AN EMPIRICAL INVESTIGATION INTO THE INFORMATION CONTENT OF STOCK SPLITS – EVIDENCE FROM THE NAIROBI STOCK EXCHNAGE

BY

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DECLARATION

This management research project is my own original work and has not been submitted for any other degree in any other university.

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DEDICATION

To my hero and my mother Mary Muthui Mom, you shed tears for me to go to school and that memory is forever engraved in my heart, here is a small token to say thank you and please prepare your granaries for more.

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Every single bit of my success in this work belongs to someone else: First to God for the gift of Life, his goodness and mercies have followed me all the days of my life; His greatness has been beyond my understanding.

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ABSTRACT

Since 1969, researchers have been bewildered by stock splits. The pioneer study by Fama, Fischer Jensen and Ross which tried to explain the reasons behind the noticeable increase in share prices before and after the announcement date formed the genesis of a myriad of studies on this area. The interest in stock splits is motivated by the fact that this event is not directly related to changes in the operating or financial structure of the firm and, therefore, should cause no change in stock price other than the adjustment warranted by the split factor. This study intended to find out whether stock split announcements have a significant effect on share prices at the Kenyan stock market. Specifically test the existence or absence of stock splits post announcement abnormal returns at the Kenyan stock market.

The study explored the relationship between stock splits announcements and subsequent returns during the period of 2004 to 2008. The study finds that contrary to much previous research, firms do not exhibit positive abnormal returns at the long run and no abnormal returns can be cited for the period before the split announcement date. Instead, the study finds out that significant positive abnormal returns after the announcement date only persist for a very short time. The study also finds out that abnormal returns are not correlated to market returns and large capitalized firms experience broadly same scale of abnormal returns following a stock split announcement as small capitalized firms.

From the Kenyan stock market data, it can be concluded that stock splits announcements cause short term price drifts and it's attributable to the speed at which new information is digested by the market, hence there is ample evidence on existence of information content in stock splits. The consistency of these results over all the firms that have announced stock splits at the NSE provides a strong case on existence of stock splits post announcement abnormal returns.

LIST OF ACRONYMS

ASE: ATHENS STOCK EXCHANGE

CAPM: CAPITAL ASSETS PRICING MODEL

CAR: CUMMULATIVE ABNROMAL RETURN

CDSC: CENTRAL DEPOSITORY AND SETTLEMENT CORPORATION

CMA: CAPITAL MARKET AUTHORITY

EMH: EFFICIENT MARKET HYPOTHESIS

EPS: EARNINGS PER SHARE

JSX: JAKARTA STOCK EXCHANGE

MBA: MASTER OF BUSINESS ADMINSTRATION

MPS: MARKET PRICE PER SHARE

NSE: NAIROBI STOCK EXCHANGE

NYSE: NEW YORK STOCK EXCHANGE

SPSS: STASTICAL PACKAGE FOR SOCIAL SCIENCES

U.S.A: UNITED STATES OF AMERICA

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CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the study

Investors are always eager to cash in on the latest trends in the stock market in order to increase value of their portfolios, no matter what the consequences may be. Companies that go public seem to attract a lot of investor attention as in the case of initial public offers, while some investors have their eyes out on announcements of impending stock splits (Simbovo, 2001). Many investors are of the illusion that if a company splits its stocks, that it is a definite upswing in the company's fortunes. However, as with speculative investments, stock splits may temporarily increase net worth of a stock sometimes resulting to positive abnormal returns, but may also be a risky investment depending on the market conditions since the underlying driver in stock investment is the value of the stock (Simbovo, 2001)

A stock split is a corporate action the increases the number of the corporation's outstanding shares by dividing each share, which in turn diminishes its price. The stock market capitalization, however, remains the same (Investopedia staff, 2005). For example, with a 2- for-1 stock split, each shareholder receives an additional share for each share held, but the value of each share is reduced by half: two shares now equal the value of one share before the split. A stock split occurs when the board of directors authorizes distribution of common shares to existing shareholders of the company. The distribution is done proportionately, and thus shareholders end up with the same proportionate ownership they had before the stock split (Onyango, 1999).

Mbugua (2004) defines stock splits as marketing incentives offered by companies looking to attract new investors. When companies perform well and meet earnings expectations, they will look to make additional shares available to investors if demand for the stock exceeds supply

available. A split in this sense would allow existing shareholders to own more shares and additional investors to take advantage and invest in the company at the event where existing investors wish to sell their increased shares

According to Wulff, (1999) stock split is merely an accounting change, which leaves investors no better or worse off than they were before and stock splits are purely ornamental corporate events with no real economic consequence. They are transactions that simply divide the same pie into more slices and it is believed that splits are superficial, since the firms cash flows are not affected (Brenan and Copeland, 1988). They re arrange the equity section of the balance sheet and do not increase the firms assets and consequently stock splits have no effect on the firms capital structure (Mayo, 1998).

In Kenya, the process of splitting stocks begins when the board of directors authorizes a distribution of common shares to existing shareholders of the company. The distribution is done proportionately and thus the shareholders end up with the same proportionate ownership they had before the split (Onyango, 1999). The request to split shares is then placed with the capital market authority (CMA) for approval. Once a split has been approved by the Capital Markets Authority (CMA), it takes the Central Depository and Settlement Corporation (CDSC) time to credit the split shares into the client's accounts. Prior to updating of the client's accounts with the shares, only the principal number of shares trade steering an artificial supply hitch. Once the crediting is finalized, the split shares flood the market creating excess demand.

The studies on stock split and their resultant effects on post announcement returns have received considerable attention in the finance literature. As observed by Rodney and Bartley (2007) the long-run performance of equities after stock splits is the subject of a vigorous academic debate

between the behavioral finance and the efficient markets schools of thought. According to Rodney and Bartley (2007) it is by now well accepted that stock splits signal favorable news about the fundamental value of a corporation, but if markets are semi-strongly efficient, the present value of such news should be fully priced during the narrow event window around the announcement date. An observed under reaction to such a simple corporate event, which leaves the corporation materially unchanged, calls into question the market's ability to quickly digest other more complex or ambiguous information especially for semi-strong and weak efficient markets.

Ikenberry et al, (1996) in a study on under reaction to self selected events and Desai and Jain (1997) in a study on long run common stock returns following stock splits and reverse splits, form the genesis of stock splits' significant role in the behavioral versus rational markets debate. They report a positive price drift during the one-year period after the announcement of stock splits from 1975 to 1991 and from 1976 to 1992, respectively. These results seem inconsistent with the semi-strong efficient markets paradigm that Daniel et al, (1998), in motivating their model of under reactions and overreactions based on psychological biases in their study of the theory of overconfidence, self attribution and market under and over reaction; cite stock splits as their first example of under reaction to public news events.

The information content theory appears to play hand in the reaction of the stock prices both after announcement of the stock split by the management and the time the stocks are traded in the stock exchange. Empirical findings by Kryzanowski and Hao (1991) give a perfectly positive correlation between the signaling information on stock splits and the returns obtained by the investors in the short-run at the Canadian stock exchange. Their study provides evidence that the

Post split abnormal returns can be as a result of efficient markets where the flow of information is strong.

Barker and Callagher (1980) found out that managers tend to mention the optimal trading range to explain the noticeable increase in share prices after the announcement of the split. By making the price more attractive to cash poor investors, the number of share orders might increase after a stock split and since a stock split gives the existing shareholders a feeling that they have more shares than before and they have more stocks to trade in, there is an increased trading activity around stock splits and this might lead to a price drift. In this sense, stock splits are used to draw attention to the firm's shares and maintain the prices within the optimal range (Grinbatt et al, 1984).

Secondly splits lower the selling price, increasing marketability of the shares. The increased interest and marketability may ultimately cause value of stocks to appreciate (Mayo, 1988). Thirdly the management of a company may use a stock split to signal to the market future prospects of the company. In this sense a stock split is an attention getting devise.

The debate over the existence or absence of post split abnormal returns is a focal point of contention and an ongoing battle in the field of finance. Actually, two simultaneously produced studies investigating virtually the same event set, both relying upon the same long run performance methodologies, arrive at conclusions that are in diametric opposition. Ikenberry and Ramnath (2002) report evidence in support of behavioral models of price formation while Byun and Rozeff (2003) argue that the abnormal returns evidence support market efficiency. Clearly a further study on price drifts is needed, but most importantly the price drifts need to be

investigated in a new set of data, especially in emerging markets as recommended by Rodney and Bartley (2007).

