elsevier Science B.V.

Tangjitprom, N. (2011), "The Calendar Anomalies of Stock Return in Thailand", *Journal of Modern Accounting and Auditing,* 7(6), 565-577.

Waithaka, G. L., (2013), "Turn of the Month Effect on Stocks Listed at Nairobi Securities Exchange", *MBA Project,* University of Nairobi, Kenya.