

**THE EFFECTIVENESS OF THE NSE 20 SHARE INDEX IN  
REPRESENTING THE OVERALL MARKET PERFORMANCE AT  
NAIROBI SECURITY EXCHANGE**

**BY**

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## **DECLARATION**

I declare that this Research Project is my original work and has not been presented for any academic award in any university.

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

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I dedicate this project to my lovely grandmother Mrs. Virginia Wanjiku Kamau and to my late grandfather Mr. Simon Kamau Mburu for their relentless efforts to seeing me through my education.

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## **LIST OF ABBREVIATIONS**

**AIG:** American International Group

**EMH:** Efficient Market Hypothesis

**ETFs:** Exchange Traded Funds

**GDP:** Gross Domestic Product

**NASI:** Nairobi All Share Index

**NSE:** Nairobi Securities Exchange



## **ABSTRACT**

The stock market movements are constantly monitored and pursued in the global, regional and local context. Particularly the movement and fluctuations of related standard indices which represent a tool to measure market performance and outcomes of the market in terms of growth are closely evaluated. The indices show registered share prices in the market. Again, they are used as comparable performance indices which investors can use to measure the performance of their portfolios compared to that of the whole market. The NSE 20 share index has been a victim of criticism from majority of investors and investment analysts due to its inherent shortcomings that make it a weak performance measurement indicator. As a result, the NSE introduced the NASI in February 2008 as a complimentary index. The study sought to investigate the effectiveness of the NSE 20 share index in representing the overall market performance at the NSE. The study's specific objective is to investigate which of the two indices between the NASI and the NSE share index is a better performance measurement indicator. The sample of the study included all the firms that form the NSE 20 share index and NASI. The index was selected from companies in the NSE from all sectors namely Agricultural, Automobiles and Accessories, Banking, Commercial and Services, Construction and Allied, Energy and Petroleum, Insurance, Investment, Manufacturing and allied and Telecommunication and Technology. This was an empirical study and required secondary data on NASI and NSE 20 share index for the period January 2013 to December 2013 which was obtained from the NSE information centre. Correlation analysis was also carried out to determine if significant correlation exists between the two indices with market performance. From the correlation analysis there is a strong positive correlation of 0.822 between market performance and NASI and a rather stronger positive relationship of 0.861 between market performance and the NSE share index. The findings of the study indicate that there is no significant difference between the two indices also the NSE 20 share index is a better market measurement index compared to the NASI. Generally the NSE is effective as a measure of the market performance although in the future there should be an index to measure each market segment.

# **CHAPTER ONE**

## **INTRODUCTION**

### **1.1 Background to the Study**

Indexes are used across many areas of the economy of the country. They measure the stock market, economic growth, price changes and social measures like journalistic freedom (Amenc and Retkowsky, 2010). There are some indexes which are tracked by specialist in their field while there are some which are like the Consumer price Index, well known to the general public and influence economic policy decision making at higher levels. According to Arnott and Moore (2005), an index is a statistical measure of changes over time in a representative set of data points. An index is commonly described using index numbers.

The fact that a stock's inclusion in an index usually results in a share price increase was observed quite a long time ago. According to strong market hypothesis by Broby (2007), this is an anomaly, as asset prices should already incorporate all public and private information. However, early researches carried out in the US, the UK and other capital markets have found that this effect is statistically significant and exploitation of it results in abnormal profits. In addition, studies have found other effects like increase in trade volume and size after the announcement of a stock's inclusion in an index. Many of the studies (Closkey, 2008, Gigerenzer, 2004) find that a stock's inclusion in an index yields abnormal returns.

Regarding this issue Harris and Kidwel (2008) examine a strategy of buying the newly included stocks the next day following the announcement and selling them at a

higher price afterwards for period covering 1973 - 1983. The authors find that trading volume and trading size increases and a decrease in the quoted bid/ask spread of the newly included stocks is also observable. What is more, the trading volume increases permanently, while the effects on trade size and bid/ask spread are only temporary. In general, the post announcement price increase is about 4.4%, and abnormal profit can be earned using the above mentioned strategy (Kidwel. 2008).

According to Brown and Reilly (2008), African stock exchanges have the potential to help create wealth and the long-term capital needed for development thereby facilitating poverty reduction and the improvement of living standards. It has been stated that the future of Africa's stock markets is the future of the poor in Africa. The jobs, businesses, prosperity and future of the region lie in the stock markets' ability to mobilize capital for economic development and growth. The securities exchanges can be a powerful tool for growing indigenous capital that will attract international capital if they are well designed and set up, properly regulated and supported by appropriate governmental policies (Broby, 2007).

### **1.1.1 Market Index**

Brown and Reilly (2008) posit that a stock index performs several functions in the economy. An index computes the total returns and risk measures for the aggregate market or some component of the market over a specified period. The computed risk and returns are used to give verdict of the performance of individual's portfolios. To judge the performance of professional money managers, the aggregate stock and bond market index can be used as a benchmark. Market technicians use the index to predict future price movements. According to Brown and Reilly (2008) past price movements

can be used to predict the future and hence the past movements in the index can be used to determine what the market would be like in the future. To determine the companies to be included in the index, a random selection or by non-random method technically designed to incorporate the desired population is used.

### **1.1.2 Market Performance**

A firm's financial performance, in the view of the shareholder, is measured by how better off the shareholder is at the end of a period, than he was at the beginning and this can be determined using ratios derived from financial statements; mainly the balance sheet and income statement, or using data on stock market prices (Berger and Patti, 2002). These ratios give an indication of whether the firm is achieving the owners' objectives of making them wealthier, and can be used to compare a firm's ratios with other firms or to find trends of performance over time. Charreaux (1997) in Severin (2002), states that an adequate performance measure ought to give an account of all the consequences of investments, on the wealth of shareholders.

The main objective of shareholders in investing in a business is to increase their wealth. Thus the measurement of performance of the business must give an indication of how wealthier the shareholder, has become as a result of the investment over a specific time. The ratio of profits of the company over shareholder capital employed measures the use of the funds of the owner in producing the overall profit of the firm. It is given as Return on Equity (ROE) =  $\frac{\text{Net Profit after Tax}}{\text{Equity}}$ , where equity is the shareholders' funds at the end of the same period.