In Kenya, stock splits came into the picture in 2004 when companies that had experienced a rally in their stock prices opted to split their shares. Between June 2004 and June 2008, ten companies had announced stock splits at the NSE (NSE, 2008) drawing research attention in the area of stock splits. Whilst researchers including Simbovo (2008) have studied stock splits and their resultant impact on liquidity at the NSE, the Stock split topic in relation to price volatility and post announcement abnormal returns remains broadly and widely un-investigated in emerging markets, specifically at the NSE. This forms a useful conceptual background of the study.

1.2 Problem Statement

Returns or gains on stocks is a fundamental concept in finance. Both investors and borrowers are concerned about returns and they seek to know the behavior of stock prices following a corporate event (Kothari and Warner, 2004). Investors desire predictable returns that add value to their investments and are generally uncertain about when they will want to eliminate their holding for a financial asset and lock in profits. Borrowers are concerned about returns because they are uncertain of future needs to raise capital and may want to attract and retain investors (Simbovo, 2004).

Brennan and Copeland (1988) developed the information signaling theory that relates stock splits post announcement price drifts to the information content that splits signal good prospects about the firm. However Eugene and Daves (2004) repeated the study empirically and found out that if a firm announces stock splits, its stock price tends to rise but if the firm does not announce increased earnings and dividends during the next few months, the stock prices will drop to the

earlier level. Rodney and Bartley (2007) observe that stock prices do not immediately and fully respond to management's split announcement, but that the information seems to be incorporated within the relatively brief period between the announcement and the split date is suggestive of the presence of some market friction that impairs the market's ability to fully price new information rapidly.

Simbovo (2004) conducted a study at the NSE and observed a positive correlation between stock splits and liquidity, however, the behavior of stock prices after a stock split announcement in the Kenyan stock market is not known as no known study has been conducted to establish existence or absence of abnormal returns after stock split announcements.

This study will investigate the effect of stock splits on stock prices with a specific view to test the existence or absence of abnormal returns after stock split announcement at the NSE. The question is, "Do stock splits announcements cause abnormal returns for the splitting firm at the NSE?"

1.3 Objective of the Study

The objective of the study is to determine whether a stock split announcement has a significant effect on stock prices.

1.4 Importance of the Study

Investors

The study will reveal test results on abnormal returns after stock split announcement that has generated a lot of debate between the market efficiency proponents and the behavioral finance

proponents. This will enable investors to make rational decisions given the information available to them.

Investment advisors

Investment advisors are interested in corporate events because they play a key role in signaling the stock market. Further, the advisors need to advise their clients on the importance of stock splits - returns correlations in making investment decisions around stock split events.

Scholars

The study will give insights to the academic world on issues related to stock splits thereby contributing to the existing international literature. The study examines the stock price reaction associated with the announcement of stock split in a stock market (NSE) where signaling and the investor clientele motives are less important factors than in the markets covered by prior studies. Further, the study will provide a framework for advanced studies in this field.

Financial Managers

The behavior of returns has obvious implications especially for managers who may favor equity rather than debt financing, the idea being to signal the market when is the right time and attract investor attention. Consequently finance managers will understand better the behavior of post split returns for firms stocks.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

Since Fama et al. (1969) published their seminal paper on stock splits, a large body of research has investigated this particular corporate decision. The interest in stock splits is motivated by the fact that this event is not directly related to changes in the operating or financial structure of the firm and, therefore , should cause no change in stock price other than the adjustment warranted by the split factor. However, in theory a stock split is merely an accounting change, which leaves investors no better or worse off than they were before the split (Rodney and Bartley, 2007). All that happens is that there is a change in size of the units in which ownership maybe bought and sold (Sharpe et al, 2008), yet stock splits are relatively common occurrences. This implies that there must be some benefit, either real or perceived, that results from a firm splitting its stock

Several hypotheses have been proposed to address why firms split their stocks. One of the hypotheses is that due to the information asymmetry between managers and shareholders, managers split their stocks to signal good information to the public. The hypothesis also holds that it is costly to falsely signal, since if bad news comes out about a firm subsequent to the split, the stock price may sink below the range that managers and shareholders consider optimal (Brenan and Copeland, 1988).

A second hypothesis states that mangers split their firm stocks to make the stock more liquid, by splitting a stock and lowering its price, more investors will be able to own it and liquidity should increase. The liquidity-improvement hypothesis is based on the proposition that lower-priced stocks draw more investors and generate greater trading volume, thus enhancing marketability and reducing the bid-ask spread.

A third hypothesis states that by increasing the ownership base of the firm, management makes it more difficult for any one group of shareholders to initiate action against them. Though this is one of the top three reasons that managers cite for splitting their stock Baker and Gallagher (1980), empirical evidence regarding this hypothesis is somewhat mixed. Both Lamoureux and Poon (1987) and Mukherji et al. (1997) find that the proportion of institutional ownership remains unchanged following a stock split.

In a fourth hypothesis, Baker and Gallagher (1980) argue that by decreasing the price per share , stock splits may bring the stock price into a more desirable trading range for the stock that is based on the minimum ticket size that is allowed. Copeland (1979) finds a widening of the bid-ask spread as percent of price following stock splits. Similar results regarding the bid ask spread in the post-split period are also reported by Conroy et al. (1999) and Schultz (2000).

2.2 Stock Splits and the Signaling Hypothesis

The signaling theory by Brennan and Copeland (1988), assumes that managers have private information about the future prospects of their own firm. If a firm with good prospects splits, then its percentage effective spread will increase temporarily. Eventually the market will come to perceive the same good information that managers knew causing the firm price to rise and the percentage effective spread to return and even out. If a firm with average or bad prospects splits its stocks, then the percent effective spread will increase permanently. This cost differential allows good firms to signal by splitting and prevents average or bad firms from mimicking.

So the question broadly is: If a company announced a stock split, will this new information cause positive abnormal returns on the splitting firms' stock? According to Eugene and Daves (2004), Firstly on average the price of a company's stock rises shortly after it announces a stock split or dividend. However the price increases are more the result of the fact that investors take stock

splits as a signal of higher future earnings and dividends than a desire for stock splits per se, because only companies whose management thinks things look good tend to split their stocks. Since stock split announcement is taken as a signal that earnings and cash dividends are likely to rise, the price increases associated with stock splits is the result of signals of favorable prospects for earnings and dividends. Secondly, if a company announces a stock split or a stock dividend, its price will tend to rise however if during the next few months it does not announce an increase in earnings and dividends, the stock price will drop back to the earlier level.

From these findings by Eugene and Daves (2004), stock splits are just additional pieces of paper from a purely economic standpoint, however they provide management with a relatively low cost way of signaling that firm prospects looks good. Further, since large publicly owned stocks sell at prices in their hundreds, all in all it is probably makes more sense to employ stock splits when firm's prospects are favorable, especially if the price of its stock has gone beyond the normal trading size.

Stock splits also have signaling value because they have costly consequences, including execution costs, higher listing fees, and greater trading costs associated with price drops (Brennan and Copeland 1988). Therefore, only firms with positive private information can afford to signal through a stock split. Firms can also split their stock to attract market attention (Grinblatt et al, 1984) and Brennan and Hughes (1991). Only firms that believe to be undervalued or expect to perform well have the incentive to attract attention and cause a revaluation of their fundamentals.

Both these information-based theories have received supportive evidence in the U.S. for example, Lakonishok and Lev (1987) find that, compared to their peers, splitting firms have

strong pre-split earnings performance that is not reversed after the split. In addition, McNichols and Dravid (1990) report that unanticipated earnings per share (EPS) increase after the split; split factors are positively related to favorable post-split earnings surprises; and announcement excess returns increase with the split factor.

Rodney and Bartley (2007) notes that the alternative to the behavioral long run anomaly explanation for post announcement price drift is that market frictions impair the speed with which new information is incorporated into the securities post announcement prices. There are abnormal returns for the period that begins immediately after the split date as opposed to the announcement date. This strongly suggests that there is no long term post split anomaly on a value weighted basis. Moreover, even on an equal weighted basis, the results were significantly weakened in that the abnormal returns are zero for a longer period. One year post split returns , while positive zero generally are not statistically different from zero, one can infer that abnormal returns are confined to the period between the announcement and ex-date.

The signaling theory predicts that splitting firms should receive positive abnormal returns on announcement. An empirical challenge for signaling is that there is no evidence that split firms actually experience a temporary increase in percent effective spread as compared to non-split firms. The signaling hypothesis may be a more plausible reason for the splits with a small split factor. Fairly priced or underpriced firms will be motivated to take action to reveal information about their true value.

