

**THE EFFECT OF COGNITIVE BIASES ON INDIVIDUAL INVESTMENT
DECISIONS AT THE NAIROBI SECURITIES EXCHANGE**

BY

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DECLARATION

This research project is my original work and has not been submitted to any other academic institution for academic award.

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This research project has been submitted for examination with my approval as the University Supervisor.

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LIST OF ABBREVIATIONS

| | |
|-------------|--------------------------------|
| BAPM | Behavioral Asset Pricing Model |
| BF | Behavioral Finance |
| BV | Book Value |
| CBD | Central Business District |
| CDS | Central Depository Settlement |
| CMA | Capital Markets Authority |
| MV | Market Value |
| NSE | Nairobi Securities Exchange |

ABSTRACT

Behavioral finance explains market anomalies which traditional asset pricing models fail to explain. This study sought to establish the cognitive biases which influence individual investment decisions at the Nairobi securities exchange. Descriptive research design was used. A sample of 69 individual investors was used. Primary data was collected using self-administered questionnaires. It was analyzed using SPSS Version 22 to generate frequencies, mean scores, percentages, and multiple regression analysis. Major findings indicated that results of individual investment decisions were significantly correlated to a number of cognitive biases including; random walk ($r=-.764$, $p<.01$); anchoring ($r=-.810$, $p<.01$); excessive optimism ($r=.661$, $p<.01$) and accounting information ($r=.609$, $p<.0$). The study concluded that cognitive biases play a significant role in individual investment decisions. The study recommends the education of investors to enable them to be rational, while the Capital Market Authority should track rogue brokers who may over charge unsuspecting investors for market information. Individual investors should seek for knowledge from their fund managers before they commit money in particular stocks so that they put money in stocks that are likely to yield returns as opposed to random walk. The Nairobi Securities Exchange should also initiate investor education programs for potential and existing investors so they understand the happenings in the stock exchange which would guide proper investment.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Investment managers are mainly the ones who make investment decisions in an investment company or Institution. They usually arrive at these decisions by use of technical analysis, fundamental evaluation and judgment. The decisions regarding investments are mostly supported by decision tools. Therefore t information design and the interplay of elements in the market altogether control people's investment decisions and market results.

Shefrin (2007), indicates that Behavioural finance is a fast growing field that deals with the aspects of psychology and their effect on the conduct of financial professionals. Own investments behaviors are affected by the decisions of buying of small items of securities of own relation (Nofsinger & Richard, 2012).

Regardless of the amount of how much information an investor has about a particular stock, carried out due diligence or analysed about a certain stock prior to putting money in it, he always has the fear of loss in the future. Investor behavior is influenced by varying factors leading to their irrationality. An individual investor is defined as one who purchases usually a little quantity of securities for their own.

1.1.1 Cognitive Biases

A cognitive bias/prejudice is a deviation from rational decision making where an individual draws conclusions about people and circumstances unreasonably based on their own feelings about the particular stimulus, which then guide their responses in their

society. This leads to distorted perception and erroneous response (Haselton, Nettle & Andrews, 2005).

Studies in behavioral finance indicate that people do not conduct themselves reasonably. Barberis and Thaler (2003), give an excellent analysis of ways that attempt to clarify the equity premium puzzle, surplus volatility, unnecessary trading, stock return certainty using both Prospect Theory by Kahneman and Tversky (1991), and values. This is supported by Daniel, Hirshleifer and Teoh (2002) who illustrated that markets are not able to regulate themselves and investor prejudices influence security prices significantly. As shown by Subrahmanyam (2007), markets might not be efficient and the investors are irrational and this may lead to lowering of prices from great values because of the prejudiced investors.

Fan and Xiao (2005) and Statman (2010), illustrate that people from different backgrounds and societies bear varying behavioral prejudices which might influence their decisions with regard to finances. Behavioural finance is made up of psychological and sociological theories together with finance, which joins the balanced theory of finance by establishing behavioural characteristics specific to the decision-making procedure.

Markowitz and Sharp (2010), contradict this by stating that behavioral finance deals with how people bring together information and how they understand the information.

In essence, behavioral finance evaluates how individuals make financial decisions. It seeks to appreciate and foresees the psychological decisions and their effect on the financial markets. This also aimed at explaining the function of economic and psychological processes on the development of financial decision-making (Statman, 2010).

