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ANALYSIS OF THE POST EARNINGS ANNOUNCEMENT DRIFT IN THE NAIROBI SECURITIES EXCHANGE

MUSALIA CLAUDE MUGARAVAI
071521

A research project submitted in partial fulfillment of the requirements for the Degree of Bachelor of Business Science Actuarial at Strathmore University

School of Finance and Applied Economics
Strathmore University

DECLARATION

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the Research Project contains no material previously published or written by another person except where due reference is made in the Research Project itself.

MUSALIA CLAUDE MUGARAVAI ..... [*Name of Candidate*]

..... [*Signature*]

17/12/2015 ..... [*Date*]

This Research Project has been submitted for examination with my approval as the Supervisor.

MARY KIPKEMOI ..... [*Name of Supervisor*]

..... [*Signature*]

18/12/15 ..... [*Date*]

School of Finance and Applied Economics

Strathmore University

ABSTRACT

This paper is an event study concerning the market anomaly, Post-earnings-announcement drift (PEAD) in the Nairobi Securities Exchange from 2008 to 2014. The PEAD theorizes that a stock`s cumulative abnormal returns tend to drift in the same direction of an earnings surprise for several weeks following an earnings announcement. Its aim was to determine if the PEAD occurred in the Nairobi securities exchange and whether it could be used to monitor stock performance. Stock performance was determined by using the market model to regress the stock returns against the market returns. Evidence from the study suggests that the PEAD anomaly occurred in the NSE and that it could be used to monitor stock performance.

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List of Abbreviations

1.	PEAD	Post Earnings Announcement Drift
2.	NSE	Nairobi Securities Exchange
3.	SUE	Standardized Unexpected Earnings
4.	EAR	Earnings Announcement Return
5.	EPS	Earnings Per Share
6.	CAPM	Capital Asset Pricing Model
7.	EMH	Efficient Market Hypothesis
8.	EABL	East African Breweries Limited
9.	BAT	British American Tobacco
10.	CMC	Cooper Motor Corporation
11.	KPLC	Kenya Power and Lighting Company
12.	KCB	Kenya Commercial Bank
13.	KQ	Kenya Airways
14.	IR	Initial Reaction

1. Introduction

1.1 Background of study

One of the most puzzling stock market anomalies is the post earnings announcement drift (PEAD), where stock prices continue to move in the direction of the earnings surprise up to a year after the earnings is publicly known.

Fama (1998) pointed out the existence of two robust and persistent anomalies that still pose a challenge to the efficient market paradigm. One of these anomalies is the post earnings-announcement drift (PEAD), or earnings momentum. Earnings momentum refers to the fact that companies that report unexpectedly high earnings subsequently outperform companies that report unexpectedly low earnings. Different companies thus react differently to earnings announcements. There are good news firms and bad news firms. Good news firms react positively whereby their stock prices react positively to the earnings announcements while bad news firms react negatively to the earnings announcements. So what exactly is the definition of a "good news firm"? In academic research, scholars use a variety of metrics. The most common is called SUE, which stands for Standardized Unexpected Earnings. A company that surprises the market very positively will get a high SUE score and vice versa. By ranking companies according to this metric, one could easily test for positive abnormal returns for "good news firms" and negative abnormal returns for "bad news firms".

Ball & Brown (1968) were the first to note that stock prices continue to drift in the direction of earnings surprises for several months after the earnings are announced. Schwert (2003) showed that a number of market anomalies have typically disappeared, reversed, or attenuated following their discovery. The post earnings- announcement drift, together with price momentum, is still robust after its initial discovery.

A specific anomaly to the efficient market, called the overreaction hypothesis, has been observed by De Bondt and Thaler (1985). Their research indicates that the stock market tends to overreact to unexpected news events such as earnings announcements that exceed expectations. They further show that equities that experience the highest (lowest) return in response to an event tend to underperform (over perform) in the subsequent period, therefore 'correcting' its mistake. They

hypothesize that the reason for the overreaction is the market's inefficient response to the earnings information. Similar behavior was observed by Brooks and Buckmaster (1980) who noted that earnings deviate from a random walk after experiencing extremes and tend to revert back to their long-term mean.

An anomaly opposite to the overreaction hypothesis, namely the under-reaction anomaly, has also been found to exist. This anomaly is explained as the slow reaction of market participants to new information such as earnings announcements, which constitute an initial under-reaction which is gradually corrected as cumulative share returns tend to drift in the same direction of the initial earnings response for a substantial period after the announcement has been made (Ball & Brown, 1968; Choi & Kim, 2001; Hong & Stein, 1999; Foster, Olsen, & Shevlin, 1984). Thus the cumulative share returns of companies which announce higher (lower) than expected earnings tend to drift upwards (downwards) for a period after the information has been made public. The under-reaction phenomenon is more commonly known as the post-earnings announcement drift (PEAD) anomaly.

A fundamental principle of efficient markets is that any new information ought to be reflected in share prices almost instantaneously and the adjustments should be fair according to the new information received. Predictable patterns such as market overreactions and under-reactions and their respective subsequent corrections should not exist in a perfectly efficient market.

1.2 Problem statement

Several studies using different Market data across the world have documented a systematic pattern in abnormal returns related to corporate earnings announcements known as the post earnings announcement drift (PEAD). Different companies react differently to earnings announcements. However the direction of the reaction could be unknown. Investors could either gain or lose following the release of earnings information to the public. Moreover Information of good news firms and bad news firms is not always known by investors. This study attempts to contribute to the Post Earnings Announcement Drift literature specifically on the Kenyan Market and too see if it is significant in the Kenyan Market. This information could be useful in the trading strategies applied by portfolio managers.

1.3 Research objectives

The objectives of this research are as follows;

i. To determine the existence of the Post Earnings Announcement Drift anomaly in the Nairobi Stock Exchange.
ii. To evaluate stock performance using the Post Earnings Announcement Drift.

1.4 Research questions

The research questions are as follows;

i. Is the Post Earnings Announcement Drift present in the Kenyan stock exchange?
ii. Can the Post Earnings Announcement Drift be used to observe stock performance in the Nairobi Stock Exchange?

1.5 Scope of Study

This study focused on the Post Earnings Announcement Effect on the Nairobi Stock Exchange. The period of the study is between January 2008 and November 2014.

2. Literature Review

2.1 Introduction

This chapter outlines the theoretical and conceptual underpinnings upon which the premise for this study is build. The different sections of the literature review will cover the various topics and issues related to the Post earnings Announcement Drift. There is a discussion on the discovery of the Post earnings Announcement Drift, its contradicting theories, contributing factors and recent discoveries by various researchers and lastly the theoretical framework.

2.2 Previous Literature

2.2.1 Discovery of the Post Earnings Announcement Drift

Several studies using US data have documented a systematic pattern in abnormal returns related to corporate earnings announcements known as the post earnings announcement drift (PEAD). Cumulative abnormal returns for stocks announcing extreme positive (negative) unexpected earnings drift upwards (downwards) for an extended period after the announcement. The initial discovery is due to Ball and Brown (1968) over thirty years ago. They found that estimated cumulative abnormal returns continue to drift upwards for "good news firms" and downwards for "bad news firms". Since this unique finding, many researchers have verified the existence of post earnings announcement drift. Foster, Olsen, and Shelvin (1984) are among the many who have examined the phenomenon. They estimate that over the 60 trading days subsequent to an earnings announcement, a long position in stocks with unexpected earnings in the highest decile combined with a short position in stocks in the lowest decile yields an annualized abnormal return of about 25% before transactions costs.

Subsequently, the PEAD phenomenon has proved robust to more sophisticated controls for risk and to other efficient markets explanations. Initial studies in establishing PEAD as a market anomaly beside Foster, Olsen, and Shevlin (1984) is Bernard and Thomas (1989). They found that a long position in the highest unexpected earnings decile and a short position in the lowest decile yield an estimated annualized abnormal return of approximately 18% for portfolios over the 60 days subsequent to the earnings announcement. A different approach was used by Abarbanell & Bernard (1992). They grouped firms into quintiles based on the magnitude of analysts' earnings forecast errors (scaled by stock price 10 days prior to the forecast date) within that quarter. For a

combined long position in firms within the highest quintile of unexpected earnings and short position in the lowest quintile, the total post earnings announcement cumulative abnormal return is about 8%. Ke & Ramalingegowda (2003) state that institutional investors exploit the PEAD and that their arbitrage generates an annual abnormal return of 22 percent after transaction costs.

2.2.2 Contradicting Theory of Market Efficiency

The PEAD contradicts the theory of efficient markets first proposed by Fama (1970). However, Fama (1998) admits to PEAD as the "granddaddy of underreaction events" and as the only established anomaly above suspicion. Recent research has focused on the findings of Bernard and Thomas (1989), which state that a large proportion of the drift occurs subsequent to earnings announcement dates and on whether this can be explained by the failure of investors to understand the US quarterly earnings generation process. Bernard and Thomas (1989) hypothesize that investors naively assume earnings follow a seasonal random walk and fail to understand the implications of current earnings for future earnings. Furthermore, recent research on the drift also investigates factors that are associated with different drift levels according to prior intuition about the effects of these factors on investors' underreaction. For example, Bartov, Radhakrishan and Krinsky (2000) show that the drift is lower for companies with higher proportions of institutional investors, who are more sophisticated and less prone to underreactions. Mikhail, Walther, & Willis (2001) provide evidence that the drift is smaller when companies are followed by more experienced analysts, who tend to incorporate the earnings surprise more fully in their forecasts and reduce the underreaction typically observed for less experienced analysts. Mendenhall (2004) shows that the drift is stronger for firms subject to higher arbitrage risks, consistent with market equilibrium of investors who initially underreact to earnings announcements and arbitragers who are unwilling to completely eliminate the underreaction effects on prices due to large arbitrage costs.