2.3 Stock Splits and the Trading Range Hypothesis

The trading range theory of Copeland (1979), suggest that a split lowers the price, which makes trading more affordable especially by avoiding old lot trading costs. Eventually this leads to an increase in the base of traders in the firm. In turn, this eventually increases the volume of trade.

which eventually lowers the percent effective spread. The empirical evidence finds that split firms experience an increase in the base of trades and an increase in volume. Survey of corporate managers by Baker and Gallagher (1980) and Baker and Powell (1993) reveal that the two most important reasons given by managers for undertaking a stock split are to bring stock prices into a better trading range and improve its liquidity. An empirical challenge for the trading range is that there is evidence that split firms experience a lower percent effective spread. In other words there is no evidence that splitting firms receive a net benefit from splitting stocks.

Conventionally, the trading range hypothesis suggests that adjusting the price back to its "optimal trading range" can induce a positive revaluation effect. There is nevertheless a wide spread belief in financial circles that an optimal price range exists for stocks. Optimal means that if the price is within range, the firms' value will be maximized. The main argument behind this hypothesis is that small investors have a preference for low-price stocks in order to trade in round lots and, thus, minimize their trading costs.

Baker and Powell (1993) argue that the managerial view of enhanced liquidity is this increase in diversity and number of shareholders. Lamourex and Poon (1987) find an increase in the number of shareholders after stock splits, and their evidence is therefore consistence with the managerial motivations for splitting stocks to price ratios that fit a better trading rage.

In contrast, large investors prefer high-price stocks since the trading cost per dollar falls as the price moves higher, thus, leaving the optimal trading range effect open to empirical validation. In relation to the same hypothesis, firms may use a split to achieve an optimal balance of investor's clienteles resulting in a better valuation of their stock. Several studies; Lakonishok and Lev (1987), Ikenberry et al, (1996) and Rozeff (1998) find that the stock prices increase

faster for firms that later split their stock than their matches and the price gap disappears after the split (Lakonishok and Lev, 1987). Conroy et al. (1990), McNichols and Dravid (1990), and Rozeff (1998) find that split factors are positively related to pre-split prices or price deviation from normal levels. A change in the motivations for trading after the split manifests itself as a change in the trading activity of the stock. Desai et al. (1997) provides evidence consistent with this hypothesis and find a significant increase in the number of trades and a significant decrease in the average turnover per trade (trading volume per trade, normalized by outstanding shares) after the split.

An alternative explanation for stock splits is that firms may prefer their shares traded within a particular price range (Copeland, 1979). Management might have this preference because when stock prices are too high, many small uninformed investors cannot afford to trade in round lots, thereby affecting the liquidity and price of the stock. Splitting shares would improve price by enlarging clientele and hence reducing the trading cost of the stock. Moreover management may prefer to bring more small investors-investors who tend not to exercise too much control-into the firm to create more controllable ownership mix (Powell and Baker, 1993).

According to this hypothesis investors discount illiquid securities heavily compared to liquid ones. This implies that an investor will have a high rate of return for illiquid securities. Stock splits have costs, which if increased will affect the liquidity and price. An empirical challenge for the trading range is that there is no evidence of the splitting firms receives a net benefit from doing so. The hypothesis is not likely to be a plausible explanation for splits with a small split factor because small split factor would not effectively reduce that share enough to a certain range (Aminhud and Mendelson, 1986).

Debate still continues on which of the two theories (Signaling theory and Trading range hypothesis) better explains the corporate action of stock splits. Puspitasari and Hendi (2002) explored stocks splits data at JSX covering the period of 1999 -2001 and their study showed evidence that signaling theory is more suitable in explaining stock split decision. This is because the non-perceived component of information is more prevalent. They also find that the split factor is not significantly correlated with the first three years of profit after the firms decide to split the stocks, implying that stock split is only significantly related to the short term returns and less significantly related with the long run returns consistent with the signaling theory.

2.4 Stock Splits and Efficient Market Hypothesis.

The Efficient Market hypothesis (EMH) states that security must fully reflect all available information. This theory has been subjected to much research and analysis, and has been a major source of disagreement between practitioners and academics. Copeland (1988), Fischer and Jordan (2002), Lofthouse (2001). Prior to 1950s it was believed that traditional investment analysis could be used to outperform the stock market. In 1950s, studies emerged (Kendal 1953) that changes in security prices followed a random pattern. This generated theorizing and research that led to the efficient market notion (Lofthouse, 2001)

At the random reception of information the percentage price changes should be random. Since new is by definition unpredictable and, thus resulting price changes must be unpredictable and random. As a result, prices fully reflect all known information and even uninformed investors buying a diversified portfolio at the tableau of prices given by the market will obtain a rate of return as generous as that achieved by experts. This happens if the market is efficient. If the market is inefficient, there maybe patterns to share prices. The prices could be a series of price increases followed by price decreases (Lofthouse, 2001).

An interesting paradox in the market efficiency debate is that a market is efficient if some people (known as noise traders) believe that it is not efficient and trade on something other than new information. Moreover, the market return must be sufficiently high to allow informed traders to recover their costs of collecting information or none would be collected (Lofthouse, 2001). This study is designed to ascertain whether stock splits significantly drive stock price at the NSE.

The advocates of behavioral finance attributes the abnormal returns after stock split as purely based on ability of the market to digest the corporate news and factor the value of the information in the stock prices. Goyenko et al, (2006) observes that in perfect capital markets, stocks splits would neither create nor destroy value. But in real world stock splits have an impact on value and therefore firms do split their stocks which they would not make an effort to do if it was completely irrelevant.

Fama (1998) noted that market efficiency survives the challenge from the literature on long-term return anomalies. Consistent with the market efficiency hypothesis that the anomalies are chance results, apparent overreaction to information is about as common as under reaction and post-event continuation of pre-event abnormal returns is about as frequent as post-event reversal. Most important, consistent with the market efficiency prediction that apparent anomalies can be due to methodology, most long-term return anomalies tend to disappear with reasonable changes in technique.

Fama (1998) provides a vigorous defense of market efficiency and a critique of Long-term return anomalies that purport to challenge the efficiency paradigm. One of Fama's arguments is that the reported anomalies are not sufficient to refute the efficient markets paradigm, because they have

not been tested out of sample. Fama observes, "Some anomalies do not stand up to out-of-sample replication."

Seemingly in response to Fama's critique, two papers emerged independently and almost simultaneously, Ikenberry and Ramnath (2002) and Byun and Rozeff (2003). Ikenberry and Ramnath (2002) re-examine the stock-split anomaly over a long sample period, 1927–1997. They report significantly positive abnormal returns after stock splits throughout the sample period and generalize their findings by abstracting "these results are consistent with the notion of market under reaction to the information in corporate news events." Their results provide support for the behavioral theories of Daniel, et al (1998) and Barberis et al, (1998).

Commenting on Ikenberry and Ramnath (2002), Titman (2002) concurs that the study seems to "provide strong support for the overconfidence or under reaction hypothesis. Given the consistency of this evidence [their results] should probably tilt our beliefs toward some sort of overconfidence explanation" (p.g 530). Nevertheless, Titman concedes puzzlement over what prevents people from trading on knowledge of the anomaly and making it disappear over time, and calls for further research on the matter. Using almost the same sample period (1927–1996), Byun and Rozeff (2003) also study long-run performance after stock splits. They confirm the findings of Ikenberry, et al (1996) and Desai and Jain (1997) in that they report long-run positive performance after two-for-one splits from 1975 to 1990.

Sharpe et al. (2008) indicates that for each stock split the stocks abnormal return was determined by relating monthly returns on the stock to the corresponding returns in the stock markets. They argued that expected positive returns developments (such as unexpected large increase in earnings) caused abnormal increases in the stock prices of these firms after which the firms decided to split their stocks. The announcement of stock splits appears to have triggered a boost

in the firms stock; it had abnormal increase of about 3% in the period from two days before to two days after the announcement.

The behavior of post split prices indicates that over the following year investors continued to receive significantly positive abnormal returns amounting to 8 % and that thereafter no notable abnormal returns occurred. Apparently the prices of firms whose stock split did rise but they did not rise to an equilibrium level on that announcement date. Such an under action of the announcement of a stock split can be interpreted as evidence of market inefficiency, however other studies using different stocks and time periods, have found slightly negative abnormal returns after the stock split.

Stock splits are associated with increased transactional costs (Sharpe et al, 2008). After stock splits, trading volumes rise less than proportionately as both commission costs and bid ask spreads expressed as a percentage value increased hardly -reactions that are favorable to stockholders. For example after a 2 to 1 stock split there will be twice as many shares outstanding , so as it is reasonable to expect the daily number of shares that are traded to double. It is also reasonable to expect daily number of shares that are traded to double. It is also reasonable to expect the commission for buying 200 shares after the split to be the same as the commission for buying 100 shares before the split. Instead it was found that after the split the number of shares traded daily was less than twice as large as commission per share traded were proportionally larger.