The supposition of rationality is that our ideas should constantly be supported by facts and importance. Actually, this does not always happen. Individuals have a way to put together or attach their ideas to a certain belief. Sometimes such a belief has no reasonable relationship with the choices at hand.

Even though the organization is making money, its stock value may not go up due to the investor belief that the changes in earning is not permanent. This makes the investor to remain fixed on the past history of the organization's capability since they have reacted slowly to the new, helpful information (Subrahmanyam, 2007).

Over-optimism results from a number of biases such as illusion of control and self-attribution. People think that they can control the outcome of uncontrolled situation. Self-attribution refers to the situation where an investor attributes good outcome on its skills and bad outcome is attributed to their bad luck.

The underlying key indicators of interest are deemed to sway an investor when deciding to put money in a certain stock. For instance, people undervalue the possibility of getting divorced, getting into a car accident, or having a major illness, when they want to live long then others miscalculating their victory in the work and thinking that their siblings are very brilliant (Sharot, 2011).

As found by Merika (2008), Easley and O'Hara, (2010), financial information and predictable company income have a similar outcome on the decision to invest in shares. When creating an intention to invest, investors usually start with evaluation of firms founded on some factors that include returns on equity or earnings per share. Later, their emotional impression concerning such estimations may result as they try to defend their investing decisions; the rational people have the possibility to seek information on

presentation and also on the behavior of the investors (Chong & Lal, 2011). The release time of the information about the market had important outcomes on how investors made their decisions.

1.1.2 Individual Investment Decisions

Investing refers to expecting returns at a future date from money committed to a recent course which can be done by the individual himself or a professional (Bodie, Kane & Marcus, 2008). The returns however depend on the level of financing, the nature of the venture and the experience of the person managing the venture (Griffith, 2000).

The procedure of making decisions comprises studies of few aspects and following different procedures. This is the procedure of deciding on a specific option. It follows after good assessment of all the choices as illustrated by Subramani and Venkatraman, (2003). People believe that making decisions is supported by two basic factors; technical and personal factors. Likewise, when settling for particular stocks in the stock market, investors mostly depend upon the two factors.

Factors that include age, education, income, and investment portfolio, etc. usually are mostly considered by people while making decisions. (Harper, 2002), indicates that in the same way investment decisions are made from large models of finance. The models are comprised of investment risk and returns like CAPM. Making of decisions is the procedure where a person responds to the advantages and disadvantages that come through studying the options and making decisions on the particular goals and actions to be taken (Akintoye, 2006).

Thus, the investors in shares or securities also go through the process of making decisions. This then indicates that the investors in shares are affected by some of the aspects of decision making. On the other hand, there are contradicting assumptions on the circumstances that influence individuals' decisions to investment in shares.

1.1.3 Cognitive Biases and individual investment Decision Making

Investors' emotions and psychology and how they influence investment decisions are what behavioral finance tries to investigate. This is the study of individuals' behavior, particularly investors and how they make mistakes in their financial decisions because of their emotions. Making of decisions is the process of selecting the best option amongst a list of many options. This comes after a good assessment of all the choices. The making of decisions is the greatest and most challenging action of investors.

Each and every investor disagrees with others in all directions because of some issues like demographic factors, socioeconomic background, educational level, sex, age and race (Banerjee, 2011). According to Chandra, (2008) investors indeed make the most of their decisions on only emotional thoughts. Efficient making of decisions in the stock market needs a consideration of human nature all over the world over and above financial ability. Therefore, cognitive psychology ought to be given meaning in the procedure of the making of decisions (Chandra, 2008).

After the bull market from 2003 to 2007 and the following financial disaster, many studies have recently been directed at the unreasonable investor. Behavioral finance has then become an important factor in making of decisions because it greatly affects the investors' performance. This is in conformity with Banerjee, Duflo, Glennerster and

Kinnan (2015) who stated that understanding of the investors' emotions leads to irrational behavior which is crucial for any investors.

Retaining a stock for an extended period even when it is losing value and buying exaggerated stocks with regard to market opinions. The key, according to Parikh, for such an entrepreneur to succeed is contact the emotional indiscipline he has portrayed, and tackle it in order to avoid it in future. Warren Buffet, comments that if you integrate sound intellect with emotional discipline, intelligent behavior will result (Parikh, 2011).