It is advisable to take caution in the use of ROE as a measure of performance, as differences in accounting practices may distort results. For instance, when the spending on research and development is treated as an expense in some industries and in others it is capitalized as an asset and expensed over periods longer than one year, the earnings applied will differ. Other measures like the dividend rate which measures the cash return to the shareholder from his investment in the share firm and the market value of the company compared to its book value measuring the change in shareholders' value of investment can be used to measure performance.

### **1.1.3 Relationship between NSE 20 share index and overall market performance.**

Stock market index movement is used to judge the performance of the stock market and an indication of the economic activities in the country. Broby (2007) asserts that when the stock market index moves upwards on a continuous basis the market is referred to as bullish and when the index moves downwards the market is referred to as bearish. According to Berger and Patti (2002), at times the markets move within a very narrow range and it is neither bullish nor bearish. The stock market index reflects the market performance through the direction of share price movement.

Market performance is measured by the stock market index which indicated the direction of share price movement (Hsu, 2006). It measures quickly the overall direction of the market and is considered to be an accurate indicator of changes in the stocks. This implies that a stock market index ought to neither understate nor overstate the market position and should be not only precise, but also exact. The market index entails all listed companies which represent a significant portion of

market capitalization and trade actively. According to Kibuthu (2005), there are three main indices in the Nairobi Security Exchange namely; Nairobi Stock Exchange (NSE) 20 Index, NSE All Share Index (NASI) and the American International Group (AIG) Index.

The average performance of 20 large cap stocks drawn from different industries is measured by the NSE 20 Share index. Experiences however, indicate that most large cap stocks do not record a high performance as compared to low cap stocks. There are times small cap counters record growth averaging at 50% while is unlikely for large cap stocks. From this perspective the 20 share index tend to be biased towards a large cap counters and thus fails to transmit the right signals on the entire market performance. This impact negatively on the total market performance of the NSE traded shares.

#### **1.1.4 Nairobi Security Exchange**

Nairobi Securities Exchange was constituted in 1954 as a voluntary association of stockbrokers registered under the Societies Act. Dealing in shares and stocks started in Kenya in the 1920s. At that time, Kenya was a British colony. Stock broking was conducted solely by Europeans in areas of specialization such as accountants, auctioneers, estate agents and lawyers who met to exchange prices over a cup of coffee. Trading took place on gentleman's agreement in which standard commitments such as making good delivery and settling relevant cost. There was no formal market, rules or regulations to govern stock broking (Munga, 1974).

By 1966, the NSE had begun measuring daily trading activity by computing the NSE Index. The index measured daily average price change in 17 companies that were considered the most active stocks in the market. It was computed as a weighted average of price changes in the selected stocks and 1966 was used as the base year and set at 100 points (NSE, 2011).

Economic growth is promoted through improved efficiency in mobilization of savings as capital is allocated to investments that bring the most value to the economy capital (Kibuthu, 2005). Currently, the NSE has two market indices; the NSE 20 Share Index which is price weighted and an all inclusive NSE All Share Index (NASI) which is market capitalization weighted. Price weighted indices are based on a geometric mean of average prices of the constituent companies which are equally weighted. The market indices are reviewed periodically to ensure that they reflect an accurate picture of market performance.

## **1.2 Research problem**

The stock market movements are constantly monitored and persuaded in the global, regional and local context. Particularly the movement and fluctuations of related standard indices which represent a tool to measure performance and outcomes of the market in term of growth are closely evaluated. The indices show registered share prices in the market. Again, they are used as comparable performance indices which investors can use to measure the performance of their portfolios compared to that of the whole market. Indices have played an important role in performance measurement as well as in investment decision making.

A study by Amenc et al (2006) comparing weighted indices including the fundamental index, equal weighted index, efficient index and minimum volatility index found that all these indices showed on average returns superior to those of cap weighted equity indices. Another study by Rapach(2002)comparing the performance between the cap weighted indices that weight stocks by firm characteristics found that characteristics based portfolios produce positive excess returns over the cap weighted indices. Severin (2002) found that due to heavy weighting of the large capitalization stocks, the S&P 500 index actually consists of 86 effective stocks and Russell 1000 index has 118 effective stocks.

A study by Brown & Reilly (2008) found that S&P 500 index cannot be considered a diversified portfolio because the 10 largest companies in the index account of 25% of the market value and the top 25 companies account for 40%. Hsu (2006) compared the concentration of the top 10 firms and industries in the FTSE 100 Index in 1984 and 2002 and found that there was a dramatic increase in the concentration of the top 10 firm sector holdings. Jones & Turkey (2006) argue that cap weighted indices are in general heavily concentrated in a few large firms. Additionally, since cap weighted indices assign weights to stocks by their market capitalization, which is usually the product of the price of one share if the stock and there total amount of share, if there no new share is offered the weight of any stocks depends on the share price.

Amencet al. (2006), comparing alternative weighted indices including the fundamental index, equal-weighted index, efficient index, and minimum volatility index, find that all these indices show, on average, returns superior to those of cap-weighted equity indices. Platen and Rendek (2010) observe that the equal-weighted



portfolios constructed from country indices in each country had higher Sharpe ratios than the corresponding Cap-weighted indices in all 53 countries tested. A study by Hubbard & Obrien(2009) compared the performance between the cap-weighted indices and indices that weight stocks by firm characteristics and found that the characteristics based portfolios produced positive excess returns over the cap-weighted indices in their data sample of more than 15 years.

Literature shows that cap-weighted indices are in general very concentrated in some large stocks. For instance, Simpson & Evans. (2003) find that due to heavy weighting of the large capitalization stocks, the S&P 500 index actually consists of 86 effective stocks and the Russell 1000 index of 118 effective stocks. According to Bernstein (2003), the S&P 500 index cannot be considered a diversified portfolio because the 10 largest companies in the index account for 25% of the market value, and the top 25 companies account for 40%. Tabner (2007) has compared the concentration of the top 10 firms and industries in the FTSE 100 Index in 1984 and 2005. He finds that there is a dramatic increase in the concentration of the top 10 firm/ sector holdings.