2.2.3 Contributing factors of Post Earnings Announcement Drift and Recent Discoveries

Several studies have tried to characterize the companies that have large PEAD drifts. Johnson and Schwartz Jr (2000) argue that the post announcement drift persists where arbitrage costs are highest; that is, among small firms, and among firms with few or no analyst following or with low stock prices. The findings are consistent with the notion that practitioners used earnings surprise trading strategies to arbitrage the drift once the phenomenon had been well documented in academic research. Ng, Rusticus and Verdi (2006) argue that the PEAD trading strategy likely

involves high transaction costs because firms that announce extreme earnings surprises tend to be different from firms that announce moderate earnings surprises. Evidence suggests that those firms announcing extreme earnings surprises have higher beta, smaller capitalization, and higher return volatility compared to the firms announcing moderate earnings surprises. These characteristics are expected because firms with extreme earnings surprises are more likely to be younger firms and/or have operations that are more risky.

PEAD is often explained as an underreaction by the market. In some cases the opposite can occur, i.e. an overreaction. De Bondt & Thaler (1986) document long-run reversals of prior stock price changes, which they interpret as corrections of prior overreactions to news events. They show that a strategy of buying prior extreme losers and selling prior extreme winners measured in terms of stock price performance generates positive market-adjusted returns of approximately 12% per year over the next three years. Ball & Khotari (1991) suggest that when one controls for none-stationary betas, these market adjusted returns can be explained as a risk premium. However, Chopra, Lakonishok and Ritter (1992) argue that Ball and Kothari overstate the influence of the beta adjustment, by assuming that market price of risk is as implied by the CAPM. When they instead rely on an empirical estimate of the market price of risk, the DeBondt and Thaler portfolios generate abnormal returns of approximately 5% per year, even after controlling for none-stationary betas and the size effect. DeBondt and Thaler (1986) suggest that stock market participants may overreact to current earnings, not recognizing that extreme annual earnings changes tend to be partially reversed in the future.

Lundstrum (2010) reviews many of the conflicting views regarding the explanation of post-earnings announcement drift over the years. Among the numerous explanations for post-earnings announcement drift cited in Lundstrum (2010) and other sources are investor under-reaction or delayed price response (Bernard & Thomas, 1989; Hou & Maskowitz (2005); Marais (1989)), not fully taking inflation into account (Chordia & Shivakumar (2005)), information uncertainty (Francis , Lafond, Olsson , & Schipper, (2007)), arbitrage risk (Mendenhall, 2004; Shelfer & Vishny, 1997), firm size (Foster, 1984) and liquidity risk (Chordia , Sadka, Goyal, and Shivakumar, 2007; Sadka, 2006), an earnings surprise risk factor (Kim & Kim, 2003), transaction costs (Ng, Rusticus, & Verdi, 2008), trading volume (Choi & Kim, 2001) and trader behavior (Shanthikumar, 2004; Kaniel, Shuming , Saar , & Titman, 2008). According to Lundstrum the most likely explanations for the post-earnings announcement drift anomaly include the limited

arbitrage hypothesis and the illiquidity hypothesis. The limited arbitrage hypothesis as proposed by Mendenhall (2004) and Shleifer and Vishny (1997) claims that arbitrageurs are deterred from exploiting excess returns associated with PEAD because they are concerned about the associated idiosyncratic risk involved. Lundstrum presents new evidence that illiquidity, rather than limited arbitrage explains the post-earnings announcement drift.

Most studies on PEAD have used the standardized unexpected earnings (SUE) metric to form portfolios. Brandt, Kishore, Santa-Clara, & Venkatachalam (2006) explore an alternative measure of the surprise in a company's earnings announcement: the stock's abnormal return around the announcement date. They argue that this earnings announcement return (EAR) captures the market reaction to unexpected information contained in the company's earnings release like sales, margins, investment, and other less tangible information communicated around the earnings announcement. A strategy that buys and sells stocks sorted on EAR produces an average abnormal return of 6.3% per year, which is 0.6% more than a strategy based on the traditional measure of earnings surprise. Moreover, they find that the EAR and SUE strategies appear to be independent of each other. A strategy that exploits both pieces of information generates abnormal returns of about 11% on an annual basis.

Research has also been carried out for non-US markets such as in the UK where Liu, Strong and Xu (2000) found that the PEAD portfolio generates significant profits. Further, authors like Womack (1996) and Barber, Lehavy, McNichols, & Trueman (2001) have studied the overreaction of earnings announcements based on analyst recommendations. Womack (1996) found that for buy recommendations, the mean post event drift is 2.4% and short lived but -9.1% for sell recommendations and extends for six months. Barber, Lehavy, McNichols, & Trueman (2001) founds an average annual abnormal return of 4.13% for the most favorable recommended stocks and -4.91% for the least favorable recommended stocks.

2.3 Theoretical Framework

This section presents the theory that serves as the foundation of the Post Earnings Announcement Drift.

2.3.1 Efficient Markets

The efficient market hypothesis (EMH) was developed by Eugene Fama (1970). According to Fama (1970) the primary role of the capital market is the allocation of ownership of the capital stock within the economy and a perfect market is one where prices fully reflect all available information. This would mean that this type of market provides accurate signals for the allocation of resources and is thereafter called an efficient market. Fama (1970) defined three different subsets of market efficiency based on the amount of information incorporated in each.

In the weak form of efficiency the prices are assumed to reflect all the information included in the historical prices. This means that prices follow a random walk and that it is impossible to earn abnormal returns by just observing past prices. The reasoning is that if it is possible to use historical prices to find certain patterns, this opportunity would immediately be exploited and prices would then adjust accordingly. The PEAD that is studied does not solely rely on historical prices but also on publicly available information.

The semi-strong form of efficiency requires prices to reflect not just past prices, but also all publicly available information. This includes announcements of new share issues, annual reports, mergers between companies, stock splits, and other similar publicly available information. To investigate if the semi-strong form holds, one would have to study the share price development before and after the announcement of an event and the speed with which the price adjusts to new information. The faster the adjustment of the share price after the release of new information, the more efficient is the market. In this study, it is argued that the adjustment to earnings announcement does not take place immediately, but rather over time as the market initially underreacts. Therefore, the PEAD is a violation of the semi-strong form of efficiency.

The strong form of efficiency means that prices does not just reflect all publicly available information and historical prices, but that it fully reflects all available information that exist in the market, both public and private. Thus, no individual can generate returns above the expected returns by using inside information and that there would be no point for insiders to trade in order to take advantage of their information. This means that we could not expect to find any investors

that consistently beat the market. However, there are evidence that insiders can earn abnormal returns and that there are investment managers, traders, and others that do in fact beat the market on a regular basis. This would be incompatible with the strong form of market efficiency. The PEAD is therefore also a violation of the strong form efficiency.

2.3.2 CAPM

The capital asset pricing model (CAPM) quantifies a relationship between the risk and the expected return of a risky asset. The major insight of CAPM is that the risk is not the variance of the assets return but rather the covariance of its return with the return of the market portfolio. This risk affects the expected return. The market portfolio is defined as a combination of all risky assets available on the market where each assets weight is based upon its market value. The expected return of an asset is only affected by the risk component that cannot be diversified away, i.e. the systematic risk, which is captured by the beta. Beta is the only firm specific explanatory variable in the CAPM formula stated below:

$$E(r_i) = r_f + \beta_i * \left[E(r_m) - r_f\right]$$

The CAPM is a crucial model for research on PEAD. As mentioned before, the CAPM is used to calculate abnormal returns. If it is either incomplete or misestimated, one will fail to adjust raw returns fully for risk. As a result, the so called abnormal returns are nothing more than fair compensation for bearing risk that is priced but not captured by the CAPM. In this study, the raw returns were adjusted with the CAPM model and thereby accounting for market risk.

2.3.3 Behavioral Finance

Behavioral finance attempts to explain the reasoning patterns of investors, including the psychological processes involved in investing and the degree to which they influence the decision making process. Essentially, behavioral finance attempts to explain aspects of finance and investing, from a human perspective. For example, behavioral finance studies financial markets as well as provide explanations to many stock market anomalies such as the January effect, speculative market bubbles (the Internet bubble of 1999), and stock market crashes (crash of 1929 and 1987). Behavioral finance has gained tremendously in popularity since traditional finance theories such as CAPM and the EMH have failed to explain many phenomena. One of these phenomena is the PEAD drift. (Ricciardi & Simon 2000).

Recent empirical research in finance has uncovered two families of persistent regularities: underreaction of stock prices to news such as earnings announcements, and overreaction of stock prices to a series of good or bad news. A common explanation for this is that investors do not always react in proper proportion to new information. For example, in some cases investors may overreact to performance, selling stocks that have experienced recent losses or buying stocks that have enjoyed recent gains. Such overreaction tends to push prices beyond their fair or rational market value, only to have rational investors take the other side of the trades and bring prices back in line eventually.

In other cases, investors underreact to good/bad news and prices will instead not adjust immediately, but rather over time. This precise phenomenon can be exploited in the post earnings announcement drift. However, another implication is that contrarian investment strategies, strategies in which "losers" are purchased and "winners" are sold will earn superior returns due to the opposite effect, namely overreaction. Thus, behavioral finance can be used to predict overreaction sometimes, and at other times it predicts underreaction. According to Fama (1998), this double sidedness of underreaction and overreaction cancel each other out and therefore the EMH still holds.

2.4 Research gap

The Post Earnings Announcement Drift has been found to be very significant in various foreign markets and has been found to generate significant profits and provide useful information about various stocks in the market. Therefore this brings out the need to study it in the context of the Kenyan market and see if the PEAD can be used as a performance measure for stocks in the NSE which can prove to be vital for investors in the country. This study therefore seeks to add on the literature of the PEAD in the context of the Kenyan Market.

3. Research Methodology

3.1 Introduction

This section outlines the methodology and the models that was used in the analysis. The choice of models was based on the availability of data and from previous studies done on other stock markets around the world.

3.2 Research Design

In order to establish when the announced earnings deviate from expectations and 'surprise' the market, it is necessary to define a way of calculating or estimating the expected earnings. The models used to define or estimate the expected earnings are called expectation models and previous research used several ways to estimate these expectation models (Foster *et al.*, 1984). A favorite method used by researchers is the consensus estimates provided by data providers and sourced from analysts. Due to the lack of a historical database of consensus estimates before each earnings announcement, other expectation models will be used in this research.