2.5 Forms of Market Efficiency

Fama (1970) distinguished between three forms of marker efficiency, the weak form, semi strong form and the strong form efficiency. His distinction was based on the amount of information impounded in stock prices. In the weak form efficiency, security prices reflect all past prices

(historical information). This implies that in the weak form efficiency, it is impossible to make abnormal profits by using pas prices to make sell and buy decisions.

In the semi strong efficient markets, all publicly available information is reflected in the security prices. Therefore efforts by fundamental analysts and investors to acquire and analyze public information will not yield consistently superior returns. The strong form efficiency suggests that all public and private information is factored into security prices. The implication is that no trader will make abnormal profits by using his information except by chance. Sharpe (2001). However studies in 1970s onwards suggest that the market is less than perfectly efficient. Fama (1990) reviewed the literature again in three categories. He replaced weak form with tests for return predictability, the semi-strong from with event studies and strong form with tests of private information. Return predictability had the greatest impact. This resulted in huge literature on time varying returns (Kingori, 1995) and cross sectional returns.

These studies appear to show that the market is much less efficient than the academics previously thought. Most researchers show that capital markets are efficient in the weak and semi strong forms but not in the strong form. Usually capital market efficiency has been tested in large and sophisticated capital markets of developed countries (Copeland, 1988) and so one must be careful to limit any conclusions to the appropriate arena from which they are drawn.

However, any refuting evidence against EMH is labeled as an anomaly and is encompassed in rather ad hoc modifications to the old theory (Lofthouse, 2001). It is hoped that the anomalies may eventually be shown to be mistaken or that a new theory will emerge. These ad hoc modifications seem, inevitable in the case of EMH because all tests are joint tests Lofthouse (2001), Sharpe (2001) and Copeland (1998). They test an asset pricing theory at the same time as

the efficient market hypothesis. Since asset-pricing theories like CAPM are used to measure normal returns, any anomalies may be either due to EMH or the asset pricing theory used (Dimson and Mussavian, 1998).

2.6 Stock Split Life Cycle and Its Effects on Stock Prices

Stock split driven abnormal returns for the period that begins immediately after the split date as opposed to the announcement date. Rodney and Bartley (2007). This strongly suggests that there is no long term post split anomaly on a value weighted basis. Moreover, even on an equal weighted basis, the results by Rodney and Bartley (2007) were significantly weakened in that the abnormal returns are zero for a longer period. One year post split returns , while positive zero generally are not statistically different from zero, one can infer that abnormal returns are confined to the period between the announcement and ex-date.

Stock splits have shown a typical lifecycle according to Ikenberry (1996), each stage predicting unique drivers for returns. First is the Pre announcement stage where stocks usually enter this stage quietly and without fanfare after a long period of healthy growth. However some cases the emergency into the pre – announcement stage is occurs quickly, as unexpected windfall causes a rapid increase in the stock price. This stage of stock split is often associated with significant appreciation in share price. The key of profit from this stage is being able to determine which stocks are the most likely to split and when (Inkenberry, 1996)

Secondly is the announcement stage which is causes an upbeat atmosphere of a stock split often pulls in a large number of new buyers. This influx of traders and investors can lift the stock price higher, giving exceptional gains for those positioned in the stock prior to the stock split announcement. For those who are not in stock before the split announcement, this stage usually offers low risk setups for timing short term trading entries. On the announcement date, the firm

will announce a record date and payment date for the split. Several weeks elapse between the announcement date and the payment date (Inkenberry, 1996)

Thirdly is a dormancy stage when there is generally a return to normal price behavior in the week following a split announcement at the initial interest subsides. The shorter the time between the announcement and the split date, the less subdued this stage will be. For many stocks, period between announcement and actual split is less than 90 days, in which case this stage is not a dormancy stage but a pre-split run which is a more powerful phase of the cycle. Over the pre-split run, investors dramatically bid up for the pre split shares (Inkenberry, 1996)

And then the split stage which is the day of the stock split provides more investor awareness of the already well publicized stock split. Many investors who watched the stock rise at the announcement and again during the pre split run will now buy shares at a lower split prices. The buyers can push prices even higher. By convention, the ex date is the trading day the follows the payment date. On the ex date and thereafter, trading commences in the split shares (Inkenberry, 1996).

Lastly the post split stage is the period after the last buyers are in, investor excitement for the stock can begin to fade. Prices will often retreat for a while as shares are sold to lock in profits. This stage of a stock split can deliver excellent shorting prospects. While some stock splits will pull back and consolidate for a while, strong performers often dip, quickly rebound and then continue to fly higher (Inkenberry, 1996).

The positive stock price reaction on the announcement day follows a significant positive price run-up in the month preceding the stock split decision. This price run-up is followed by a persistent upward price drift that Ikenberry, et al (1996) attribute to investor under reaction at the

announcement time. There is also evidence of significant positive abnormal price reaction around the ex-day. The significant reaction on the ex-day is puzzling because capital market efficiency rules out further revaluation around the ex-day gives the high certainty about the execution of the stock split. Lamoureux and Poon (1987) attribute the positive market reaction to price pressure induced by an expansion of the investor clientele of the splitting stocks which generates additional positive revaluation around the ex-day while Money and Mullein (1992) observe that the ex-day positive price reaction is due to a temporary order imbalance caused by a surge of buy orders as new investors are attracted to the splitting stock. Significant positive returns around the announcement and ex-day have been also reported from markets outside the U.S.A including Canadian Stocks (Kryzanowski and Hao1991), Biger and Page (1992) for stock splits on the Johannesburg Stock Exchange, Wu and Chan (1997) for Hong Kong stocks, and Niini (2000) for Finnish stocks

2.7 Conclusions from Literature Review

The long-run performance of equities after stock split announcement is the subject of a vigorous academic debate between the behavioral finance and the efficient markets schools of thought. From the above literature it is now well accepted that stock splits signal favorable news about the fundamental value of a corporation, but if markets are semi-strongly efficient, the present value of such news should be fully priced during the narrow event window around the announcement date. An observed under reaction to such a simple corporate event, which leaves the corporation materially unchanged, calls into question the market's ability to quickly digest other more complex or ambiguous information.

Lama (1998) noted that market efficiency survives the challenge from the literature on long-term return anomalies. Consistent with the market efficiency hypothesis that the anomalies are chance

results, apparent overreaction to information is about as common as under reaction and post-event continuation of pre-event abnormal returns is about as frequent as post-event reversal. Lama (1998) therefore leaves the abnormal returns debate wide open for further study.

Whilst all the theories explicitly reveal that stock splits lead to share price volatility, there are different views on the stage when abnormal returns or price drifts set in after stock split announcement. Moreover, evidence on information content of stock splits for firms listed in emerging markets is broadly lacking. In this sense, there is a need to test these hypotheses on a different set of data and in markets where stock splits are recent actions (like the NSE). By investigating the stock split price behavior at the NSE, this study will consider more recent stock split events for the period between 2004 and2 2008 hence contribute in addressing this knowledge gap.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction

This chapter sets out the various steps that were taken in executing the study thereby satisfying the study objectives. The chapter consists of an outlay of research design, population of the study, data sampling, data collection and data analysis.

3.2 Research Design

An event study of a descriptive nature was used which is an empirical study that examined the behavior of firms' stock prices around corporate events (Kothari and Warner, 2004). An event study design was preferred because the study utilized quantitative data to describe events and finds out 'what is' (Glass and Hopkins, 1984) as opposed to inferential statistics that determines 'cause effect'. The study engaged the use of secondary data from the NSE. The methodology was based on the assumption that capital markets are sufficiently efficient to evaluate the impact of new information arising from simultaneous events and factors that occur alongside stock splits.

3.3 Population

The target population of the study constituted 10 equity listed companies that have announced stock splits at the NSE between the period 2004 to 2008 (See Appendix. 2). Since the population size was less than thirty (N<30), a census was done where all the 10 companies was considered for the study.

3.4 Data collection

This study relied on secondary data collected from the NSE. The 90 days (before and after announcement of stock split) daily stock prices, daily market returns and stock split announcement dates for the individual sampled firms were collected in soft copy from the NSE.

The data was captured as follows:

Table 3.1 ..... *>10th*

Date	BARCLAYS			EABL			KCB		
	Price	NSE 20 index	Any cash Dividends	Price	NSE 20 index	Any cash Dividends	Price	NSE 20 index	Any cash Dividends
Day 90 (Before announcement)									
Day 89 (Before announcement)									
Day 88 (Before announcement)									
Day 1(Before announcement)									
Split Announcement Date									
Day 1 (After announcement)									
Day 2 (After announcement)									
Day3 (After announcement)									
Day 90(After Announcement)									

Daily share prices for each stock and cash dividends were recorded against NSE 20 daily share index. Since stock split announcement dates differed per company, data for the 10 companies was collected and tabulated separately.