According to Amencet *al.* (2006) there is a new source of risk that should be priced into the assets when the portfolios are highly concentrated in few stocks. They show that even for economies with an ample number of securities, when the companies exhibit a fat tailed distribution of sizes, the total risk of the portfolio does not reduce relative to its market risk. Both of these arguments essentially imply that index performance is often dictated by performance of a few big stocks in the index and do not provide investors with the risk reduction through diversification, as is generally perceived to be the case. Goltz and Sahoo (2010) present simplified examples of the

negative effects of concentration on performance, and how it produces a significant drag in market portfolio returns due to relative underperformance of a single large stock in the index.

The empirical studies suggest that the broad market indices constitute specific choices of risk factors rather than a “neutral” risk exposure. This means that investors who passively hold an index or managers who select a market index as a benchmark can see their risk exposure to styles or sectors being modified through time (Amenc et al. 2006). As a possible consequence their risk exposure may no longer correspond to the initial asset allocation and their initial choice of risks.

The purpose of introducing the NASI was to provide a better performance tool in the stock market as compared to the NSE 20 share. The NSE 20 share index had been a victim of numerous criticisms mainly due to its biased nature as a result of basing the index on only 20 blue chip companies which in most cases do not represent accurately the underlying market position. Wahome (2008) asserts that when such markets indicators such as the volume of shares traded and the value of such shares are on the increase while the index is continuously declining it sends confusing signals to the public and the prospective investors.

To be effective, an index should be accurate. This implies that the index movement must correspond to all underlying price movements at the market. Where there is no correspondence, cause may be as a result of the bias. This therefore misleads the parties who rely on the index for decision making. Unlike the 20 share index, which measures price movement in selected, relatively stable and best performing 20 listed

companies, NASI incorporates all listed companies irrespective of their performance and their time of listing. NASI is calculated based on market capitalization, meaning that it reflects the total value of all listed companies at the NSE.

However, the performance of the NASI has equally been a victim of criticism. Ideally an index should be a sample of the market and not the entire population as it is with the NASI. A small percentage of the population will provide a valid indication of the behavior of the total population if the sample is properly selected. The sample should be representative of the total population otherwise it would be meaningless. A large biased sample is no better than small biased sample (Brown and Reilly, 2008). Some counters are very illiquid with very few shares available for trading in any given day and their inclusion have not made much difference in improving the accuracy of the index.

In the past, complains have risen regarding the computation of the NSE 20 share index. The fact that the index is equally weighed has led to the assumptions that it is not reflecting the market performance. So as to improve the performance of the NSE 20 share index, the NSE reviewed the index and made certain fundamental changes to make it better measure what is going on in the market and the economy. Some of the major changes included, market capitalization a maximum of 50 million and liquidity of the shares became the underlying criteria for the index inclusion. This implied that a listed company would need to be quoted for at least one year and have 20 shares available for trading at the stock market.

In the new changes of the NSE 2011, tradability of the shares was tracked by the turnover, the numbers of traded shares and the number of concluded deals on each counter. Ever since these changes took place there are limited documented studies which have been done regarding the effectiveness of the NSE 20 share index. The researcher thus, felt the need to assess the effectiveness of the NSE 20 share index in representing the overall market performance at the NSE.

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

The objective this study is to investigate which of the two indices between the NASI and the NSE share index is a better performance measurement indicator.

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

This study offers valuable contribution to the theory and practice. First, the study findings will add to the body of knowledge that exist on index and market performance and therefore form the basis of further study by identifying the knowledge gap that will arise from the findings. The study may create a forum for further discussions and debate on effectiveness of market index in the measurement of market performance.

To practice, the findings of this study may benefit the stock market brokers in understanding marketing performance and thus offer effective opinions to investors in the market. The study findings may also benefit investors in understanding the firm's past performance and its future direction with regard to its market performance. The findings may also benefit foreign investors using indices as predictors of market

performance in making major financial decision. Finally, the study gaps which were found in the study may be used as a basis for further researcher by future scholars.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

According to Misati and Nyamongo (2010), the financial sectors of most African countries have been rapidly flourishing especially after the adoption of the financial sector reform policies in the early 1990's. Consequently, the capital markets have grown substantially resulting into an increase in the financial instruments on offer, and these developments have attracted the interest of economic researchers and analysts who aim to investigate the factors that influence the performance of the stock markets indices.

#### **2.2 Theoretical Review**

##### **2.2.1 Price Pressure Theory**

Prut (1986) as cited in Kidwel (2010) argue that once a stock is included in the index, the demand for such a stock increases and hence leading to an increase in both its price and volume traded. They however argue that such an increase on price is temporal as with time investors in search of stocks with superior returns on investment will substitute between shares eventually resulting in the restoration of the equilibrium price. This theory was later criticized by Woodrige and Ghosh (1986) in their liquidity theory. According to the two liquidity of the stock is the ability of the stock to be sold as quickly as possible as at when need arises. They further argue that the inclusion of a stock in an index increases its liquidity. The increase in liquid is as a result of increased demand for the stock. The increased liquidity will eventually lead to a permanent increase in prices.

### **2.2.2 The Imperfect Substitutability Theory**

According to Sheifer (1989) some of the price effects as a result of the inclusion of a stock in the index are permanent. This is because the performance of some stock cannot be substituted with another. This implies that other assets are not perfect substitutes of the share included in the index. This implies that other assets are not perfect substitutes of the share included in the index. This theory is limited since it ignores the fact some investors will diversify risk by investing in stocks of firms in various industries even when such stock are currently doing well. Therefore stocks can be perfectly substituted with each other.

### **2.2.3 The Information Theory**

This theory was advanced by Jain (1988). According to him the decision to include a firm stock in the index conveys very important information to the market regarding the firms' future prospects in Growth. Such inclusion of a firm's stock in the index sends a positive signal to the market that the firm expect a bright future and hence increased demand in future for its stock. However it should be noted that at times the inclusion of a firm stock in the index can send wrong signals to the public. Equally there are several other factors that may eventually affect the future prospects of the firm.