1.1.4 Individual investors at the Nairobi Securities Exchange

In Kenya, the only organized stock market is the Nairobi stock exchange (NSE). The NSE dates back to 1920s when it commenced as an informal way of dealing in shares. Now it is quite advanced with the creation of the capital market authority (CMA) and introduction of the central depository system.

The NSE has 61 publicly listed companies trading in securities (Appendix III). In an ordinary trading day, both corporate and individual investors flock the NSE intending to sell and or buy securities from different firms listed there. They do this through the accredited brokerage firms. Individual investors form about 70% of the total transactions in the NSE (NSE, 2015).

Olweny and Kimani (2011) studied the influence of the stock market on the Kenyan economic growth established that rise in the NSE 20 share index signaled a better market, expecting of better dividends, better profits and in turn a rise in economic growth. Although such a scenario would mean more investments in the stock market, it

does not always happen; meaning that there are other factors at play (cognitive biases) in making such investment decisions at the Nairobi Securities Exchange.

1.2 Research Problem

Investment decisions are made with the hope of gaining either in the short or long term. It should be however noted that the NSE market environment in Kenya cannot be entirely explained by the Traditional Finance Theory and thus its models can't perfectly apply to this market situation (Ombai, 2010).

Over a short period of time recently, the NSE has seen continuous rise in the number of companies applying to be registered for trading. This has attracted many individuals who are interested in investing as it is evidenced through repeated oversubscriptions for shares. However many investors have made losses due to herd behavior and overconfidence as it was exemplified in Safaricom and Eveready Initial Public Offers (Ndiege, 2012).

According to Kimani (2011) there were five behavioral factors that were at play. These were: herding, market, prospect and overconfidence bias. However, it was not clear whether these behavioral biases affected individual investor decisions concerning the IPOs.

According to Shiller (2002), literature in empirical finance which mainly comes from psychology, sociology and anthropology, suggests a myriad of behavioral principles as influencing stock investors. In Kenya, cognitive psychological biases have taken prominence over rational behavior on many occasions as pertains to stock market investments.

Recent studies on behavioral finance in Kenya have established the presence of herd behavior, fear of regret, overconfidence and anchoring as elucidated by Werah (2006), while Mbaluka (2008) study focused on psychological aspect. Further, Nyaribo (2010) centered on overconfidence, frame dependence, anchoring, mental accounting and representativeness. As such the above studies had not adequately addressed random walk, anchoring, excessive optimism and accounting information as biases affecting NSE investors while making their investment decisions on which stocks to invest in.

This study intends to bridge the knowledge gap left by the above studies which have not adequately focused on investor behavior on the NSE in Kenya today by establishing the impact of random walk, anchoring, excessive optimism and accounting information as cognitive biases. The study endeavors to respond to the following research question: What is the effect of cognitive biases affecting individual investment decisions in the NSE?

1.3 Objective of the study

To examine the effect of cognitive biases on individual investment decisions at the NSE.

1.3.1. Specific Objectives

- i) To examine the effect of Random walk on individual investment decisions at the NSE
- ii) To examine the effect of Anchoring on individual investment decisions at the NSE
- iii) To examine the effect of Excessive optimism on individual investment decisions at the NSE
- iv) To examine the effect of Accounting Information on individual investment decisions at the NSE

1.4 Value of the Study

This study would add value to the body of information in the sphere of finance. It would be a reference for future students and researchers keen on expanding their knowhow in behavioral finance. This will form the basis for problems in research. The study findings would also be of importance to the companies listed in the NSE in that they may use the findings to customize the information that they relay to existing and or potential investors with the aim of convincing them to invest in those companies' securities.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This is an overview of the literature that has been reviewed on the effect of cognitive biases on individual investment decisions at the Nairobi Securities Exchange. The literature has been reviewed on the relevant theories and determinants of individual investment decisions which include Random walk, Anchoring, Excessive optimism and Accounting information and ends with a summary of the literature review.

2.2 Theoretical Review

This section presents the theories used in this study as introduced in the following sub-sections.

2.2.1 Efficient Market Hypothesis

The Efficient Market Hypothesis (EMH) was for the first time advocated by Fama in 1965 who indicated that in an efficient market, normally, competition always results to all areas of the new information on essential principles to be looked at instantaneously in the real prices. Usually it is the current stock prices that actually reproduce available information on the price of the company, and there is no other way the surplus profits (further than the market on the whole) can be made by use of the information.