3.5 Data Analysis

The st a study was a descriptive event study. Abnormal returns of stocks were generated from the event of interest Which was the stock split announcement date? These abnormal returns were estimated by the difference between the realized return observed from the market and the benchmark return (I eemakdej, 1998). The benchmark return was recorded as the return of the stock if there was no event Since this return is unobserved, It was estimated from the asset price model (I eemakdej, 1998). The analysis therefore used the traditional market model to estimate the abnormal returns. The market model for the firm was estimated as shown in (1) benchmark model

$$Ri,t = \alpha i + \beta i Rm,t + \varepsilon i,t \quad \text{.....(1)}$$

Where:-

Ri,t is the realised return for firm i, computed as (2) below.

Rm,t is the corresponding return on the NSI market index at day t.

βi is the systematic risk of the stock.

The realised Return (Ri,t) was computed as follows -

Ri,t = (P2 - P1) /P1 ..... (2)

Where:

P2 is closing price of day t

P1 is the opening price of day t

After estimating the parameters of the market model through regression analysis, the abnormal return for each day and for each firm (ARi,t) were estimated as the residual εi,t as outlined by the traditional event study methodology (Leemakdej, 1998)

ARi,t = (Ri,t- αi- βiRm,t) .....(3)

The announcement date was denoted as T_1 and the 90th day after announcement denoted as T_2 while the 90th day before the announcement date denoted as T_0 The cumulative abnormal returns (CARs) were computed for the window between T_1 and T_2 by summing the daily abnormal returns.

$$CAR = \sum_{t=T_1}^{T_2} AR_t \quad \text{..... (4)}$$

This was repeated for the period before the announcement event for the window T_0 and T_1, to get cumulative abnormal returns value before stock split announcement.

These CARs were then divided by N_1 to get average CARs before the event. Where N_1 is the 90 days average window before announcement date. To get the average CARs after the event, the

CARs observed after the event were divided by N_2 where N_2 is the 90 days window after the announcement date.

Various statistical tests were conducted to gauge:

i. Whether stock announcements cause abnormal returns by testing whether the average cumulative abnormal returns were significantly different from zero.

ii. Whether there is a significant difference between the abnormal returns observed for the two portfolios constructed from the 10 firms. This was to further indicate the market efficiency, whether strong or weak based on the 10 firms.

iii. The strength or weakness of correlation coefficient (r) between the daily estimated abnormal returns for the splitting firms and the daily NSE 20 share index return. This was to ascertain the magnitude and direction of the overall relationship between the two variables.

A T-test statistic (5% significance level) was undertaken to determine whether there is a significant difference between the average abnormal returns for all stocks, before and after stock split announcement.

A F-test statistic (5% significance level) was also undertaken to determine whether in general, there was a significant discrepancy in average abnormal returns between the two portfolios constructed from the 10 firms by way of comparing the significance in the variations of the two portfolios.

Correlation coefficient tests were carried out on changes in daily abnormal returns and NSE 20 index for the firms under scope. This was to determine whether in overall changes in abnormal returns had any significant association with daily NSE 20 share index return.

Since the study assumed that capital markets are sufficiently efficient.to evaluate the impact of new information arising from simultaneous events and factors that occur alongside stock splits (see Research Design), the existence of significant abnormal returns was purely driven by stock splits announcements.

CHAPTER FOUR

4.0 DATA ANALYSIS AND FINDING

4.1 Introduction

This section presents the detailed data analysis that was carried out and includes the findings of the research.

4.2 Test of abnormal returns before and after stock split announcements at the NSE.

A t-test statistic (5% significance level) was undertaken to determine whether there is a significant difference between the average abnormal returns before and after stock split announcement for all the firms. The table below shows the t-test results:

Table 4.1

t Test Paired Two Sample for Means

Average CARs Before and After Split announcement		
Mean	0.154592587	-0.259486007
Variance	0.022463916	0.094566883
Observations	10	10
Pearson Correlation	-0.697252828	
Hypothesized Mean Difference	0	
df	9	
t Stat	3.075237228	
P(T<=t) one-tail	0.006620729	
t Critical one-tail	1.833112923	
P(T<=t) two-tail	0.013241458	
t Critical two-tail	2.262157158	

Significance at 5% level. See detailed analysis in appendix iii

Since t-statistic = 3.075 is greater than t-critical = 2.263 then there is evidence that at 5 % significant level, the average cumulative abnormal returns before stock split announcements are significantly different from the average cumulative abnormal returns after stock split announcement. These findings are similar with the findings when using the P-value; since P-value is 0.006620 and greater than α (the t-test significant level) of 0.005 then consistent

evidence exists. It can thus be stated that the NSE is relatively efficient in terms of information content of stock splits and these results imply that stock split announcements significantly trigger abnormal returns for the splitting firms.

4.3 Trend of abnormal returns

The trend of abnormal returns (AR) was computed for the entire 180 day period, where the first 90 days trend represented the abnormal returns for the period before stock split announcement while the 91 day to 180 day trend represented the abnormal for the period after stock split announcement. Since the announcement date was day 90, the return volatility observed immediately after this date can be attributed to stock split announcements. From the charts below, there is consistent evidence that abnormal returns significantly occur after the announcement date. It can therefore be stated that stock split announcement cause significant abnormal returns at the NSE.