## **2.3 Determinants of Market Performance**

The prices of stocks around the world do not move together in an exact manner. This is because the economic systems in which stock markets are located have dissimilar environments in terms of taxation, industrial growth, political stability and monetary policies among other factors. Stock markets may experience a general increase in price level referred to as a bull market or general decrease in price level referred to as

bear market. Stagnant prices or sudden big price movements downward is referred to as stock market crash (Kidewel, 2008).

Among the main measures of stock market performance include; stock market indexing, market capitalization and stock turnover. Stock market indexing is one of the most widely used measures of stock performance. Investors hold portfolios of many assets but it is cumbersome to follow progress on each security in the portfolio. Thus it is prudent to observe the entire market under the notion that their portfolio moved in the same direction as the aggregate market. The market index such as the NSE index is used to observe total returns for an aggregate market and these computed returns are to judge performance of individual portfolios (Karanja, 2006). The assumption is that randomly selecting a large number of stocks from the total market should enable the investor to generate a rate of return comparable to the market (Kaimba, 2010).

Market capitalization is another measure of stock market performance. This measure is used to measure market movements by measuring the total value of stock in a particular stock market by aggregating the market value of the quoted stocks (Maghyereh, 2002). Changes in market capitalization occur due to fluctuations in share prices or issuance of new share prices or issuance of new shares and bonus issues. This implies that high activity at the stock market may signal more investments in the stock markets. Market turnover indicates inflows and outflows in the stock market and is based on the actively traded shares. A change occurs due to the actively traded shares and to fluctuations in share prices or number of shares traded in a given day (Opati, 2009).



Among the determinants of stock market performance include, performance of the economy, monetary policies, fiscal policies, inflation, availability of substitute investments, change of investor preferences and market sentiments. Activities of government and general performance of the economy influence stock market activity and therefore the performance of stock markets. Monetary and fiscal measures enacted by various agencies of national governments influence the aggregate economies of those countries. The resulting economic conditions influence all industries and companies in an economy positively or negatively which in turn affect the performance of stock markets (Rehman & Saeedulla, 2005).

Fiscal policy incentives such as tax cuts can encourage spending, where as additional taxes on income, petroleum products, cigarettes, and alcoholic beverages discourage spending. Increase or decrease in government spending also influence the general economic activity by triggering multiplier effect (Simpson & Evans, 2003). Monetary policy has implications to the economy. A restrictive monetary policy reduces the supply of funds for working capital and expansion of business. Alternatively a restrictive monetary policy may lead to increased interests rates thus increasing the cost of capital which makes it more expensive for individuals to finance home mortgage and purchase of durable goods (Severin, 2002).

Changes in investor composition also affect stock market performance .As supply and demand for security change overtime, different types of investors are attracted to the market. If the risk preferences of the investors are not as those of current investors the required rate of return tend to shift .Accordingly, price relationship will change quite independently of any modification in earnings expectations. (Saunders and Connet,

2009) Participation by institutional investors at Nairobi Stock Exchange influences pricing and returns generated at the stock market (Maghyereh, 2002).

Market sentiment also referred to as the psychology of market participants affect stock market performance. Market sentiment is often subjective, biased, and obstinate. The uncertain mass reaction of individuals to developments affecting the stock market is one of the factors that handicaps stock market forecasting. A mild stock market flurry caused by a spurt in business activity may generate a wave of buying enthusiasm that raises prices to blossom levels. As an indication to this tendency, from January 1967 through December 1968 the American Stock Exchange index more than doubled in the face of a business activity advance of about ten percent (Hubard & Obrien, 2009).

## **2.4 Review of Empirical Studies**

According to information gathered by Howard and Chan (2002) several studies have reported significant price effects associated with changes in the composition of market indices, particularly the S&P 500. 'Over the period 1976 to 1988 when Standard and Poor's announced and implemented changes in the index sample simultaneously, additions were associated with an average abnormal return of approximately 3% on the first trading day after the change. The majority of studies found that the price changes were sustained over subsequent trading days. Since October 1989 when Standard and Poor's has generally announced index changes a week in advance, the price response is larger. The results of these US studies appear to be robust to variations in the methodology used.' In addition, various researchers have documented abnormal trading activity after the announcement of index changes.

They note that this effect has increased over time which may be related to growth of index funds and activities of risk arbitrageurs.

A study of the NSE by Kaimba (2010) found that the Kenyan market reacts positively to stock splits, as shown by a general rise in volumes of shares traded around the stock split. This is consistent with the signaling hypothesis, which states that managers of companies split their stock to act as a means of passing information to stock holders and potential investors. Another study by Ikenberry, Rankine and Stice (1996), found evidence that the market under-reacts to split announcements and this suggest splits realign prices to a lower trading range. Kidewel (2008) reported results indicating stock prices react positively to stock dividends and stock split announcements.

A study by Rapach (2002) examined whether stock splits convey important information about earnings. The results show that firms split their stocks after a significant increase in earnings therefore leading investors to increase their expectations that the past earnings increases are permanent. The evidence also suggests that the market's reaction to split announcements cannot be attributed to expectations of either future earnings improvement or near term cash dividend increases.

Karanja (2006) did a study on an evaluation of post rights issue Effect on firms' share price and traded volumes. The objective of the research was to evaluate the effects of post rights issue on the firms share price and traded volumes. On the population, Karanja evaluated 9 firms out of the 14 firms that had announced rights issue. He did

an analysis 90 days after the rights issue and noted that most firms that announce rights issue usually experience a decrease in the share price after the issue at least in the very short run. Karanja recommended that firms that announce rights issue must consider information asymmetry as this highly determines the firms share prices after successful rights issue. Karanja (2006) further uses the work of Christie William et al who also examined whether post offer price share performance is related to the decision to issue rights instead of a firm commitment offering if market offering is important factor affecting post issue stock returns.

Christie et al (1993) wanted to find significant difference in stock performance after a firm commitment offering would be consistent with the notion that firm's commitments are timed. They found out that significantly more negative abnormal return during the year following the offer for the firm's commitment than for rights offer firms. They show that differences in these abnormal returns are robust to controlling for the offer size, the firm's leverage, and the market to book ratio and other firm's attributes. Hence the evidence suggests that firms selling shares to current owners via rights offer did not appear to be timing their issue to exploit over-valued equity while firms selling to new owners were. These findings support the notion that the pattern of underperformance is tied to market timing.