The most vital factor in finance is dealt with; the reason as to why prices vary in security markets and the way those alterations occur. This has very basic propositions in addition to those of the financial managers (Fama, 1965).

Where there is a lot of rational competition of profit-maximizers, with every one of them trying to guess the future markets prices of individual securities, and whereby vital

available information is nearly freely obtainable to all the members, an efficient market results. In this market, competition amongst most of the members results to a position where, at any place and time, the specific market of individual securities focuses on the influence of information on the two measures that are currently occurring and on those that are expected to happen someday (Brooks, 2011)

The predictions of the efficient market hypothesis need to include all the information available at any time. Nevertheless, there are special types of information that affects security ethics. This special type of information doesn't normally bear equal importance and it is not usually available concurrently. This indeed creates space for irrational decisions and these are the biases called the behavioral biases (Merika, 2008).

2.2.2 Prospect/Loss-Aversion-Theory

It was initially illustrated in 1979 by Tversky and Kahneman. Globally, it was seen as a unique explanation of how individuals experiment with risk. It claims that individuals portray a diverse range of emotions to profits and losses. People get much stressed by potential losses than they get excited from the profits. Losses always look greater than the profits of the same size- when they go deep in the pocket the worth of the money completely changes (Tversky & Kahneman, 1979).

This theory as well gives the explanation as to why investors cling to losses more than they take risks to avoid the losses so as to recognize the profits. It is for this reason that the investors stick at a dangerous place, in the hope that the prices will get back up. This is the same with gamblers who always keep doubling their bets in the hope that they will get back what they already lost. Thus the rational need we have to have a return for the

risks we take, we are likely to give much more value to something we have than the value we would actually want to pay for it (Tversky & Kahneman, 1979).

Individuals usually fail to react reasonably to recent data because they totally fail to pursue the ideal mathematical structure. This theory used cognitive psychological system to illustrate some of the recognized differences of economic decisions made from the neo-classical theory. This explains how individuals structure and rate a decision including doubts and afterwards they see their options in terms of possible losses and profits, which relate to a certain position, which at most times is the purchase price. This shows that their options are relatively biased (Barberis & Thaler, 2003).

2.3 Determinants of Individual Investment Decisions

According to Sevak and Schmidt, (2006) investments made by women are generally lower compared to the investments made by men due to some reasons that include demographic and social concerns. Nevertheless, the variations persist to be important even after calculations for own character.

The study by Demirel (2011) showed the relationship between financial behavior and demographic factors in saving decisions. He explained that gender relates with five other financial factors that include; overconfidence, irrational thinking, cognitive bias, herding and overreaction plus the stage of own savings with only the four financial behavioral features that are the cognitive bias, irrational thinking, herding and overreaction.

Another study done by Younes and Yosra (2013) on the behavior of investors in Tunisia. They came to a conclusion that mental accounting, attitude, loss aversion, and representativeness are the aspects that affected the investors of Tunisia with the thought that their decisions procedures with the lack of brave bias in the stock market of Tunisia.

Actually the investors appear to be less confident undecided and very sensitive to others' reactions and ideas.

2.3.1 Random Walk

The hypothesis of random walk suggests that the success of price changes in individual securities is independent random variables. According to Fama and Kendall (2002) in a market of random walk, stock prices go down greatly around their essential ethics, the returns rapidly to the stability and completely focus on the current information that is available in the market.

Even though the price changes might not be perfect, it is fair; because sometimes the market might go up and sometimes it might go down, but then in the market one cannot tell what might happen at any given time. Random Walk refers to the notion that changes in stock prices are random and unpredictable (Bodie, Kane & Marcus, 2008). It is thus of no use, to attempt to predict future stock prices.

Past patterns of stock price movements should not be used as a basis to extrapolate future price trends. According to Bernstein (2004), investors consistently push stock prices to unsustainable levels, both upwards and downwards. Parikh (2009) in advocating for 'value investing' quotes Benjamin Graham who says, "Price is what you pay, value is what you get".

He states that value investors buy stocks when the market is bearish, when expectations of investors are low; during bullish times, the value investors look for good neglected stocks which are out of favor with investors. He shows that growth stock investing on the

other hand is based on dreams, illusions or popular opinion. A study by Anyumba (2010) concluded that NSE follows a random walk under the weak form of market efficiency.