Chart 4.1 Barclays Bank

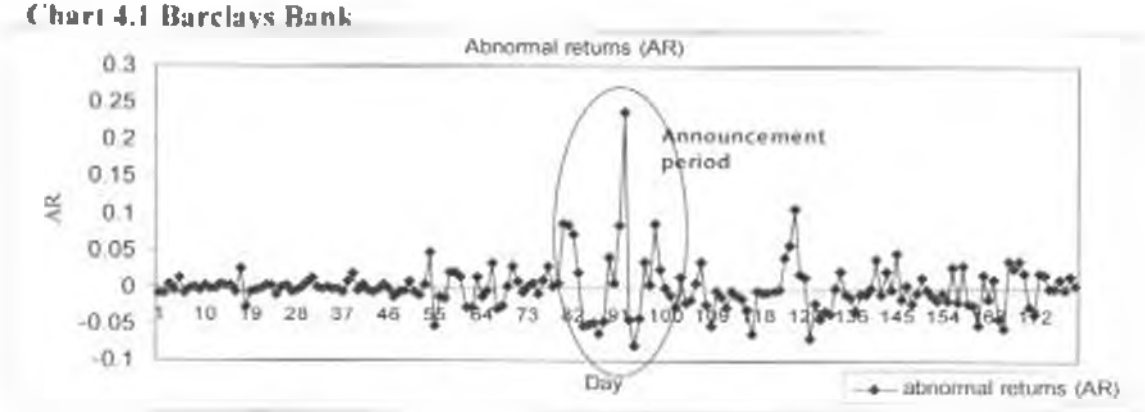


Chart 4.2 East Africa Cables

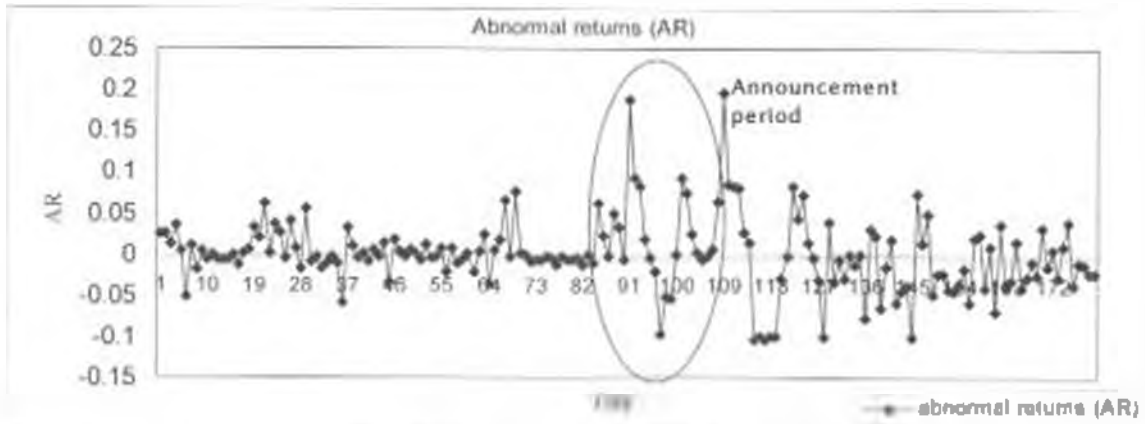


Chart 4.3 Equity Bank

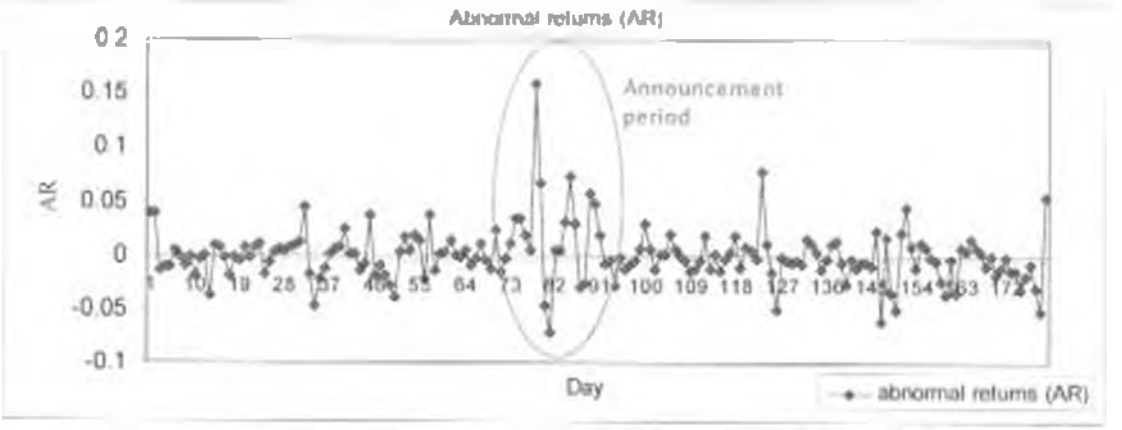


Chart 4.4 NMG

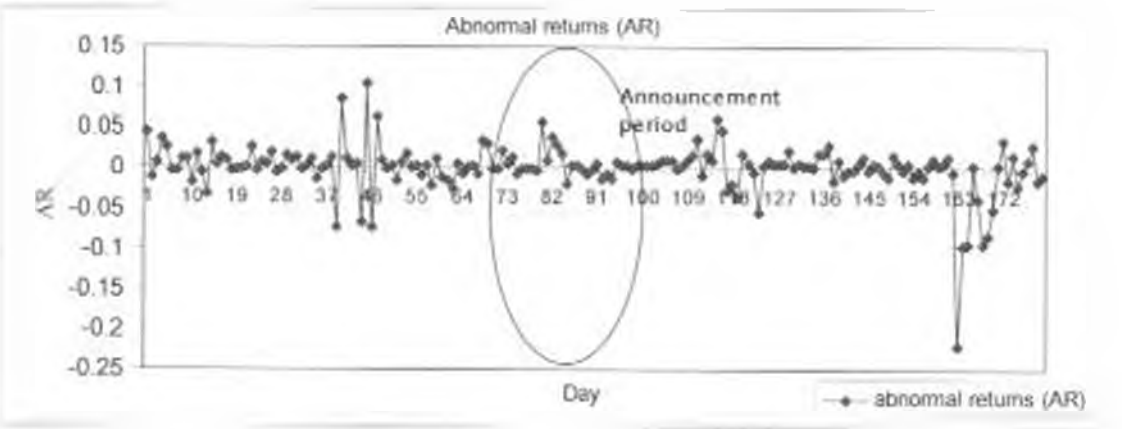


Chart 4.5 KCB

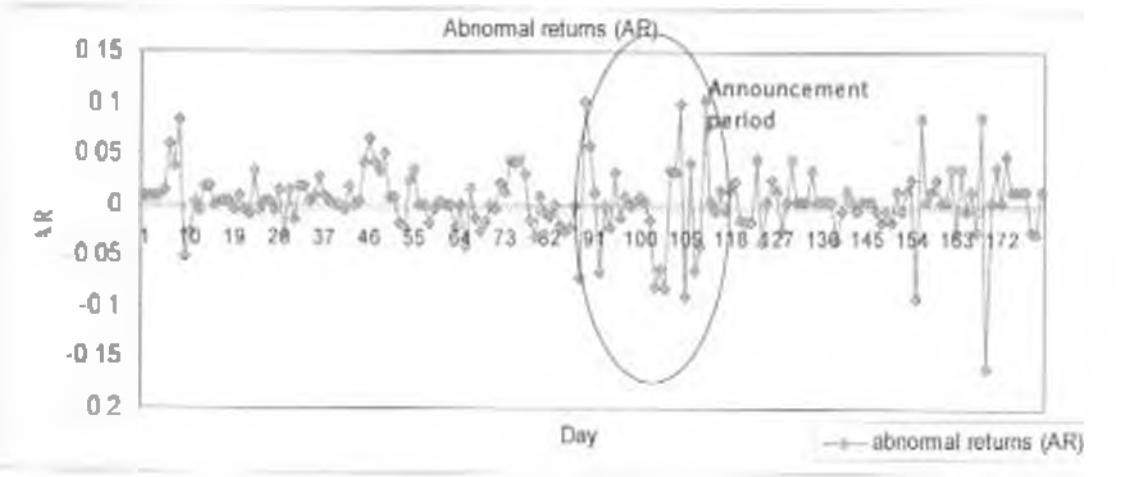


Chart 4.6 CMC Holdings

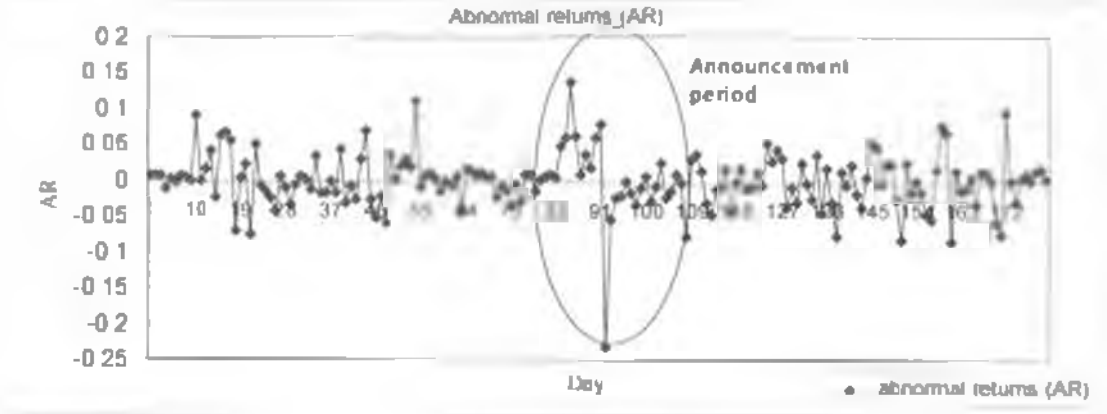


Chart 4.7 ICDC

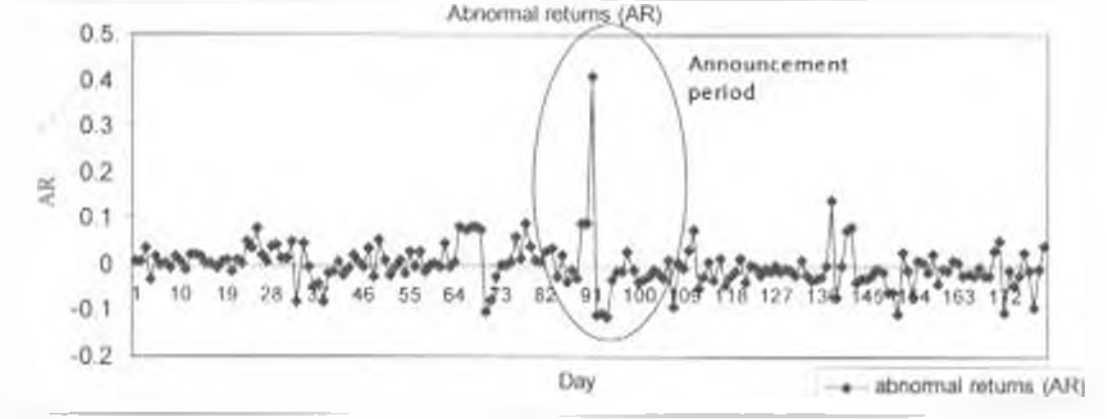


Chart 4.8 EABL

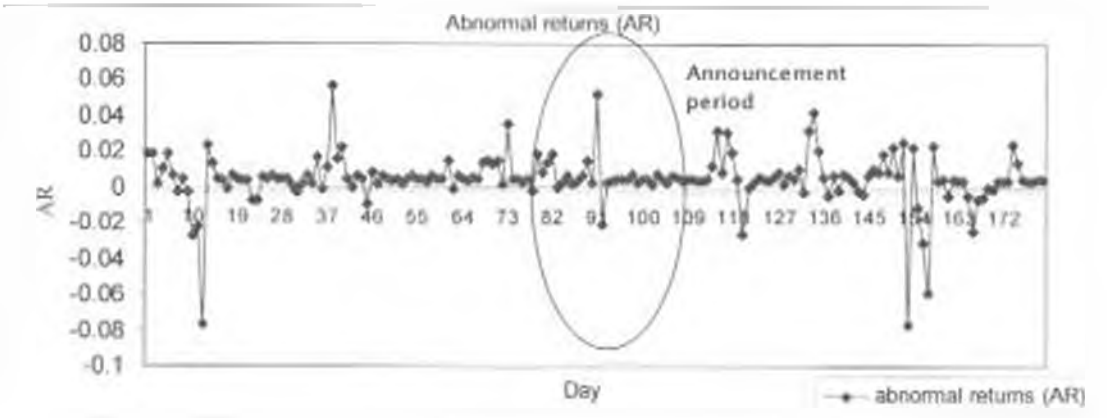


Chart 4.9 Sasini

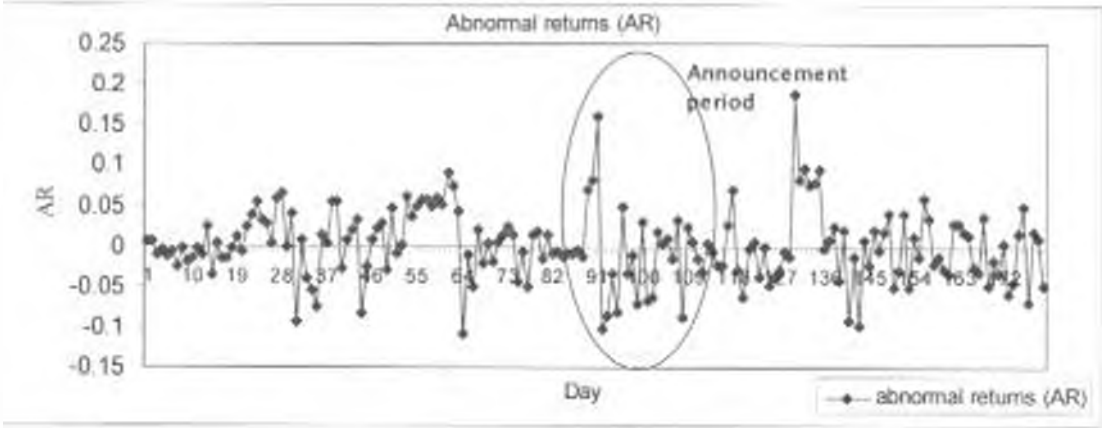
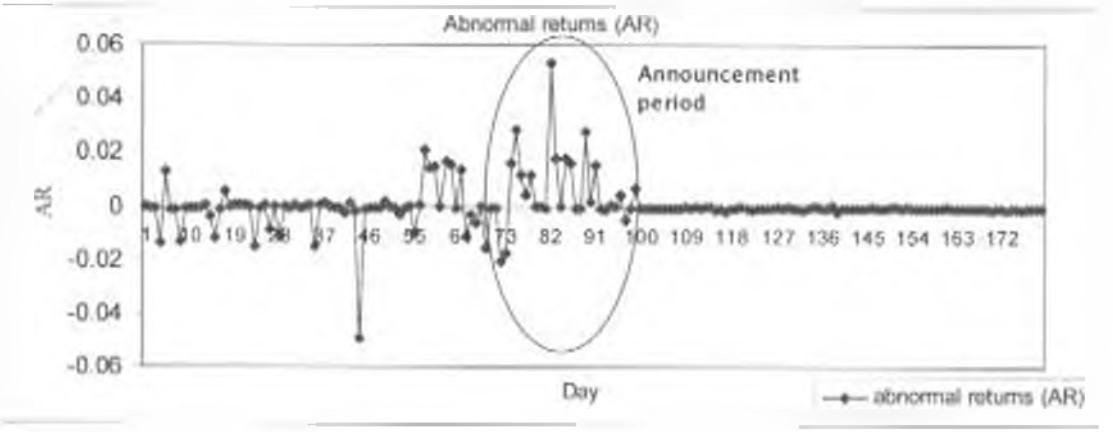


Chart 4.10 Kenol



4.4 Consistence of abnormal returns across all firms

The t-static generally indicates significant abnormal returns for all stocks before and after stock split announcement. In deed the variance between average cumulative abnormal returns of large capitalized stocks and small capitalized stocks could be indicative of some form of market in efficiency occasioned by liquidity constraints and information lags occasioned by stock split announcements.

To test for significant variation of abnormal returns between large capitalization stocks and small capitalization stocks, the 10 companies that announced stock splits were divided into two

portfolios. One portfolio constituted the 5 largest market capitalization stocks and the other was made of the remainder. Portfolio average abnormal returns for before and after stock split announcement where computed.

Subsequently, the F-test statistic was used to test the significance difference between the abnormal returns for two portfolios and for the period before and after stock split announcements. The table below shows the findings:

Table 4.2

	Company	Before Split Announcement	After Split announcement
1	Portfolio Average Abnormal returns - Large Cap	0.132718705	-0.156167251
2	Portfolio Average Abnormal returns - Small Cap	0.176466469	-0.362804763
	F- Statistic*	15.37231929	
	F- Critical	18.51282051	

** Significance at the 5% level-detailed analysis in Appendix v*

In cases where average cumulative abnormal returns is higher for large capitalization stocks, it may be that stock split information was slow in coming into the market hence at the time of announcements the large capitalization prices tended to jerk up or slump to accommodate new information.

However from these findings (since F-statistic < F- critical) there is no significant difference between abnormal returns for large capitalized firms and small capitalized firms. It can therefore be implied that stock split information is equally received across portfolios and there is consistence in digestion of stock split information across all announcing firms at the NSE.

4.5 Market Return and Stock abnormal return Correlation Coefficients (r)

Correlation coefficients were computed for the period before the announcement date and after the announcement date to find out whether there exists any significant relationship between the estimated abnormal returns for the splitting firms and the NSE 20 share index. The findings are tabulated below:

Table 4.4

ANOVA

	df	SS	MS	F	Significance F
Regression	1	7.01486E-06	7.01486E-06	0.000494843	[illegible]
Residual	8	0.113407405	0.014175926		
Total	9	0.11341442			

See Appendix vi and vii for detailed analysis