Kakiya (2007) conducted a study on the effects of Announcements on stock returns. The researcher computed a 5 day moving average to observe the trend of stock returns following earnings announcement. Daily market adjusted abnormal and cumulative abnormal returns were computed and a further t-test done to determine the effect of earnings announcement on stock returns and results interpreted. The findings from the

study were that trends in stock returns are dependent on event announcement. Traded volumes are not significantly affected by announcement. Earnings announcement had a significant effect on stock returns when CAR was evaluated indicating market inefficiency but AR was not significant for individual companies. From the findings of the study, it was concluded that the Nairobi Stock exchange is not semi-strong form efficient. The researcher analyzed all companies and was testing the efficiency but this research has narrowed down on effect of rights issue on company's share performance and only companies that have done rights and those that form part of the NSE 20 share index formed the target population.

Olesaaya(2010) did a research on the effects of rights issue on stock returns and he investigated companies listed at the NSE. Oleesaya used event study methodology in his study. He used market model which is a statistical model that relates the returns of any given security to the return of the market portfolio to measure and analyze the abnormal returns. In this study, Olesaaya assumed that the abnormal returns reflect the stock market's reaction to the announcement of rights issue. According to Olessaya (2010), there are negative abnormal returns prior to announcement of rights issue, positive abnormal returns during the announcement and negative results thereafter. Munene K. (2006) studied the relationship between profitability and sources of financing of quoted companies at the NSE. The study population of the 48 companies quoted at the NSE between 1999 and 2004 and they concluded that there is a weak positive relationship between capital structure and profitability of firms quoted at the NSE between 1999 and 2004 and therefore other factor contribute to firm capital structure.

While majority of the studies indicated above have given findings on the effects of market performance by the stock return, share price and stock split, there are limited studies on the index representation of the market performance. This study seeks to fill this gap.

## **2.5 Summary of the Literature Review**

Among the main measures of stock market performance include; stock market indexing, market capitalization and stock turnover. Stock market indexing is one of the most widely used measures of stock performance. Investors hold portfolios of many assets but it is cumbersome to follow progress on each security in the portfolio. The Kenyan market reacts positively to stock splits, as shown by a general rise in volumes of shares traded around the stock split. In the stock market negative abnormal returns are experienced prior announcement of rights of issue, positive, abnormal returns during the announcement and negative results. The effectiveness on the index has limited studies. It is therefore important to study how the index represents market performance with a focus on the improved NSE 20 share index.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.0 Introduction**

This chapter presents the research methodology which was used in the study. This entails; the research design, target population, sample design, data collection methods and data analysis.

#### **3.2 Research Design**

The research used descriptive design. The research was on the effectiveness of index in representing marketing performance. The study used secondary data available from January 2013 to Dec 2013. The monthly value of NSE 20 Share Index was collected from NSE. The index was used since it covers the period of study.

#### **3.3 Population**

The population of the study included all the 60 firms listed in the Nairobi Stock Exchange and monthly financial performance of the firms. This population was taken due to the nature of companies listed in the NSE in that they have made their financial information public and represents all sectors of the economy.

#### **3.4 Sample design**

The sample of the study included all the firms that form the NSE 20 share index and NASI. The index was selected from companies in the NSE from all sectors namely Agricultural, Automobiles and Accessories, Banking, Commercial and Services, Construction and Allied, Energy and Petroleum, Insurance, Investment, Manufacturing and allied and Telecommunication and Technology. The monthly NSE

20 share index was analyzed against corresponding NASI in the period of study. The NSE 20 share index is oldest market index in the market hence provided the necessary data for the period of study.

### **3.5 Data collection methods**

The study required data on NASI and NSE 20 share index for the period January 2013 to December 2013. The study relied on secondary data to collect relevant information.

### **3.6 Data analysis**

The study majored on NSE 20 share index and NASI at Nairobi Securities Exchange. The monthly return for each firm was determined by taking the closing price for that month and the opening price for that month. Market index (NSE Index) was obtained. The market performance was the dependent variable and the NSE 20 share index and NASI was independent variable. The monthly return was regressed against market index and the regression model shall be derived.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \mu$$

Where:

Y = Market performance

$\beta_0$  = Intercept

$\beta_1$  = Measures changes in Y with respect to  $X_1$  holding other factors fixed

$X_1$  = NASI

$\beta_2$  = Measures changes in Y with respect to  $X_2$  holding other factors fixed

$X_2$  = NSE 20 share index

$\mu$  = Error term



The regression analysis model also yielded a statistic component referred to as coefficient of determination, the mean for each particular day, the standard deviation, variance and coefficient correlation. The study examined the significance of  $\beta_i$  and the p value of the coefficients. If the p value is less than 0.05, it implies that the coefficients are statistically significant.

## **CHAPTER FOUR**

### **DATA ANALYSIS, PRESENTATION AND INTERPRETATION**

#### **4.1 Introduction**

This chapter is presented in sections according to the study objectives. The data has been presented in tables. The responses were analyzed using descriptive statistics. The regression analysis results of NSE 20 Share Index, NASI (independent Variables) and Representing Market performance (dependent) which helped in answering the research questions. The data was analyzed using vector auto-regressive (VAR) analysis model which was developed by Sims (1980). The model specification had NASI and the NSE 20share indices as variables.

##### **4.1.1 NSE 20 Share Index and NASI**

This index primarily focuses on price changes amongst these 20 companies.

The above companies form the NASI indices in the security exchange in Kenya. NASI factors all the stocks in the NSE while NSE 20 share index only comprises the 20 blue chip stocks (see appendix 1). As a result, NASI reflects the entire changes in stock prices. The Nairobi Securities Exchange Ltd 20 Share Index (^N20I) is a price weight index. The members are selected based on a weighted market performance for a 12 month period as follows: Market Capitalization 40%, Shares Traded 30%, Number of deals 20%, and Turnover 10%. Index is updated end of day only.

## 4.2 Background Information

### 4.2.1 Market Summary

Below is the market Summary

**Table 4.1Market Summary**

Indices	
NSE ALL SHARE INDEX	161.92
NSE 20 SHARE INDEX	5,249.09

(Source: NSE, 2014)

The table above shows the summary of the index. It shows that the NSE 20 share index is larger than the NSE all-share index. This because the NSE 20 share index has only 20 blue chip companies while the other has to encompass the whole lot of the companies in the stock exchange.