2.3.2 Anchoring

The idea of rationality indicates that what we think and view ought to be based on importance and reality. Although this is not normally very relative. Individuals have a way to anchor their ideas to a situation although the idea may not have a reasonable relationship with the choice at the moment. Even though the firm may be making much money, its stock worth doesn't go up since the investors think that the change in production is only for a moment.

So, the investor stays focused on earlier prospects of the firms' possibility of profits since they are yet to react to the current, positive information. This then doesn't signify that the investors will never go away from their original point of anchoring. They will then come to understand that the firm might continue to incur more profits in the future and that its stock might get a good future investment.

Anchoring can then be a basis of disturbance in the financial world, as the investors focus their verdict on unrelated facts and data (Reilly & Brown 2006). For instance, a few of the investors put in the stocks of firms that have failed in very little time. In cases like this, the investor usually anchors on a current "loft" that the stock has attained and therefore believes that the fall in worth gives a chance to buy the stock at a cut rate (Brooks, 2011).

2.3.3 Excessive Optimism

Excessive optimism comes as a result of biases that include self-attribution and illusion of control. Individuals sometimes think that they can manage the results of situations that are not controlled. In a state where an investor attaches good results to its ability and bad results to misfortune is what is referred to as self-attribution. ZhaoyangGu, (2007) analyzed the study by Eastwood and Nutt and found that individuals are likely to react excessively to the positive information and under react to the negative information.

Individuals are commonly positive towards their capability and knowhow. They are likely to undervalue the vagueness of beliefs or forecasts and they are likely to overrate their capability. Excessive optimism happens when individuals overrate the occurrence of favorable results and underrating the occurrence of unfavorable results (Shefrin, 2007). For instance people undervalue the possibility of getting a divorce or even getting a bad illness they always focus on having good health and living more than other and having having great and talented children (Shefrin, 2007).

For financial intermediation, optimism is very important in that it can influence commercial, financial and accounting choices; it can lower security prices where there are short-sale limits that can result to little or no responses in stock prices.

As illustrated by Robinson and Puri (2007), many positive individuals do a lot of work, expecting to retire later, investing more in stocks and saving much, whereas the extreme optimists portray financial habits that are not regarded as sensible. When making a financial decision, excessive optimism results to ineffective consequences. Shefrin, (2007) gives the example of a manager who portrays positivity may slow or avoid lowering costs in the business which may later lead to inferior gains for the company.

2.3.4 Accounting Information

According to Lal and Chong, (2011) financial information is the past performance of the company, price movements, the firm status, reputation of the firm and the accounting reports. The greatest influence of an entrepreneur in settling to invest in stocks is that an individual evaluates the basic activities of the company as a pointer of interest. This is what is considered financial information. Financial information and the anticipated firm returns do have an important influence on the decision to invest in shares Merika (2008) and Easley (2010).

Easley and O'Hara (2010) indicated that when creating a target to invest, people normally start with examining the firm's position of finance based on a few aims that include earning per share and returns on equity. Afterwards, their emotional thoughts of the evaluations come to affect and try to defend their decisions on investing in a given firm stock.

According to Chong and Lai (2011) when making a venture decision, intelligent individuals tend to look for information on how other investors behave and perform. The time of releasing the information on the market had a great influence on how investors came up with their decisions (Hughes, 2008). The available studies on financial information gives a practical start to obtain the past and future results of a company (Chong & Lal, 2011).

2.4 Empirical Review

Chira, Adams and Thornton (2008) researched on prejudices and heuristics, which, the business students were subjected to. The results were that when students were more objective, they made less mistakes of being overconfident and over-optimistic.

Sairafi, Selleby and Stahl (2008) evaluated the observable behaviour of business students interested in investing and their processes of making choices from a behavioral perspective. The most conspicuous trait that was observed was herd (student) behavior.

Ismail, Maheran and Muhammed (2008) examined the relationship between investment decision making of an individual and their rationality in the Malaysian capital market. The study established that frame of reference affected decision-making behavior. Zhang, Bellamy and Kellogg, (2015) found that human judgments, including experts, are always biased and shows that conservatism bias is observed in experience investors. They wanted to find out whether the same kind of cognitive biases such as loss aversion and framing influences investment.

Pompian (2016), conducted a survey on 290 top investment advisors from stock exchanges in 30 countries, to investigate the effects of cognitive biases. He discovered that cognitive errors or biases shoot from original statistics, processing of information or errors of memory and therefore it might be due to defective analysis.