3.2.1 Expectation models

The following expectations models will be used in this research. Swartz & Hoffman (2013) use the last previously announced EPS as the expected earnings. The change in EPS is thus used as a proxy for unexpected earnings. The normalized change in EPS for the i-th observation from period t-1 to period t is defined as:

$$\Delta EPS_{i,t} = (EPS_{i,t} - EPS_{i,t-1})/|EPS_{i,t-1}|$$

It should however be noted that the above definition of unexpected earnings (UE) is not necessarily measuring a surprise to the market, because the market's consensus earnings estimate may be correct no matter what the change in EPS is.

The second model uses cumulative security returns on the day of announcement as a proxy for unexpected earnings. This is consistent with Matsumoto (2002) who constructs a measure of expected earnings based on previous earnings and prior returns. Because some uncertainty exists about the time of the announcement and the day on which the market reacts thereto, the

cumulative reaction on the days [0; +2], with day 0 the announcement day, is used as an indication of the market's surprise to the announced earnings. This value is called the initial reaction. The second earnings surprise proxy is therefore calculated as:

$$IR_i = \sum_{t=0}^{2} R_{i,t}$$

All returns are calculated as the natural logarithm of the ratio of the price to the previous period's price, also known as the continuous compound return:

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

Dividends will be included by adding the dividend amount to the closing price ($P_{i,t}$) on the payout date and then calculating the natural logarithm of the returns as in the equation above.

3.3 Population and sampling

The population of this study was the Kenyan stock market i.e. The Nairobi Stock Exchange. The sampling technique was based on the stocks for which information is available throughout the period from January 2008 to November 2014 since some stocks might cease to trade in the NSE during that period. It will also be based on the information on earnings announcements dates for companies in the Nairobi Stock Exchange.

3.4 Data Collection

This study used secondary data from the Nairobi Stock Exchange for stock prices form January 2008 to November 2014.

3.5 Data Analysis

3.5.1 Event Study Definition

3.5.1.1 Event and Event date

In our study, the event of interest is earnings announcements from firms in the Nairobi Securities Exchange market. The study focuses on a timeframe of 7 years from 2008 to 2014. We have defined the event date, as the date where the market is able to react to the information released in the earnings announcement. Hence, if the announcement is made during a time where the market is open, this day serves as the event date.

3.5.1.2 Event window

The event window of 181 days. The window consists of 60 days before the event, the event day, and 120 days after the event day. We have chosen 60 days before the event date in order to capture any abnormal returns in the stock before the earnings announcement is published. The 120 day interval was chosen in order to identify signs of possible post-earnings-announcement drift.

3.5.2 The Post Earnings Drift

The Post-Earnings Announcement Drift or the subsequent price drift after the initial reaction for observation during period t for the period subsequent to the announcement (t=0) will be calculated as:

$$R_{PEAD,t,i} = R_{i,t} \forall t \in [3; 120]$$

These returns were adjusted by subtracting the corresponding market return on the same day to remove the effect of the market. This is done to control for market wide movements.

The market return for observation i for the same period subsequent to the announcement as in the equation above will be calculated as:

$$R_{PEADM,i,t} = R_{M,t} \forall t \in [3; 120]$$

$R_{M,t}$ is the index market return.

Excess post-earnings announcement returns can be defined as, $R_{PEAD,t,i} - R_f$ with the risk free rate of return. It will be determined if these excess returns exceed the risk adjusted returns that would be expected based on the systematic risk associated with holding the respective shares during the post-announcement drift periods.

Therefore the following approach was used. This was to compare the risk-adjusted returns during the post-announcement drift periods to market returns during the same periods. In order to determine systematic risk during the PEAD periods we estimated α and β over the combined post-announcement drift periods and then determined whether actual returns during the PEAD periods were in excess of expected returns based on the PEAD β.

Using the market model we therefore regressed the post-earnings announcement excess returns against excess market returns to obtain the PEAD α and β for each share, representing the behavior of the respective shares, not in general, but specifically for the periods 6 to 120 days subsequent to earnings announcements:

$$R_{PEAD,t,i} - R_f = \alpha_{PEAD,i} + \beta_{PEAD,i}(R_{PEADM,i,t} - R_f) + \varepsilon_{i,t}$$

Due to the lack of available data covering the whole period and to simplify matters the risk-free rate (R_f) will be taken to be a constant throughout this research.

While it would have been more correct to use a varying measure for R_f it is argued that since it is subtracted both from share specific and from market returns, a varying risk-free rate would have had a minimal impact on the resulting values of α and β.

3.5.2 Performance Measure

Lastly the excess return performance measure has to be chosen. According to the portfolio performance measure proposed by Jensen (1968) $\beta_{PEAD,i}$ as estimated in the Equation above fully reflects the systematic market risk of the share during the post-announcement periods, and $\alpha_{PEAD,i}$ can therefore be regarded as the excess risk-adjusted post-earnings announcement returns. Therefore the Jensen's alpha measure was used to investigate the PEAD performance of shares.

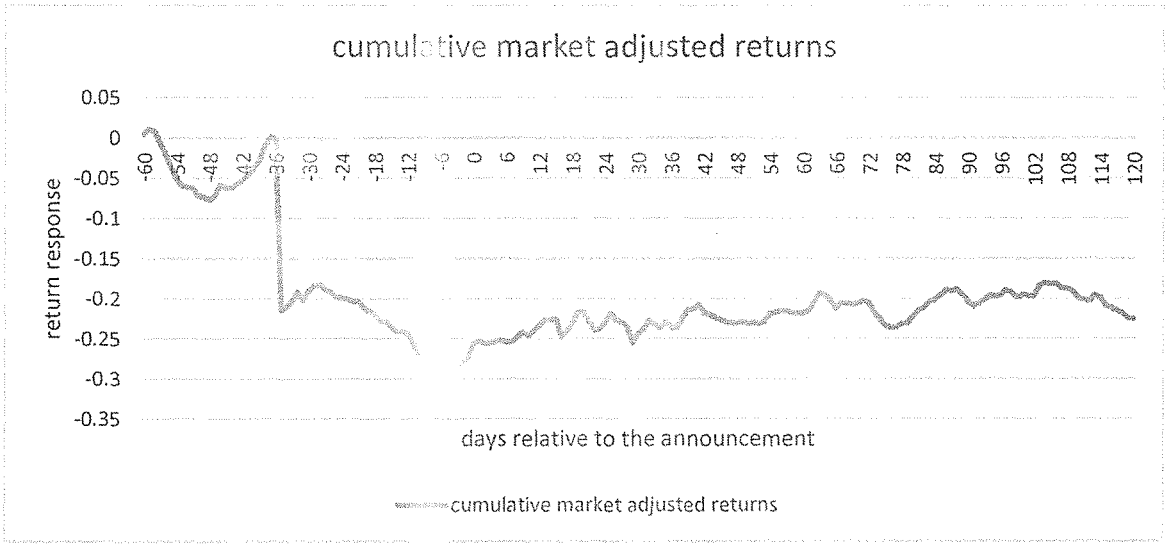
4. Results

In this section the results obtained from analyzing the returns for the 120 trading day (6 months) period after earnings releases (the [6; 120] period) are presented and discussed. The results of these analyses can reasonably be expected to provide evidence whether or not the PEAD anomaly occurred on the NSE for the period 2008 – 2014.

4.1 The PEAD anomaly

One of the purposes of this research was to determine the existence of the Post Earnings Announcement Drift in the Nairobi Securities Exchange. In this research the stocks in the NSE-20 index were used. Each stock was analyzed separately and the results are as follows;

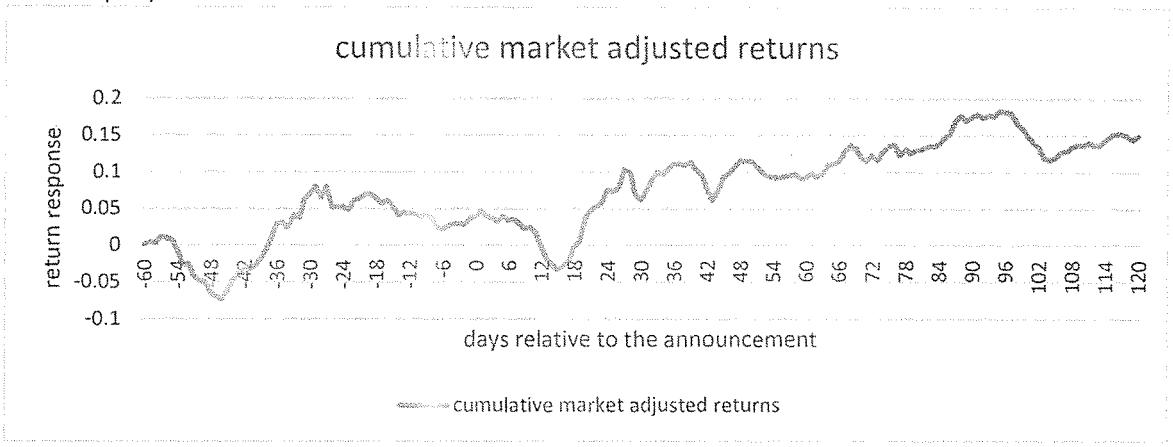
4.1.1 Barclays Bank



The movement of the cumulative market adjusted returns of the Barclays stock show no significant reaction to the announcement date. This categorizes this share as a 'no news' stock since the earnings announcement has little effect on the share movement. The sudden dip is attributed to the share split that occurred in January 2011.

An analysis of the relationship between the unexpected earnings in terms of the initial reaction and normalized change in the EPS and the excess PEAD returns however show a positive correlation whereby the change in the two variables is little hence the level movement of the excess PEAD share returns.