## 4.3 Correlation of Study Variable

Correlation tests were carried out on the original data to show the extent or strength and direction of the relationship between variables. It should be noted that correlation does not show causality between independent and dependent variables. It only informs on the magnitude with which a dependent variable changes due to a unit change in the independent variable. From theory, a correlation coefficient which is close to 1 implies a strong positive (for a positive sign) relationship or strong negative relationship (for a negative sign). The signs inform on whether the relationship is positive or negative. Table 4.4 below presents the correlation for the variables under study.

**Table 4.2 Correlation of study variable**

<b>Correlations</b>				
	<b>Market Performance (Constant)</b>	<b>NASI</b>	<b>NSE 20 Share Index</b>	
<b>Market Performance (Constant)</b>	1.000	.822	.861	
<b>NASI</b>	.822	1.000	.836	
<b>NSE 20 Share Index</b>	.861	.836	1.000	
				.

Source: Researcher (2014)

From table 4.2 above, shows there is a very strong positive correlation 0.82 between market performance and NASI and a rather stronger positive relationship 0.861 between market performance and the NSE share index. The 0.836 correlation coefficient indicates that there was a mutually causality relationship between NSE 20 share index and NASI.

#### **4.4 Unit Root Tests**

When using time series data it is often assumed to be non-stationary and therefore there is need to perform a pre-test to ensure there is a stationary-co-integrating relationship among the variables to avoid spurious regression. Therefore it is important to check for unit roots in each series before estimating any equation. This study used the Augmented Dickey Fuller (ADF) test in delivering the unit root test.

Table 4.5 below presents the results for the unit root test at different critical value levels.

**Table 4.3 : Unit root test 1**

<b>Variable</b>	<b>ADF</b>	<b>1% Critical</b>	<b>5% Critical</b>	<b>Comments</b>
	<b>Statistics</b>	<b>Value</b>	<b>Value</b>	
MARKET	-1.091	-3.390	-3.833	Non
Performance				Stationary
NASI	-4.328	-2.793	-5.533	Non
				Stationary
NSE	-2.810	-3.971	-5.477	Non
				Stationary

Source: Researcher (2014)

Given that the ADF statistics for the three variables are greater than the respective t-critical values at 1% and 5% the data was not stationary and the first difference did not make it stationary either. The second difference was carried out for the same variables and its ADF and were found to be stationary; this was because the ADF statistics is smaller than the respective t-critical values.

**Table 4.4: Unit root test 2**

Variable	ADF	1% critical	5% critical	Comments
	Statistics	value	value	
Market	-4.534	-3.691	-1.798	Stationary
Performance				
NASI	-6.439	-4.852	-4.573	Stationary
NSE	-3.546	-3.135	-2.613	Stationary

Source: Researcher (2014)

By establishing the stationality of the variables, regression could be carried out to analyze the relationship and significance of the independent variables in explaining variations in dependent variables.

#### **4.5 Regression of Study Variables**

From the results shown in table 4.7, the model shows a goodness of fit as indicated by the coefficient of determination  $r^2$  with value of 0.7613. This implies that independent variables both NSE 20 share index and NASI explain 76.13% of the variations as a result of the factors affecting the market performance. 23.87% of variations are brought about by factors not captured in the objectives.

**Table 4.5: Regression model summary of the effect of independent variables on the dependent variable**

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.87256 <sup>a</sup>	.7613	.7726	.85616
a. Predictors: (Constant) Market Performance				

Source: Researcher (2014)

The variables explain 76.13% of the variations as a result of the independent variables affecting market performance in Kenya security exchange. This in essence shows that a strong relationship between the variables exists.

**Table 4.6: Regression Coefficient of Determination of the effect of independent variables on the dependent variable**

Coefficients									
Model		Unstandardized Coefficients		Standardized Coefficients		Correlations			
		B	Std. Error	Beta	t	Sig.	Zero-order	Partial	Part
1	Market Performance (Constant)	1.888	1.425		1.325	.192			
	NASI	.568	.182	.430	3.125	.003	.305	.422	.405
	NSE 20 Share Index	.336	.129	.376	2.593	.013	.158	.361	.336

a. Dependent Variable: Market Performance

Source: Researcher (2014)

The study conducted a multiple regression analysis so as to determine the relationship between the factors affecting the strategy implementation.

The regression equation ( $Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \alpha$ ) was:

$$Y = 1.888 + 0.568X_1 + 0.336X_2 + 0$$

Whereby  $Y$  = Market Performance,  $X_1$  = NASI;  $X_2$  = NSE 20 Share Index

According to the regression equation established, taking all factors (NSE 20 share index and NASI) constant at zero, Market Performance in security as a result of these independent factors were 1.888. The data findings analyzed also shows that taking all other independent variables at zero, a unit increase in NASI will lead to a 0.568 increase in effect on market performance. A unit increase in NSE 20 Share Index will lead to a 0.336 increase in effect on market performance.

#### **4.6 Summary and interpretation of findings**

From the findings it was seen there is a very strong positive correlation 0.82 between market performance and NASI and a rather strong positive relationship 0.861 between market performance and the NSE share index. The 0.836 correlation coefficient indicates that there was a mutually causality relationship between NSE 20 share index and NASI. The positive correlation between the variables was predicted and confirms the findings of Cheng et al (2011). Where after comparing the two variables the correlation turned out to be a positive a strong positive correlation. The implication of these results is that, market capitalization and the NASI will more often than not move in the same direction than with the NSE 20 share index.



From the results there is a very strong positive correlation 0.82 between market performance and NASI and a rather strong positive relationship 0.861 between market performance and the NSE share index. The 0.836 correlation coefficient indicates that there was a mutually causality relationship between NSE 20 share index and NASI. Given that the ADF statistics for the three variables are greater than the respective t-critical values at 1% and 5% the data was not stationary and the first difference did not make it stationary either. The second difference was carried out for the same variables and its ADF and was found to be stationary; this was because the ADF statistics is smaller than the respective t-critical values.