Errors of cognitive do not come from emotion or other tendencies near some judgments, but slightly are either hidden mental processes for information or irrational tolerance in individuals own attitudes. The writer states that this comes because cognitive errors result from bad reasoning, education, advice and better information can at most be gotten from them.

Waweru, Munyoki and Uliana (2008) investigated the role of psychology in investment decision among the institutional investors at the Nairobi Securities Exchange. They found that behavioral factors such as Gamblers' Fallacy, Representativeness, Herd behavior and Overconfidence influenced the decisions at the NSE.

Ombai (2010) set to find out the herd effect at the NSE during the global financial crisis. Behavioral finance provided his study's framework. He found out that the general dip in returns of stocks comprising the NSE 20 share index coupled with the decline in returns in the NSE 20 share index itself was a pointer to the existence of herding behavior.

Nyamute and Maina (2010) conducted an empirical review leading to revision of the theories that explain the concept of behavioral finance. The findings of indicated that financial literacy may not always result in improved emergency management. They associated this outcome to the fact that emergency expectation is a behavioral aspect associated with how different individuals handle risk in spite of their having an appropriate degree of competence in investment.

Aduda, Odera and Omwenga (2012) while conducting their study on the financial performance and behavior of individual investors in trade shares of firms in the Nairobi Stock Exchange list in Kenya with the goal to discover how individual investors usually make their decisions in investments.

The results were that friends' influence; where the investors got their advice from their colleagues and friends before coming to the decision to go for the stocks and acceptable ideas about the market and from the current ongoing in the share prices movements were the obvious indication of herd behavior presented in NSE.

Ndiege (2015) investigated the factors influencing investment decision in equity stocks at the Nairobi stock exchange among teachers in Kisumu Municipality. The study concluded that majority of the investors preferred to invest in real estate as opposed to investment stocks in which only small proportion of 28 per cent of the respondents invested. Herd mentality was also found to play a role in investment decisions.

2.5 Conceptual Framework

Financial psychology has demonstrated that human beings are quite irrational while making stock market investment decisions. This has been emphasized by the fact that indeed psychological factors such as endowment effect, disposition effect, fear of regret and framing effects do have an effect on the investors' rationality in stock market investment decisions (Decourt, 2005).

Further, individual investors depend on mass media before they make investment decisions, as the professional investors depend on essential and practical analysis and little on selected analysis. That's why market contributors are normally exposed to stable flow of information, varying from quantitative financial data to financial news from the media, and publicly exchanging ideas and suggestions (Andrikopoulos, 2006).

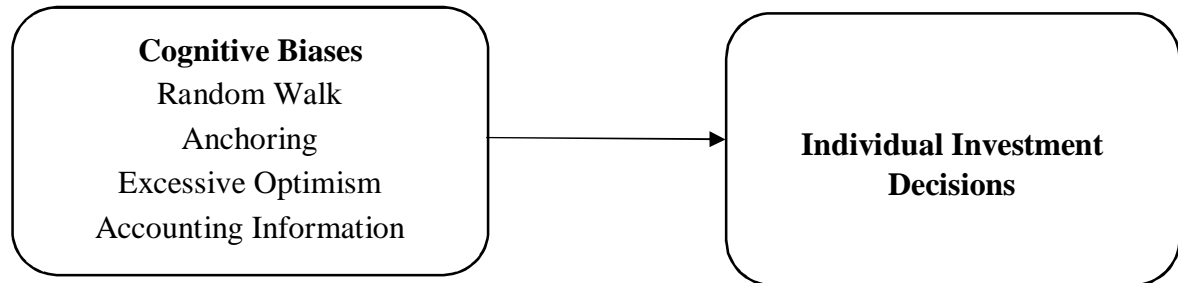
It is however a difficult task processing all this information particularly to those less savvy stock market investors and these results into them making investment decision based on less sophisticated information and data and thus giving weight to behavioral finance proponents that indeed these factors have an influence on stock market investment decisions (Dimitrios, 2007).

It should be noted further that in as much as it is expected that investment decisions should be guided by predefined fundamental and technical analysis that input a risk factor for all portfolio and are stable with the aims and time spheres of the investor, this has been very obvious that investors have challenges making prolonged financial decisions for purposes that include inability to self-regulate, a lack of financial sophistication and shortsightedness (Winchester, Huston, and Finke 2011).