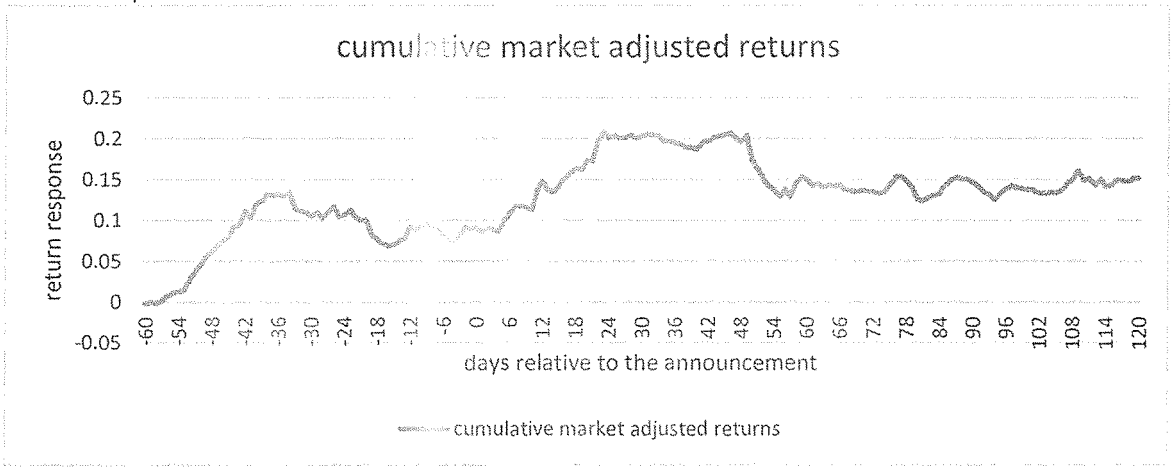
4.1.2 Equity Bank



The movement of the cumulative market adjusted returns clearly show the PEAD anomaly whereby the returns continue to drift upwards from day 20 relative to the earnings announcement. This categorizes the equity stock as a 'good news' stock whereby it reacts positively to the earnings announcement.

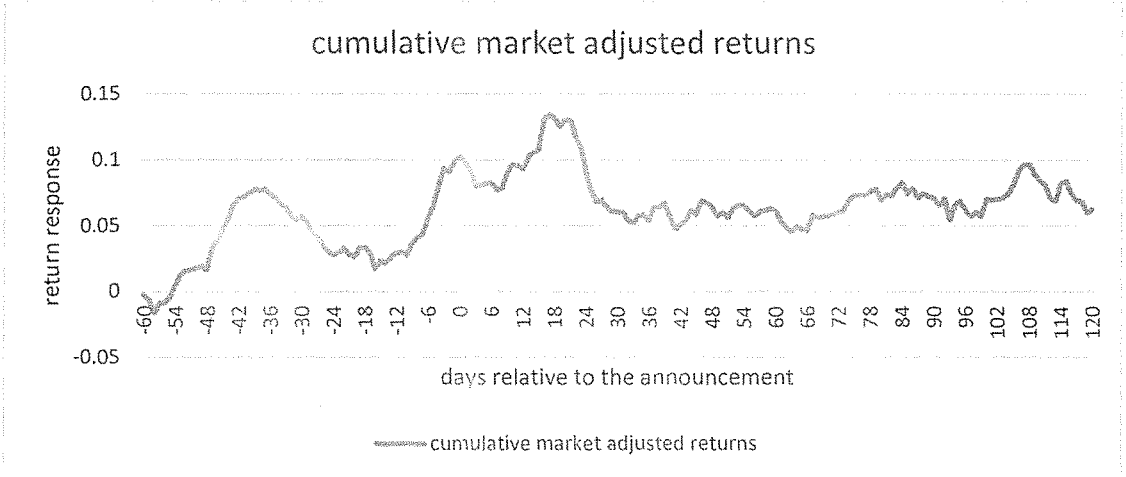
An analysis of the relationship between the unexpected earnings in terms of the initial reaction and change in EPS show a positive correlation with the PEAD returns. Most of the changes in the variables are positive which follows the positive drift in the earnings subsequent to the announcement.

4.1.3 Kenya Commercial Bank



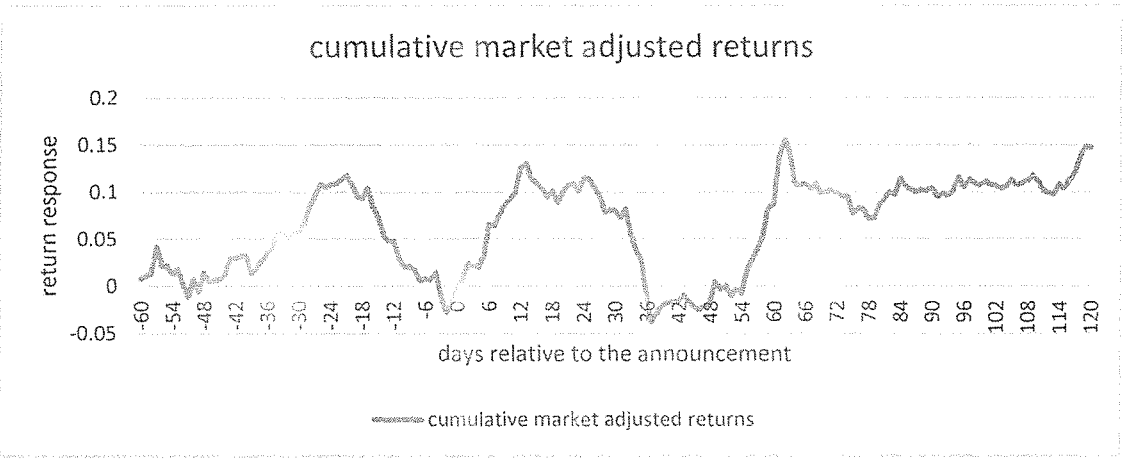
The initial movement on the announcement day is steadily maintained up to the 50th day. This shows the PEAD effect but it is less significant as the change is not quite big. This is consistent with the unexpected earnings as showed by the change in EPS where the change is little. The initial reaction variable also follows suite.

4.1.4 Standard Chartered Bank



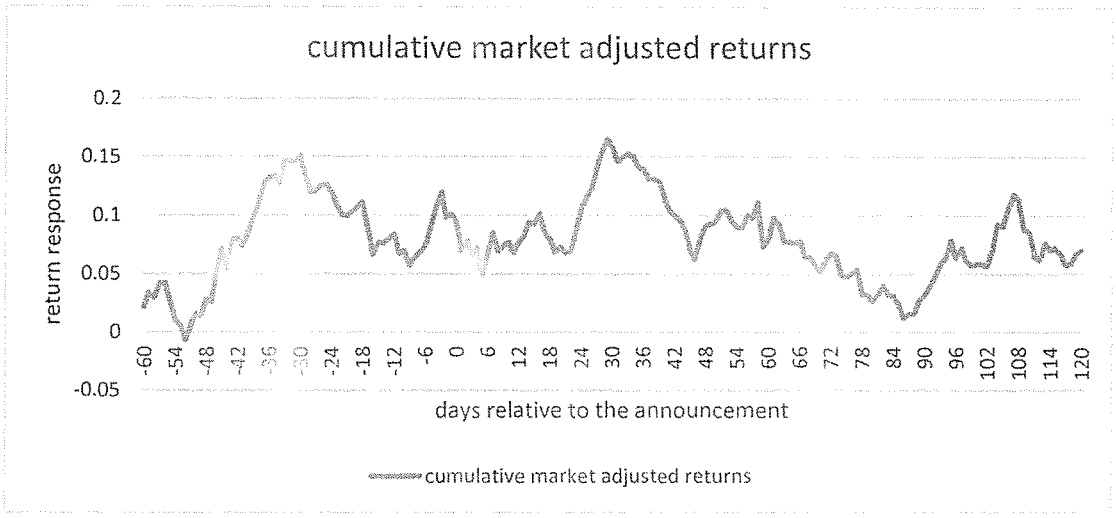
There is no significant drift in the market adjusted returns. There is a slight increase on the announcement day but it levels up from the 24th day from the announcement. This Stock can be termed as 'no news' where the earnings announcement has little effect on the stock price.

4.1.5 Sasini



4.1.6 Centum

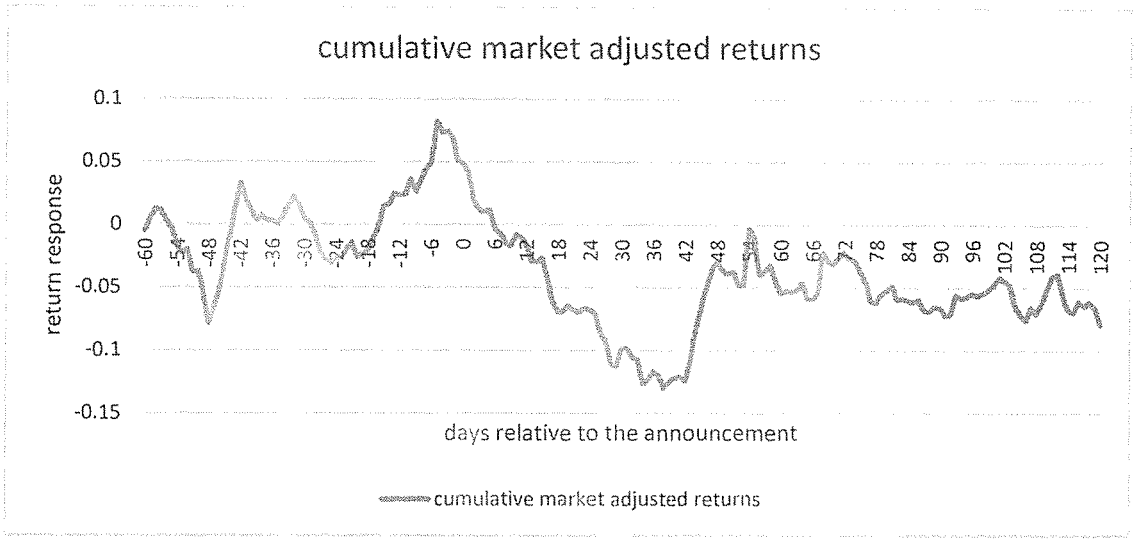
The centum stock shows a mean reverting movement with 0.08 return response and hence no consistent drift is observable. This shows little significant reaction of the earnings announcement and hence it can be categorized as a 'no news' stock.