The model shows a goodness of fit as indicated by the coefficient of determination  $r^2$  with value of 0.7613. This implies that independent variables both NSE 20 share index and NASI explain 76.13% of the variations as a result of the factors affecting the market performance. 23.87% of variations are brought about by factors not captured in the objectives.

This situation is best explained by the constituent stock counters factored in the construction of the two indices. As earlier mentioned, in the introduction chapter, NASI factors all the stocks in the NSE while NSE 20 share index only comprises the 20 blue chip stocks. As a result, NASI reflects the entire changes in stock prices. It is the respective stock price in any given day and the outstanding ordinary shares that are used to calculate the market capitalization. Therefore, NSE 20 share index maybe more volatile than the market capitalization and the NASI due to these exclusion hence the low strength of the relationship.

According to the regression equation established, taking all factors (NSE 20 share index and NASI) constant at zero, Market Performance in security as a result of these independent factors were 1.888. The data findings analyzed also shows that taking all other independent variables at zero, a unit increase in NASI will lead to a 0.568 increase in effect on market performance. A unit increase in NSE 20 Share Index will lead to a 0.336 increase in effect on market performance.

The NASI has higher correlation with the underlying market capitalization. These can be demonstrated by the higher coefficient of correlation as compared to the NSE 20 share index with a correlation index which is lower. These is mainly attributed to the fact the NASI is a capitalization weighted index as compared to the NSE 20 share index which is an equally weighted index. The researcher therefore concluded that though the NASI had solved the volume bias it had not done much towards solving the share price bias.

The variables after performing the regression explain 76.13% of the variations as a result of the independent variables affecting market performance in Kenya security exchange. This in essence shows that a strong relationship between the variables exists. The findings are supported by Abugri (2008) whose study NASI and NSE indices showed that the variables were explaining 78% after regression. This in essence shows that a strong relationship between the variables exists.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.0 Introduction**

This chapter is a synthesis of the entire study, and contains summary of research findings, exposition of the findings, commensurate with objectives, conclusions and recommendations based thereon.

#### **5.1 Summary**

The study sought to examine the relationship between market performance and stock indices at Nairobi Stock Exchange. Regression analysis was used to establish the nature of relationships of variables under the study. The study was motivated by the need to establish how the two stock indices and NSE relate with market performance, especially after the late introduction of the second index, that is, NASI. These indices are intended to improve efficiency in dissemination of stock market information as well as gauging investors' sentiments at NSE from time to time. Historical data on market performance, NSE 20 Share Index and NASI was obtained from the CMA and NSE annual reports and quarterly statistical bulletins for the period January 2013 – Dec 2013.

Correlation for the three variables shows that there is a very strong positive correlation between market capitalization and NASI of 0.82 (correlation coefficient) and a strong positive relationship between market performance and the NSE 20 share index of 0.861. On the other hand, correlation coefficient between NASI and the NSE 20 share index indicates a very strong positive correlation meaning that they move together in the same direction.

Unit root test for the data revealed presence of unit root at levels by giving ADF statistics for the three variables greater than their respective t critical values at various levels while the second difference established stationary on the data by having their ADF statistics smaller than the respective t critical values. From the regression results both NSE and NASI were found to be significant in explaining market performance. The variables were found to explain 76.13% of the variation in the dependent variable.

## **5.2 Conclusions**

From the results the researcher did not find any significant difference in the daily trend or movement of the both indices. This is because the two indices are drawn from the same population and the 20 large companies that form the NSE 20 share index are also included in the NASI hence leading to the lack of significant difference between the two indices. As a result, NASI reflects the entire changes in stock prices. It is the respective stock price in any given day and the outstanding ordinary shares that are used to calculate the market capitalization.

The study showed that the regression of variables explain 76.13% of the variations of the independent variables affecting market performance in Kenya security exchange. Therefore this shows that the independent variable do heavily influence the market performance. From the research findings, there is a strong positive correlation of 0.822 between market performance and NASI and a rather stronger positive relationship of 0.861 between market performance and the NSE share index. The findings of the study indicate that there is no significant difference between the two

indices also the NSE 20 share index is a better market measurement index compared to the NASI.

### **5.3 Recommendation**

From the analysis made in the study the following recommendation can be made. There is need to educate the user of the security exchange so that users of stock indices understand their computations and constituent counters in any given stock exchange. The NSE 20 share index appears to be more significant in explaining variations in market performance which could be attributed to the fact that the 20 counters that constituent the index account for over 80% of the total turnover at the exchange on any given day.

This has the likelihood to present a strong co-movement between the market performance and the NSE 20 share index as opposed to NASI which involves all the counters including the least traded. Inclusion of the least traded counters in the computation of the index results in smoothening out of the variations or the volatility of the stock market. As a result, NSE needs to address that selection bias and related anomalies in the indices.

There is need to for the indices to provide reliable information. Since both indices draw constituent companies from all the four sectors in both the main investment Market Segment and the Alternative Investment Market Segment. Thus do not provide reliable information to investors interested in a specific sector or market segment sector or segment indices will be helpful to such investors interested in investing in a specific sector.

#### **5.4 Limitations of the study**

The study only concentrated on the relationship between market performance and stock indices at NSE. As such, accuracy and reliability of the historical data used to generate results for the study is only correct as captured in the data sources as any rounding off is known to greatly affect the outcome of the indices. The data used was only for the period January 2013 to Dec 2013. It is possible that data for the three variables for different time periods may give slightly differing results especially where business cycles vary from the one in the period under study.

Allocating the estimation and event windows poses two major challenges to scholars. First, they must identify the correct event date as an 'anchor' for the whole analysis, and second, they need to specify the lengths and positions of the estimation and event windows. Identifying the event date is not always a simple task. In the analysis of M&A transactions, for example, initial rumors about the transaction are typically followed by an official announcement and a closing of the transaction. On each of these events, information is released, posing the question which date represents the correct event date to be analyzed. Scholars investigating this issue found the information content of the first official announcement being highest and therefore representing the correct event date in the context of M&A studies (Dodd, 1980). Similar questions also arise when studying other event types.