The significance F statistic is greater than 0.05 significance level. Therefore the correlation patterns indicate that there is no association between changes in daily abnormal returns and the NSE 20 share index, hence these findings appear to back the weak association of abnormal returns to Market return. It can therefore be stated that the occurrence of abnormal returns for the splitting firms is not affected by the market return.

CHAPTER FIVE

5.0 CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

5.1 Introduction

This section sets out the conclusions and limitations based on the findings and recommends areas for further research.

5.2 Conclusions

The objective of this study was to investigate and document the relationship between stock splits announcements and post stock split announcement stock prices for firms at the NSE. The researcher was interested in the existence or absence of abnormal returns as a result of stock split announcement. This objective was achieved by conducting a investigation on all firms that have announced stock splits at the NSE.

Eugene and Daves (2004) conducted an empirical study on stock split post announcement price drifts and found out that if a firm announces a stock split, its stock price tends to rise, while Rodney and Bartley (2007) observe that stock prices do not immediately and fully respond to management's split announcement, but the information seems to be incorporated within the relatively brief period between the announcement and the split date.

The findings in this study show evidence of reaction to stock split announcement at the NSE. Firstly, the returns observed before stock split announcement are significantly different from the returns observed after stock split announcement and it can therefore be concluded that stock split announcement trigger price drifts for the period after the announcement date. Moreover, these price drifts indentified in this study are abnormal and hence it can be also concluded that abnormal returns exist after stock split announcements at the NSE.

Secondly, since abnormal returns for large capitalized firms are not significantly different from abnormal returns for small capitalized firms, it can be concluded that stock split news or information is received and digested by the NSE at the same speed.

5.3 Limitations of the study

This study was limited in respect to:

The inability to separate the effects on stock prices by confounding events that occur alongside stock split announcement. Other corporate events signal the market as they occur, these may include earnings announcement, dividend announcements and bonus issues. However, this study assumed that price drifts during the period of study were only caused by stock split announcements.

The problem of infrequently traded stocks causes an error in measuring abnormal returns when using the traditional event study method that was used in this study Brown and Warner (1985) demonstrated that this problem cannot be solved by adjusting beta as suggested by Scholes and William (1977) and Dimson (1979). Therefore this study could not exploit the error effect arising from infrequently traded stocks.

5.4 Suggestions for further Research

This study serves as a platform for other researchers to carry out related studies in the future. In particular the following two areas would be very useful as research areas if the conclusions and limitations of this study are to be validated and further investigated respectively.