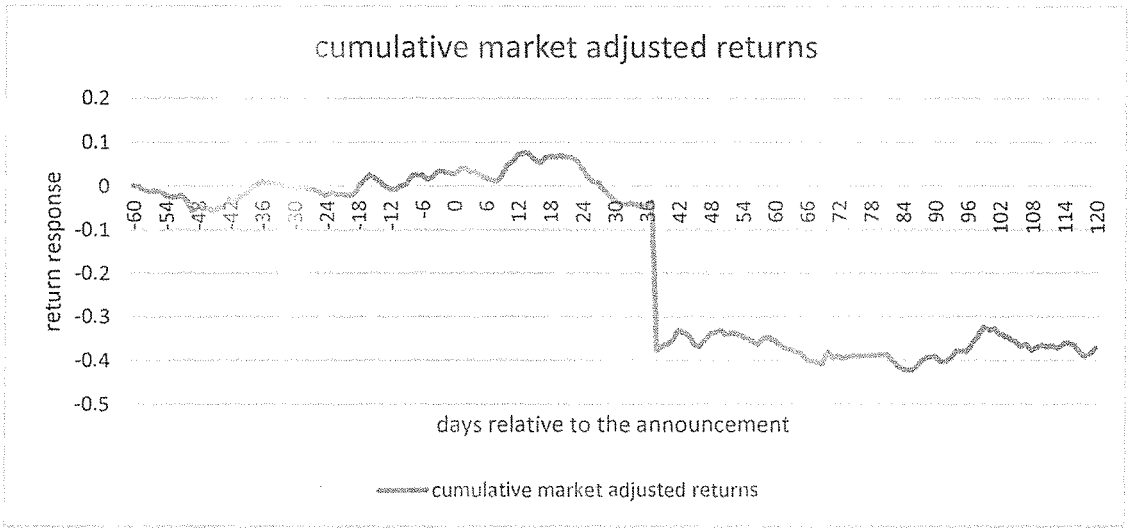
4.1.7 CMC

The CMC stock shows a down trend on the day of announcement as this continues up to the 120th day. This clearly shows the PEAD anomaly and this stock can be categorized as a 'bad news' as it reacts negatively to the earnings announcement.

An analysis of the relationship between the unexpected earnings as shown by the change in EPS and Initial reaction shows a positive correlation.



4.1.8 KPLC

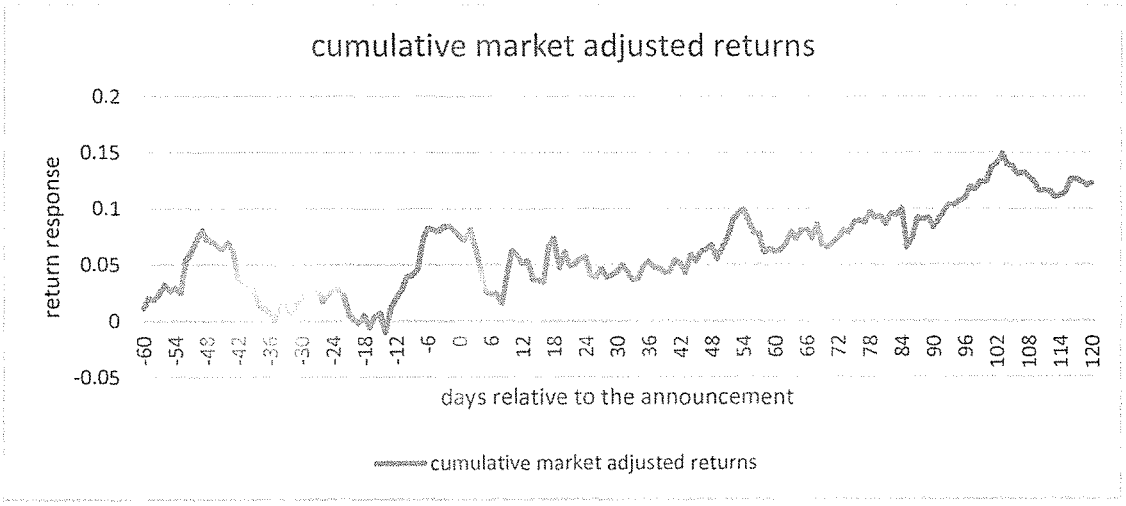


The Kplc stock does not show any significant drift from the announcement day. The sudden dip on the 38th day from the announcement day is cause of the share split the company did in 2010.

The average change in EPS and initial reaction variable show a slight change and hence positively correlated to the PEAD earnings.

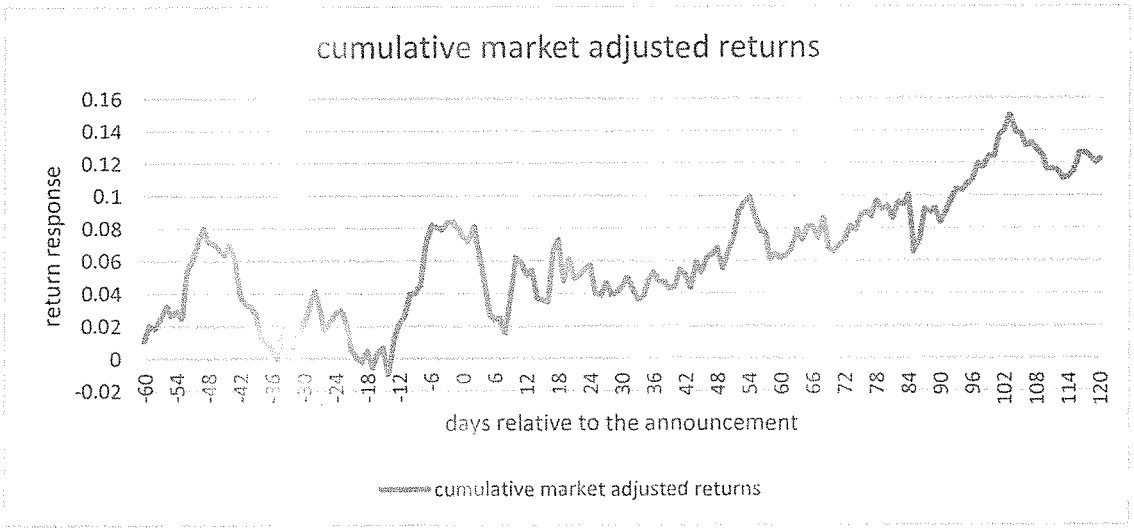
4.1.9 ARM

The ARM stock shows a positive upward trend and thus illustrating the PEAD anomaly. This stock can be categorized as 'good news' as it reacts positively to the earnings announcement. The PEAD returns are positively correlated with the unexpected earnings as shown by the initial reaction and change in EPS.



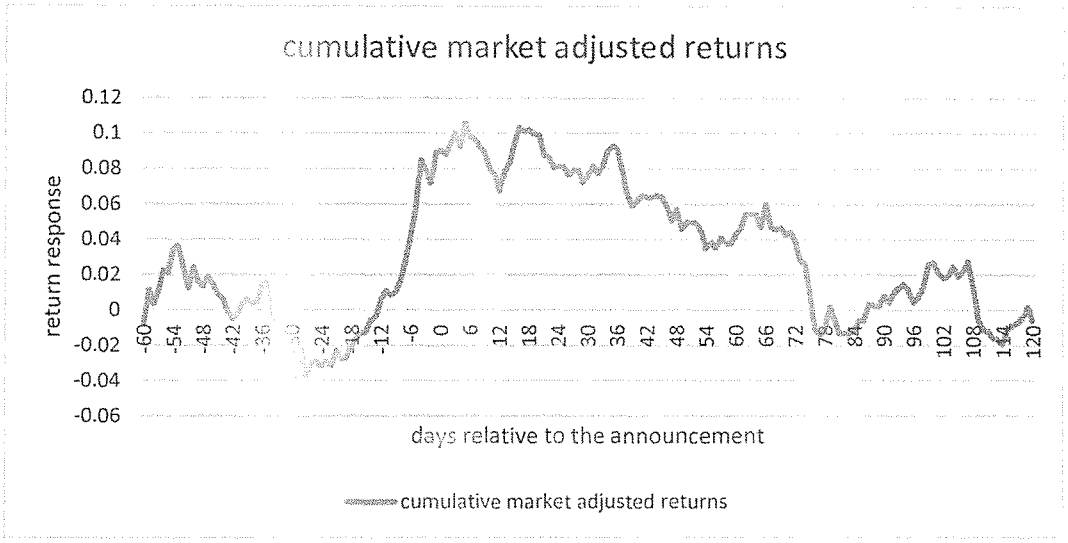
4.1.10 BAT

The BAT stock shows a positive drift from the announcement day and thus can be regarded as a 'good news' stock. The PEAD returns are positively correlated with the unexpected earnings as shown by the change in EPS and initial reaction.