Figure 2.1 Conceptual Model

Independent variables

Dependent Variable



Source: Researcher

2.6 Summary of the Literature Review

Werah (2006) established the presence of herd behavior, fear of regret, overconfidence and anchoring as factors influencing NSE investors, while Mbaluka (2008) study focused on the psychological aspect. Nyaribo (2010) centered on overconfidence, frame dependence, anchoring, mental accounting, and representativeness. As such the above studies had not adequately addressed the certain-return bias, loss aversion and regret aversion as affecting NSE investors while making their investment decisions as to which stocks to invest in.

Bernstein (2014) notes that there is proof that shows a repeat of samples of irrationality, variation, and inability in how people reach at decisions and options when they face doubts. There is also upcoming proof that investors in institutions react in a different manner than individual investors, partly due to they are agents performing in place of the actual investors. Studies have shown that the individual and institutional investors are influenced by feelings and cognitive effects when coming up with investment decisions.

To sum up, the study has argued that cognitive biases stem from prejudiced reasons. Nevertheless, this is not maintained by study proof. But instead, there are opposing

studies which recommend that financial literate investors are not protected from the results of the common culture of investing seen in individual investors, and much of the factors automatically affect the thinking of the investors as well.

In addition, while there is statistical evidence in favour of other biases such as representativeness bias argument, it is not clear how individual investors are influenced by such cognitive biases as excessive optimism, random walk, anchoring and accounting information in their investment decisions. This study intended to fill this gap.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter deals with the method of research to be adopted in the study, the research design, population, design, data collection, validity and reliability, data analysis, analytical model and test of significance, as discussed in the consequent sub-headings.

3.2 Research Design

The study employed descriptive research design. The main aim of descriptive research design was to express the situation as it is. This kind of study tries to explain things such as characteristics, values, possible behavior, and attitudes.

3.3 Population

A population is an entire group of individuals, Mugenda and Mugenda (2003) it includes objects, or events having a common characteristic. The study involved surveying individual investors who trade at the Nairobi Securities Exchange.

3.4 Sample Design

Out of the investors trading at the Nairobi Securities Exchange, a sample of 69 individuals was selected using random numbers. According to (Neville & Sidney, 2004), calculators, spreadsheets, printed tables, or use of traditional ways of drawing slips of paper, throwing of coins or rolling dice can be used to generate random numbers. The study employed the random number tables.

Simple random sampling makes sure that the sample signifies the whole population, and is not unfair towards any particular group within the population. It eliminates the

influence of a basing factor (Cooper & Emory, 1995). The study adopted a probability sampling technique to randomly select 3 respondents from each of the 23 brokerage firms. A respondent was selected in every six customers seeking services from a firm on a particular day.

3.5 Data Collection

Semi-structured questionnaires were used for data collection. The respondents filled them in. It consisted of 16 questions concerning the fundamental heuristics affecting investment decisions. The questionnaire contained three sections.

Section A contained general information of the respondents. Section B contained questions on the individual investment decisions i.e. indicating the type of share portfolio held and the volumes held in each portfolio. Section C included 3 sub-sections; Sub-section (i) contained questions on Random Walk where share price range as a factor of individual investment decision was highlighted. Sub-section (ii) contained questions on Anchoring where questions on past performance of stocks and building portfolios were considered.

Sub-section (iii) contained questions on Excessive Optimism and Accounting Information. They included questions on using predictive skills and use of market information while making investment decisions. The questionnaires were distributed using the drop and pick later method. To ascertain that the questionnaires were valid and reliable, a pilot study was conducted.

3.5.1 Data Validity and Reliability

Reliability is an assessment of the extent to which a research tool yields consistent outcomes or data after administering it several times. Reliability in a research is influenced by random error. Random error is the deviation from the true measurement caused by inaccurate coding, lack of clear directions to the respondents, interviewer's fatigue. Random error will always exist regardless of the procedure used in a study.

Validity is the scale to which outcomes obtained in the data analysis represent the circumstances under investigation. Validity addresses the accuracy of the data obtained in the study and that it is a true reflection of the variables under study. Validity addresses systematic error or non-random error in data. It is therefore a matter of degree as no data can have a perfect validity.