Another issue of event study methodology relates to the trading of the analyzed firm's stock and the market chosen as a reference index. Infrequent trading of the firm's stock, or a mismatch of trading days between the stock and the reference market, may lead to problems in deriving the estimation parameters [Math Processing Error] and

[Math Processing Error]. Specifically, mismatches in the time series of returns in the stock and market returns throughout the estimation window may lead to overall shorter estimation periods and potentially biased parameters. Therefore, mismatches within the event window will lead to failure in calculating individual abnormal returns and thus to incomplete cumulative abnormal returns.

If multiple significant events –no matter of which type– affect a single firm's stock in close succession, issues arise from the overlapping of estimation and event windows. Specifically, problems of cross-correlation, implying biased estimators, may arise. This potential problem particularly pertains to small sample studies, where flawed results do not become sufficiently 'corrected' by creating mean values over large numbers of observations (i.e., by calculating [cumulative] average abnormal returns).

### **5.5 Areas of Further Research**

From the findings of the research of the two indices they are not significantly different from each other and their performance also differs in each category rated. While the NSE 20 share index is more reliable than the NASI, the NASI is more accurate and more representative of the underlying market position. However, both indices are equally effective. The main weakness of both indices is their weak correlation with the underlying share price movements.

The findings of this study are only confined to the relationship between market performance and stock market indices. Based on these findings further research can be done to determine that relationship between the variables under different business cycles. This study examined the relationship and the extent of the relationship of the

variables under study for a period of one year only; a further study can be done to determine whether such relationship will hold in longer period. In addition, effects of equity turnover on market performance can also be studied and its impact on the indices established.

There should be further research if in the long run the NSE should consider constructing sector specific or segment of the market. A sector specific or segment index measures the performance of each sector or segment independent of the other sector or segment of the market. Currently, both indices draw constituent companies from all the four sectors in both the main investment Market Segment and the Alternative Investment Market Segment. Thus do not provide reliable information to investors interested in a specific sector or market segment indices will be helpful to such investors interested in investing in a specific sector.

There should also be further research if in the short run the NSE should construct a new price weighted index that compliments the two indices. The new index should be constructed in a such a way that more counter are included. In determining the counters to be included in the new index liquidity of the counters should be considered to avoid the inclusion of illiquid counters that may not have an impact in the movement of the index. This will ensure that the current price bias is eliminated.



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## APPENDIX 1

<b>Companies that form the index</b>
1. Mumias Sugar, Express Kenya,
2. Rea Vipingo
3. Sasini Tea
4. CMC Holdings, Kenya Airways
5. Safaricom,
6. Nation Media Group,
7. Barclays Bank Kenya,
8. Equity Bank,
9. Kenya Commercial Bank,
10. Standard Chartered Bank,
11. Bamburi Cement,
12. British American Tobacco
13. Kengen,
14. Centum Investment Company
15. East African Breweries
16. EA Cables, Kenya Power & Lighting Company Ltd.
17. Athi River Mining
18. NIC Bank Ltd
19. National Bank of Kenya Ltd
20. Total Kenya Ltd

(Source: NSE, 2014)

### Companies Forming NASI Indices

<b>ABBREVIATION</b>	<b>COMPANIES</b>
1. ARM	ARM Cement Ltd
2. BOC	B.O.C Kenya Ltd
3. BAMB	Bamburi Cement Ltd
4. BBK	Barclays Bank Ltd
5. BAT	British American Tobacco Kenya Ltd
6. BRIT	British-American Investments Company Ltd
7. C&G	Car and General (K) Ltd
8. CARB	Carbacid Investments Ltd
9. ICDC	Centum Investment Company Ltd
10. CFC	CFC Stanbic Holdings Ltd
11. CIC	CIC Insurance Group Ltd
12. COOP	Co-operative Bank of Kenya Ltd
13. BERG	Crown Berger Ltd
14. DTK	Diamond Trust Bank Kenya Ltd
15. CABL	E.A.Cables Ltd

16. PORT	E.A.Portland Cement Ltd
17. EGAD	Eaagads Ltd
18. EABL	East African Breweries Ltd
19. EQTY	Equity Bank Ltd
20. EVRD	Eveready East Africa Ltd
21. XPRS	Express Ltd
22. HAFR	Home Afrika Ltd
23. HFCK	Housing Finance Company Ltd
24. I&M	I & M Holdings Limited
25. JUB	Jubilee Holdings Ltd
26. KUKZ	Kakuzi
27. KAPC	Kapchorua Tea Company Ltd
28. KEGN	KenGen Ltd
29. KENO	KenolKobil Ltd
30. KQ	Kenya Airways Ltd
31. KCB	Kenya Commercial Bank Ltd
32. ORCH	Kenya Orchards Ltd
33. KPLC	Kenya Power and Lighting Ltd
34. KPLC-P4	Kenya Power and Lighting Ltd 4%
35. KPLC-P7	Kenya Power and Lighting Ltd 7%
36. KNRE	Kenya Re-Insurance Corporation Ltd
37. CFCI	Liberty Kenya Holdings Ltd
38. LIMT	Limuru Tea Company Ltd
39. LKL	Longhorn Kenya Ltd
40. MASH	Marshalls (E.A.) Ltd
41. MSC	Mumias Sugar Company Ltd
42. NSE	Nairobi Securities Exchange Ltd
43. NMG	Nation Media Group
44. NBK	National Bank of Kenya Ltd
45. NIC	NIC Bank Ltd
46. OCH	Olympia Capital Holdings Ltd
47. PAFR	Pan Africa Insurance Holdings Ltd
48. REA	Rea Vipingo Plantations Ltd
49. SCOM	Safaricom Ltd
50. FIRE	Sameer Africa Ltd
51. SASN	Sasini Tea and Coffee Ltd
52. SCAN	ScanGroup Ltd
53. SCBK	Standard Chartered Bank Ltd
54. SGL	Standard Group Ltd
55. TOTL	Total Kenya Ltd
56. TPSE	TPS Eastern Africa (Serena) Ltd
57. TCL	Trans-Century Ltd
58. UCHM	Uchumi Supermarket Ltd
59. UMME	Umeme Limited
60. UNGA	Unga Group Ltd
61. WTK	Williamson Tea Kenya Ltd

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(Source: NSE, 2014)