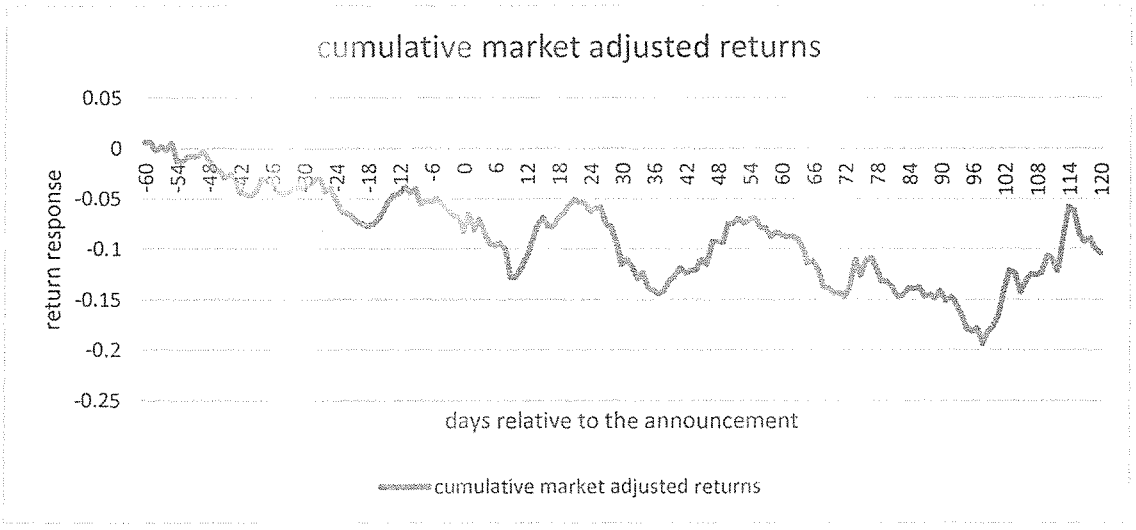
4.1.11 NMG

The Nation media group stock shows a downward trend from the earnings announcement indicating that it is a 'bad news' stock as it reacts negatively to the earnings announcement.



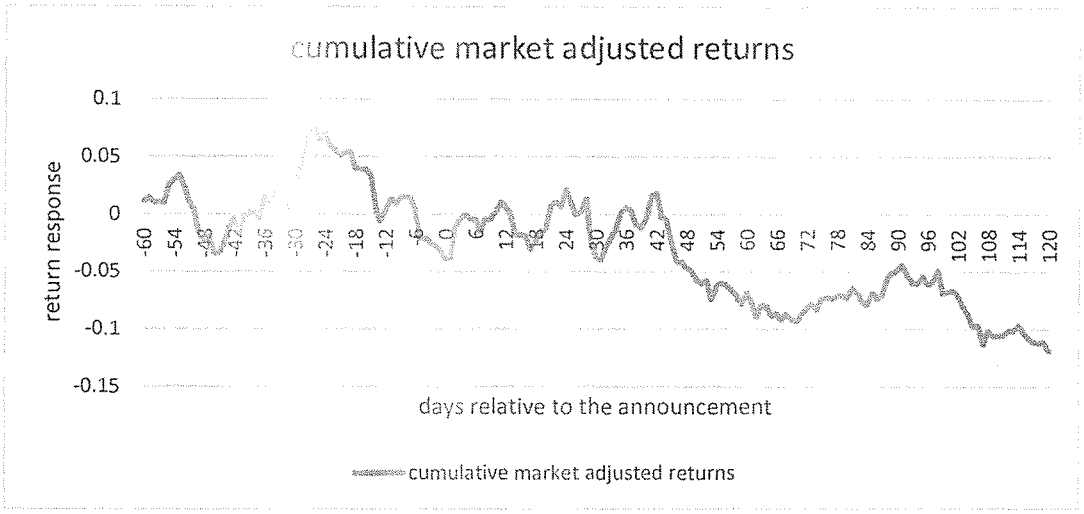
4.1.12 KENGEN

The kengen stock shows a downward trend thus indicating it is a 'bad news' stock as it reacts negatively to the earnings announcement. There is a positive correlation between the unexpected earnings and PEAD returns.



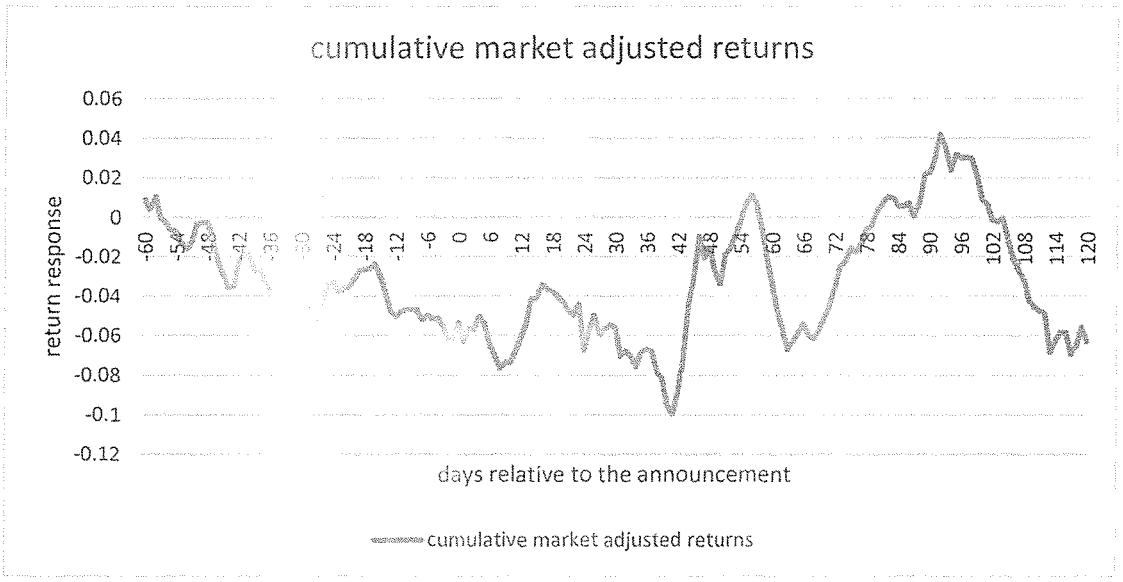
4.1.13 EA Cables

The EA cables stock shows a downward trend thus indicating it is a 'bad news' stock since it reacts negatively to the earnings announcement. There is a positive correlation between the unexpected earnings and the PEAD returns.



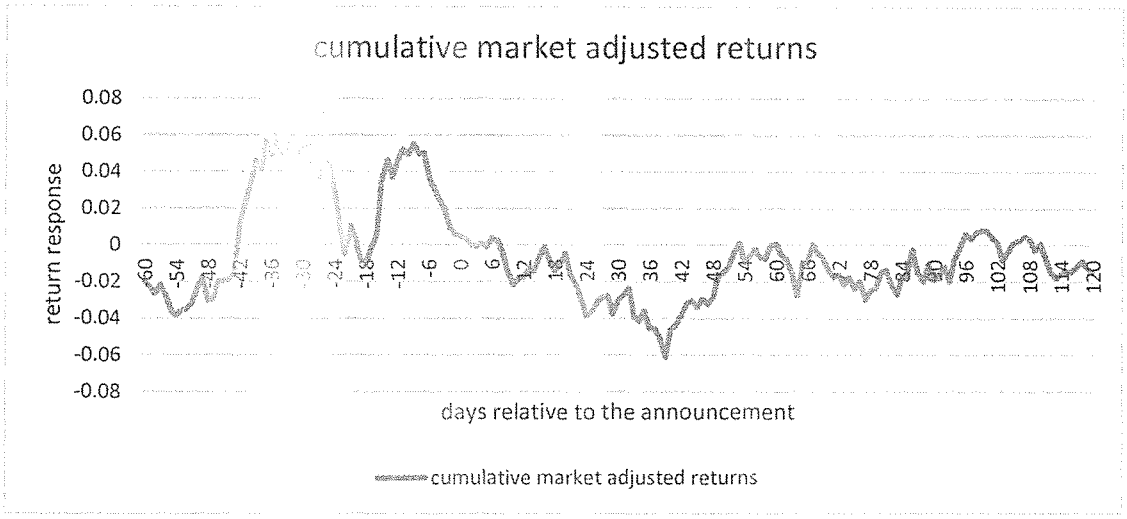
4.1.14 EABL

The EABL stock does not show any consistent drift as hence can be classified as a 'no news' stock. The different shifts in the cumulative returns can be attributed to other internal and external factors apart from earnings announcements.



4.1.15 Bamburi

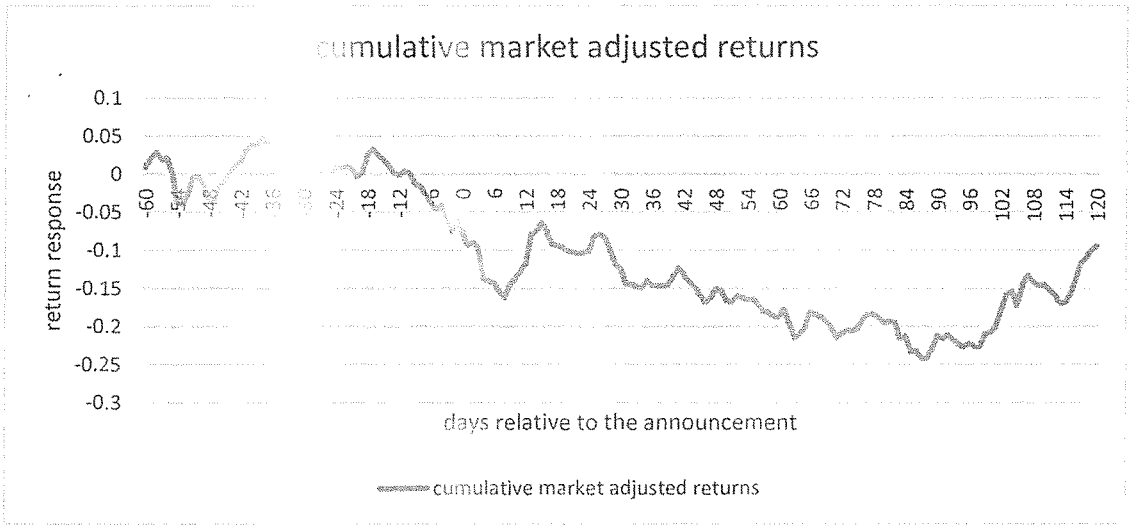
The Bamburi stock does not show any consistent drift as it retains a level line after the earnings announcement. Therefore this stock is categorized as a 'no news' stock.