Firstly, the exact stage at which price drifts check in after a stock split announcement is not known It would be useful for future researchers to further investigate the behavior of prices at intervals of pre announcement peiod, announcement date , pre split period, split period and post

plit period. Also, future studies can be carried out to seperate the effect of confounding events that occur alongside stock splits

Secondly, Infrequently traded stocks cause an error problem in estimating abnormal returns when using the traditional event study method that was used by this study . Future studies can be carried out to determine the existence of abnormal returns for infrequently traded stocks by considering alternative methods of measuring abnormal returns .

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APPENDICIES

Appendix i: ***Companies Quoted at the NSE***

Agricultural

1. Uniliver Tea
2. Kakuzi
3. Rea Vipingo
4. Sasini

Commercial and Allied

1. Access Kenya Group
2. Car & General
3. CMC Holdings
4. Hutchings Biemer
5. Kenya Airways Ltd
6. Marshalls
7. Nation Media group
8. Scangroup Ltd
9. TPS Eastern Africa (Serena) Ltd
10. Uchumi supermarkets

Finance & Investment

1. Barclays Bank
2. CFC stanbic Bank
3. Diamond trust
4. Equity bank Ltd
5. Housing Finance
6. ICDC
7. Jubilee Holdings Ltd
8. KCB Bank
9. National Bank
10. National industrial credit
11. Pan African insurance Holding
12. Standard chattered Bank

Industrial and Allied

1. Athi river mining Ltd
2. BOC (K)
3. Bamburi
4. British American tobacco
5. Carbacid
6. Crown Berger
7. E.A Cables
8. E.A. Portland
9. E.A.Breweries
10. Eveready East Africa Ltd
11. Kenol Kobil
12. K.Pow. & L
13. Kengen
14. Mumias
15. Olympia capital Holdings
16. Sameer Africa Ltd
17. Total
18. Unga

ALT INV MARKET SEGMENT (AIMS)

1. A. Baumann
2. City trust
3. Eaagads
4. Express
5. Williamson Tea
6. Kapchorua
7. K. Ochards
8. Limuru Tea
9. Standard Group Ltd.

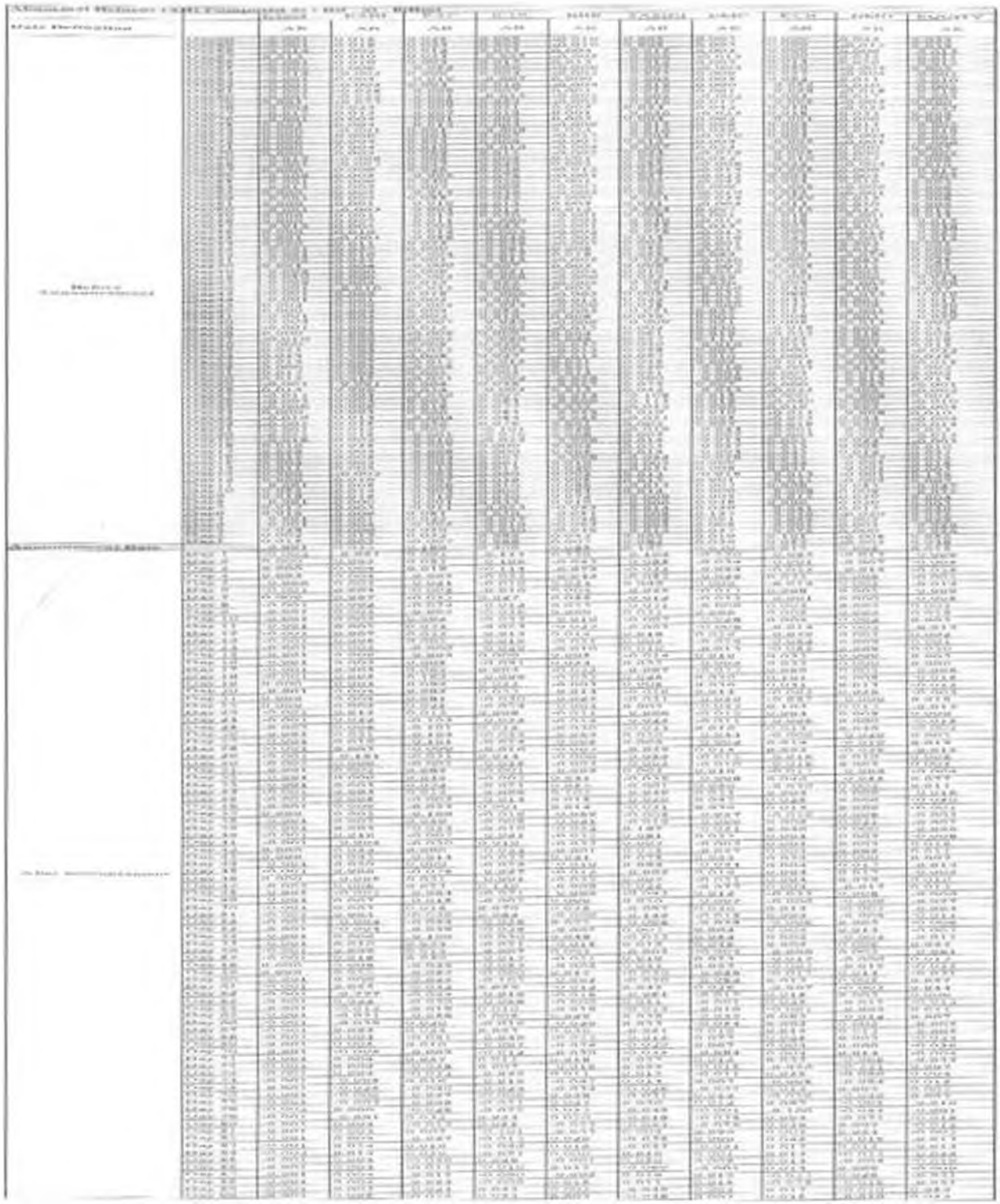
Appendix *ii. Companies that have announced stock splits at the NSE*

Agricultural
1. Sasini
Commercial and Allied
1. CMC Holdings
2. Nation Media group
Industrial and Allied
1. E.A Cables
2. E.A. Breweries
3. Kenol Kobil
Finance & Investment
1. Barclays Bank
2. Equity bank Ltd
3. KCB Bank
4. ICDC

Appendix *iii. CAR's Summary of before and after stock split announcement*

	Average cummulative abnormal Returns (Average CARs)		
	Company	Before Split Announcement	After Split announcement
1	BARCLAYS BANK	0.041702715	0.009189305
2	KCB	0.359813489	-0.590500244
3	FABI	0.169752983	-0.108777889
4	EQUITY BANK	0.007771629	-0.104770744
5	SASINI	0.16960229	-0.442664246
6	CMC HOLDINGS	0.186739924	-0.533893896
7	NMG	0.239525425	0.018739352
8	E A CABLES	0.167958138	0.004023315
9	KENOL KOBIL	0.069878497	0.030200445
10	ICDC	0.356343202	-0.826004581

Appendix *iv.* *Abnormal returns for splitting firms (AR = Rit - αi – βiRmt)*



Appendix v: *Test between large capitalized and small capitalized Firms*

Anova: Single Factor

SUMMARY				
Groups	*Count*	*Sum*	*Average*	*Variance*
Before Split Announcement	2	0.309185174	0.154593	0.000957
After Split announcement	2	-0.518972014	-0.25949	0.02135

ANOVA						
Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F critical*
Between Groups	0.171461	1	0.171461	15.37322	0.059319	18.51282
Within Groups	0.022306	2	0.011153			
Total	0.193768	3				

Appendix vi: *Test of correlation between Daily Abnormal returns and Daily Market Returns*

Correlation (r)	Before Announcement	After Announcement
BARCLAYS BANK	0.151778391	0.001660027
KCB	0.078446045	0.115478649
CAL	0.243027563	[illegible]
EQUITY BANK	0.010801766	0.084871395
NASRS	[illegible]	0.207207851
CMC HOLDINGS	0.019845147	[illegible]
NMG	0.221384721	0.103572109
EA CABLES	[illegible]	[illegible]
KENOL	0.003360540	[illegible]
ICDC	0.017324059	[illegible]

ANOVA

	df	SS	MS	F	Significance F
Regression	1	7.01400E-06	7.01400E-06	[illegible]	[illegible]
Residual	[illegible]	0.113407405	0.014175926		
Total	[illegible]	0.11341442			

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	0.10084141	0.050867449	1.982420178	0.081441048	[illegible]	[illegible]	[illegible]	[illegible]
After Announcement	-0.007943209	0.357078891	-0.022245075	0.982797298	[illegible]	0.815477585	-0.831363689	[illegible]

Appendix *vii: correlation statistics for abnormal returns and Market returns*