4.1.16 Kenya Airways

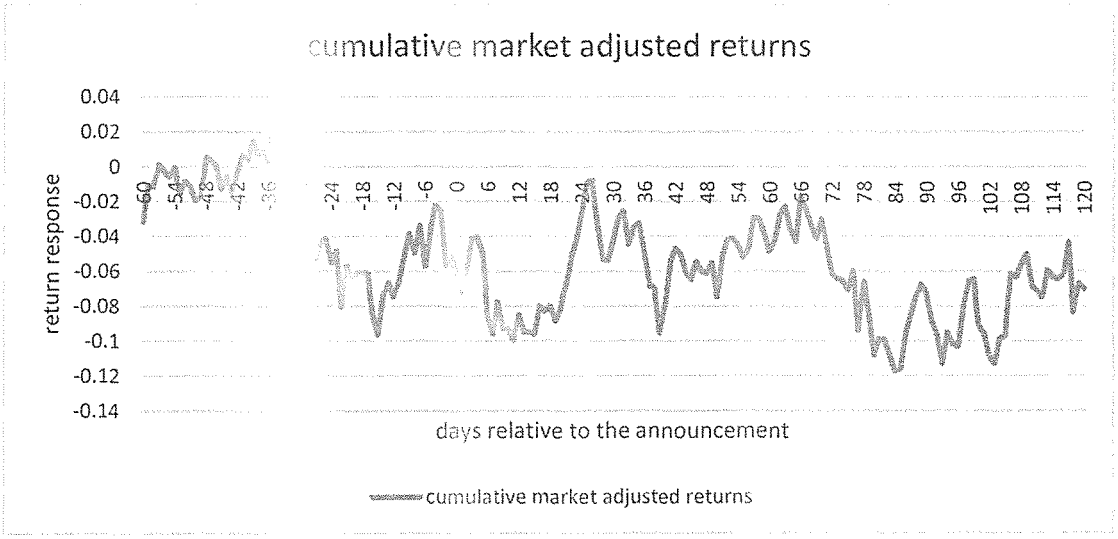
The KQ stock shows a downward drift from the earnings announcement thus illustrating the PEAD anomaly. The stock therefore is a 'bad news' stock as it reacts negatively with the earnings announcement.

There is a positive correlation between the unexpected earnings as shown by change in EPS and initial reaction variable and the PEAD returns.



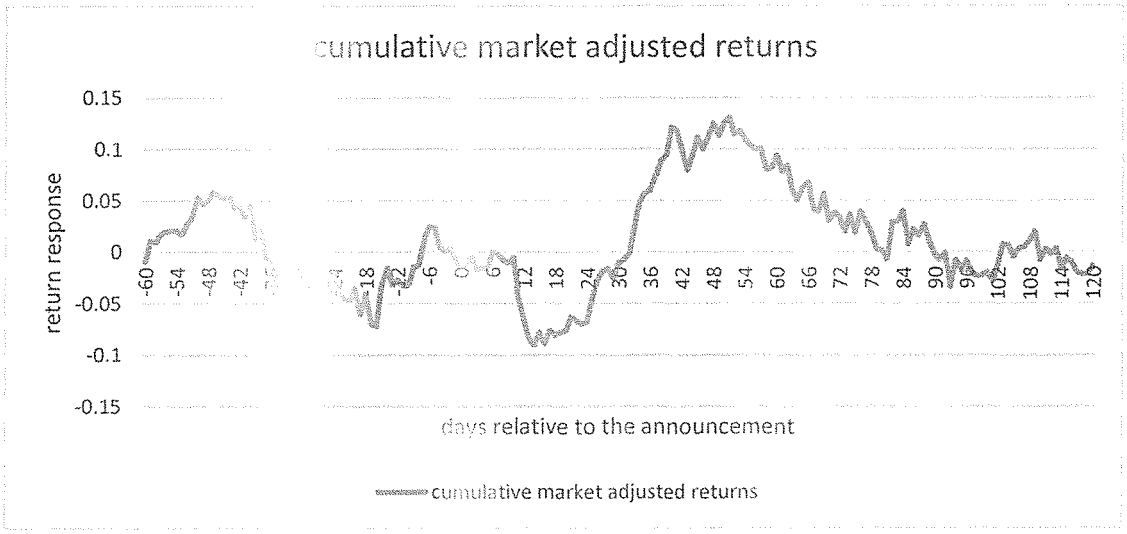
4.1.17 Express Holdings

The express holdings does not show any consistent drift from the announcement day and hence can be categorized as a 'no news' stock. This means that the earnings announcement has little effect on the stocks returns. The up and down movement is affected by other internal and external factors.



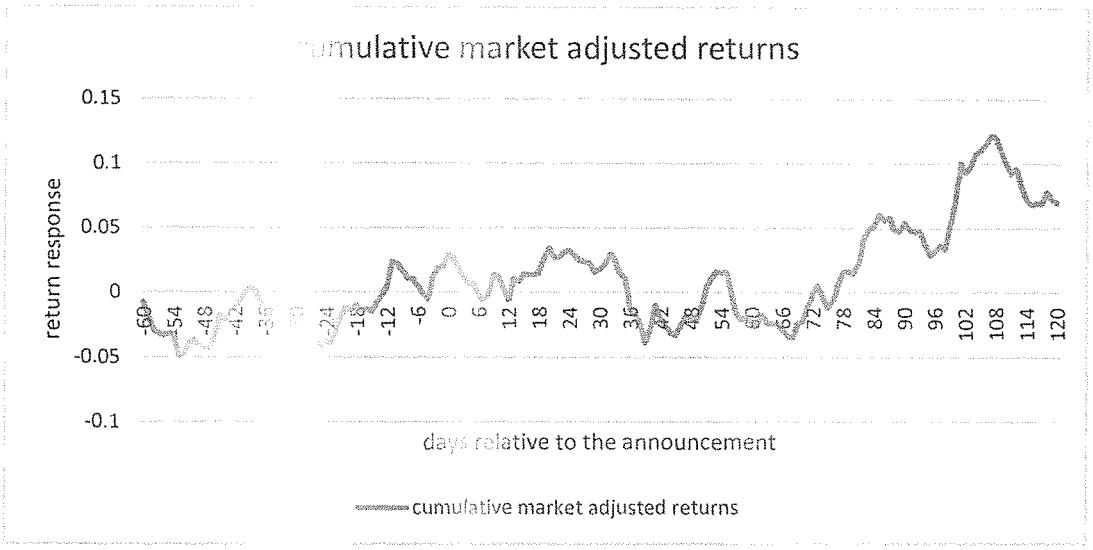
4.1.18 Rea Vipingo

The Rea Vipingo stock shows an upward trend from the announcement day and goes downwards from the 50th day from the announcement. This shows slight the PEAD anomaly and the drop from the 50th day from the announcement can be attributed to other factors.



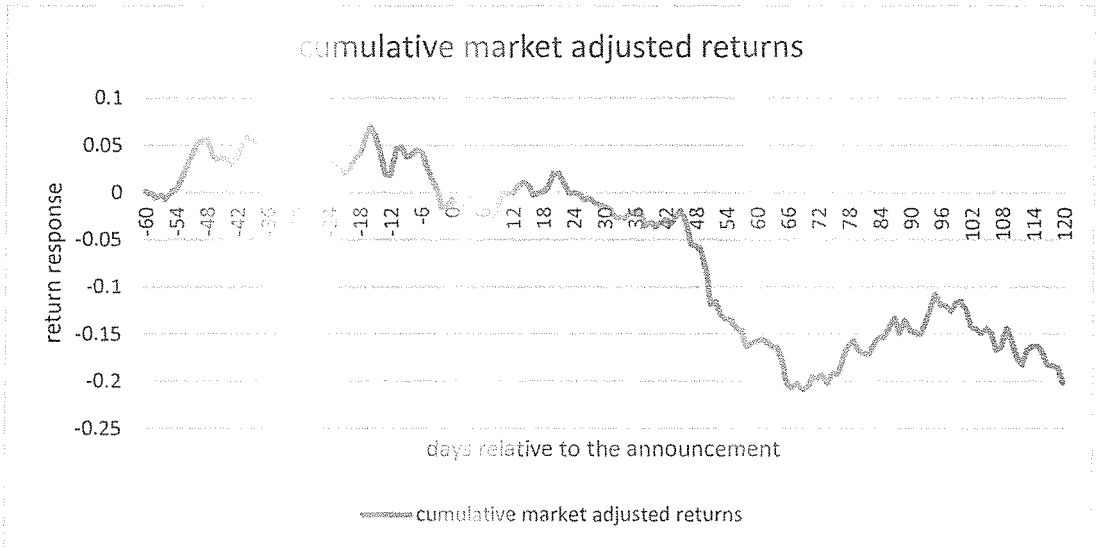
4.1.19 Safaricom

The safaricom stock shows an upward trend from the announcement day. This indicates that the stock is a 'good news' stock as it reacts positively to the earnings announcement.



4.1.20 Mumias

The Mumias stock clearly shows a downward trend from the announcement day. This indicates that the stock is a 'bad news' stock as it reacts negatively to the earnings announcement.



4.2 Performance of the Shares in the NSE

To measure the performance of the respective shares during the PEAD, the market model was used to get the values of alpha and beta of each share by regressing the excess returns against the excess market returns.

The beta values fully reflect the systematic market risk of the share during the post-announcement periods, and $\alpha PEAD$, can therefore be regarded as the excess risk-adjusted post-earnings announcement returns. The alpha values therefore show the performance of the shares during the PEAD periods.

results of regression	
beta for Sasini	-1.93069
alpha for Sasini	-0.22995
beta for CMC	-1.07455
alpha for CMC	-0.16899
beta for Barclays	0.319928
alpha for Barclays	-0.05223
beta for Kengen	0.257512
alpha for Kengen	-0.06959
beta for KPLC	7.916761
alpha for KPLC	0.516739

results of regression	
beta for Bamburi	0.203558
alpha for Bamburi	-0.06214
beta for EABL	1.474531
alpha for EABL	0.0328
beta for Safaricom	-0.00988
alpha for Safaricom	-0.07994
beta for Rea Vipingo	-2.18912
alpha for Rea Vipingo	-0.24978

beta for BAT	-0.21983
alpha for BAT	-0.09101

results of regression	
beta of Stanchart	-0.58483
alpha of Stanchart	-0.11988
beta of NMG	0.054842
alpha of NMG	-0.07308
beta of EA cables	0.528961
alpha of EA cables	-0.04209
beta of centum	-0.97676
alpha of centum	-0.15421
beta of Mumias	-0.0985
alpha of Mumias	-0.09788

results of regression	
beta of Equity	-1.47586
alpha of Equity	-0.21026
beta of KCB	-1.19845
alpha of KCB	-0.17261
beta of Express	-0.76526
alpha of Express	-0.14704
beta of ARM	0.076846
alpha of ARM	-0.06946
beta of KQ	-0.02502
alpha of KQ	-0.08757

According to the alpha values from the market model, very few shares outperformed the market during the period of study. This means that the market returns were more volatile than the individual share returns. With the level of systematic risk as shown by the beta values, an investor can therefore gauge whether the corresponding returns is worth the risk taken i.e. high volatility, high risk and high return. Therefore an invest can short shares that have a high volatility rate but low return and long or buy shares with high volatility and high return or low volatility and relatively low returns.

5. Discussion

The purpose of this paper was to determine the existence of the post earnings announcement drift in the Nairobi Securities Exchange during 1 January 2008 to 28th November 2014 and investigate whether it is possible to use the PEAD to measure stock performance. The shares in the NSE 20 index were used in the analysis and this was because they represent the whole securities market in Kenya.

The initial reaction proxy and change in EPS were the measures used for the unexpected earnings. It was determined if there was a positive correlation between the PEAD returns and the two proxies of unexpected earnings.

The PEAD anomaly which can be regarded as an initial under-reaction to earnings news is quite evident in some of the shares while other shares show no reaction to the earnings announcement. Therefore the shares in the NSE were grouped into 'no news', 'good news' and 'bad news' categories as follows:

No news	**Good news**	**Bad news**
Barclays bank	Equity bank	CMC
Centum	KCB	NMG
KPLC	ARM	Kengen
Bamburi	BAT	EA Cables
Express Holdings	REA VIPINGO	Kenya Airways
Sasini	Safaricom	Mumius Sugar
Standard Chartered Bank		
EABL		

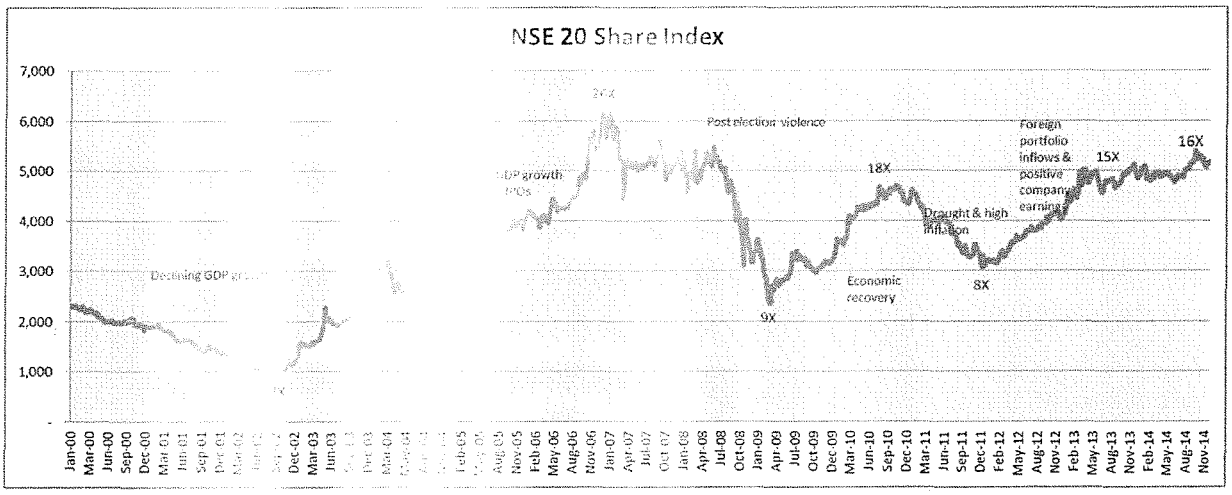
The 'good news' category is characterized by companies that reported mainly positive earnings during the period of study and this prompted the upward drift in the cumulative market adjusted returns. The 'bad news' category follows negative earnings or earnings that were not as good as expected. The 'no news' category is categorized by shares that have minimal reaction to the earnings announcement and the different movements in the cumulative returns can be attributed to other factors. The PEAD effect is thus confirmed in the "bad news' and 'good news' category in NSE.

The unexpected earnings proxies were used to determine if there was a relation between the PEAD returns and change in EPS and initial reaction. This was done by doing a correlation analysis between the average PEAD returns of each year from 2008 to 2014 and the corresponding values of change in EPS and Initial reaction of the same years. It was concluded that there is a positive correlation between both unexpected earnings proxies and PEAD returns. The table below shows the correlation coefficients between the unexpected earnings proxies and PEAD returns;

Proxy	Correlation coefficient
Initial Reaction	0.060887
Change in EPS	0.030765

The current academic research reveals that the PEAD is a cause of underreaction of market participants, i.e. it is explained by psychological biases. This area of research has gained a lot of attention recently since it has been able to explain a lot of anomalies in finance. The more traditional finance theories covered in the theoretical framework, the efficient market hypothesis, the CAPM and the Fama French three factor model have not been able to explain this phenomenon.

In a bid to explain the movements of the shares, the NSE 20 index movements was considered over the years. The graph below shows the movement of the NSE 20 index over the years.



The period of the study has two depressions in the NSE 20 index as a result of post-election violence and drought and inflation. However there has been a steady increase from 2009 up to 2014 in terms of economic recovery and positive company earnings.

In terms of the 'good news' stock, the banking industry benefited from the economic recovery period and foreign investments inflows and positive earnings. Banks on the other hand can curb the effect of inflation by increasing interest rates and therefore are not greatly affected by increasing inflation. Equity Bank and KCB are examples of the 'good news' stock in the analysis.

High inflation however greatly affected the manufacturing and allied, Energy and petroleum and commercial and services industry. Inflation greatly affects the costs of supplies and thus resulting in price inflation with then affects the performance of the different companies. Companies that are greatly affected by inflation fall under the 'bad news' category e.g. Kengen, EA cables, KQ and CMC.

Very few shares outperformed the market during this period in the NSE 20 index. The Jensen's alpha is generally negative for the shares thereby indicating worse performance than the market.

The post earnings announcement drift however could clearly be used as a tool to monitor the performance of shares by checking the direction of the drift in relation to the market. By looking at the level of risk (systematic risk) an investor will be able to gauge if the overall returns from a given share is worth the risk involved and whether to assume a long or a short position with the shares currently held in a given portfolio.

6. Conclusion

The Post Earnings announcement drift was present in the Nairobi Securities Exchange in the period between 2008 and 2014. This was evident from the individual analysis of the 20 shares in the NSE 20 index. The categories of 'good news', 'bad news' and 'no news' were able to separate from winners and the losers during this period. Further evidence from the research suggests that the unexpected earnings is a statistically significant predictor of the earnings subsequent to the earnings announcements as shown by the correlation coefficients. Negative unexpected earnings led to a downward drift while positive unexpected earnings led to an upward drift.

The result from the regression of the excess market returns against the excess individual share returns are consistent with the trends in the graphs of the individual shares compared to the graph of the NSE 20 index. The alpha values (Jensen's index) were mostly negative indicating that the shares were outperformed by the market. This therefore indicates that the PEAD anomaly can be used to monitor stock performance in the Nairobi Securities Exchange.

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7. Appendices

Appendix A: the effect of expectation on share price (Initial reaction)

The average initial reactions for all shares in the NSE 20 index.

	average initial reaction
sasini	-0.00208[illegible]013
cmc	-0.007058763
barclays	-0.19537[illegible]633
equity	0.02901[illegible]063
kcb	0.02528525
stanchart	0.020193941
express	0.024470666
nmg	0.021030856
bamburi	[illegible].01183[illegible]208
eacables	[illegible].019822647
kengen	[illegible].02756[illegible]172
kplc	-[illegible].01010[illegible]362
centum	[illegible].01463[illegible]002
eabl	[illegible].00750[illegible]368
mumias	[illegible].01540[illegible]712
safaricom	[illegible].01415[illegible]348
arm	[illegible].02369[illegible]800
reaviping[illegible]	0.00109[illegible]805
bat	0.01021[illegible]948
kq	[illegible].05267[illegible]181

Appendix B: The effect of expectation model. (Change in EPS)

[illegible] Vipin[illegible]	KCB	StanChart	Express	KQ	NMG	Bamburi	E.A.Cables
FY end	[illegible]1-Dec	31-Dec	31-Dec	31-Mar	31-Dec	31-Dec	31-Dec
EPS 2007	1.47	12.14	2.08	8.87	15.30	9.91	1.85
EPS 2008	1.97	11.34	(1.24)	8.37	9.00	8.78	1.94
EPS 2009	1.84	16.45	0.15	(8.84)	7.70	18.32	1.52
EPS 2010	2.76	18.58	(0.79)	4.40	9.80	14.02	1.12
EPS 2011	3.72	19.75	(6.47)	7.65	12.7	14.44	1.15
EPS 2012	4.11	26.51	0.37	3.58	15.90	12.17	1.74
EPS 2013				(6.35)			

	ARM		Centum		EABL	Mumias	Safaricom	Equity	CMC	StanChart
FY end	31-Dec		31-Mar		30-Jun	30-Jun	31-Mar	31-Dec	30-Sep	31-Dec
EPS 200	4.25		2.03		8.18	2.73	0.30	6.88		12.14
EPS 200	5.05		1.68		9.55	0.79	0.35	10.68		11.34
EPS 200	6.52		57		9.09	1.05	0.27	1.14		16.45
EPS 201	8.06		09		9.03	1.03	0.38	1.93		18.58
EPS 201	11.6		05		9.3	1.26	0.33	2.79	-0.31	19.75
EPS 201	2.51		79		13.46	1.32	0.32	3.26	0.18	26.51
EPS 2013			77		8.82	-1.09	0.44			