3.6 Data Analysis

The study involved both quantitative and qualitative data. It examined the collected data to make inferences; editing to eliminate restatements, erraticness and for grouping. After the data was checked for wholeness and readiness for analysis, it was thematically coded. The refined quantitative data was analyzed using descriptive statistics involving frequencies, percentages, means and standard deviations.

3.6.1 Analytical Model

The Regression equation was be modeled as follows;

$$Y_i = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + e$$

Where: α = constant

Y_i = individual investor decision to be measured by the type of share portfolio held and the volume of shares held in each portfolio.

β_1, \dots, β_n = betas for each cognitive bias.

X_1 - X_4 are the cognitive biases which influence investor choices. They include

X_1 = Random Walk

X_2 =Anchoring

X_3 =Excessive Optimism

X_4 =Accounting Information

These were measured by the ordinal level of measurement whereby the respondent indicates the preference number from 1 to 5 in line with their opinion so as to measure the impact levels for each factor using a Likert scale.

e = Error term with a significance level of 5%

3.6.2 Test of Significance

T-test was used to determine a possible relationship between the dependent variable and each independent variable in isolation.

CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND INTERPRETATION

4.1 Introduction

The objective of the study was to examine the effect of cognitive biases on individual investment decisions at the Nairobi Securities Exchange. The findings of the analysis of the Effect of Cognitive Biases on Individual Investment Decisions at the Nairobi Securities Exchange are presented in this chapter.

4.2 Demographic Information

In order to increase dependability of the respondents' information, their background information i.e. age of the respondents, gender, highest level of education and the number of years they had been investors at the NSE were established.

4.2.1 Age of the respondents

The study aimed to establish the age of the respondents. The findings were as shown on Table 4.1 below.

Table 4.1: Age of the respondents

| Age of respondents | Frequency | Percent |
|--------------------|-----------|-------------|
| 18-25 years | 4 | 6% |
| 26-30 years | 14 | 22% |
| 31-35 years | 9 | 14% |
| 36-40 years | 25 | 40% |
| over 40 years | 11 | 18% |
| Total | 69 | 100% |

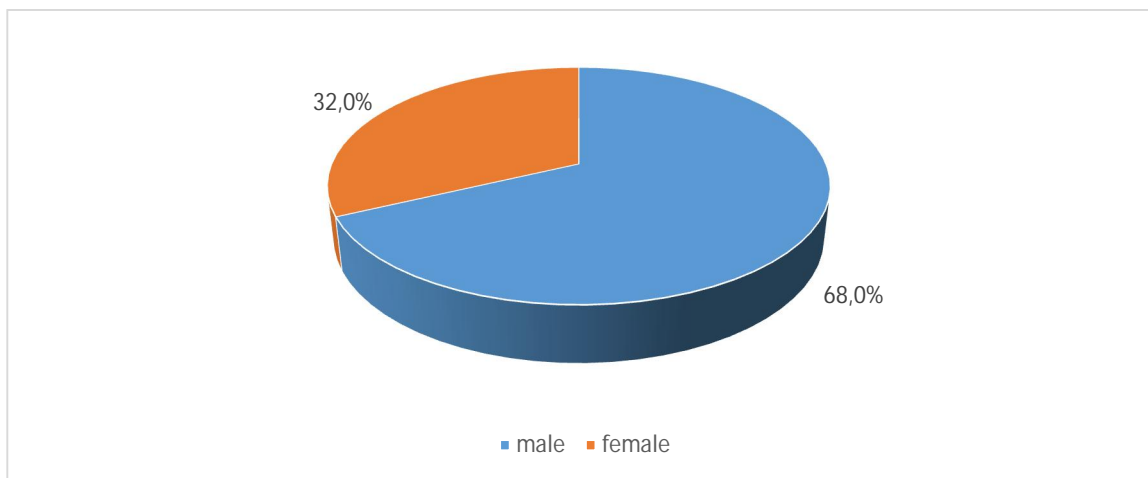
Source: Research Findings

The study found that 40% of the investors at the NSE were aged 36-40 years, 22% were aged 26-30 years, 18% were aged over 40 years, 14% were aged 31-35 years and 6% were aged 18-25 years. This implied that all the investors at the NSE were aged above 18 years and were therefore suitable respondents for the study.

4.2.2 Gender of the Investors

The study endeavored to find out the investors' distribution by gender. The findings were as shown on Figure 4.2 below.

Figure 4.2: Gender of the Investors



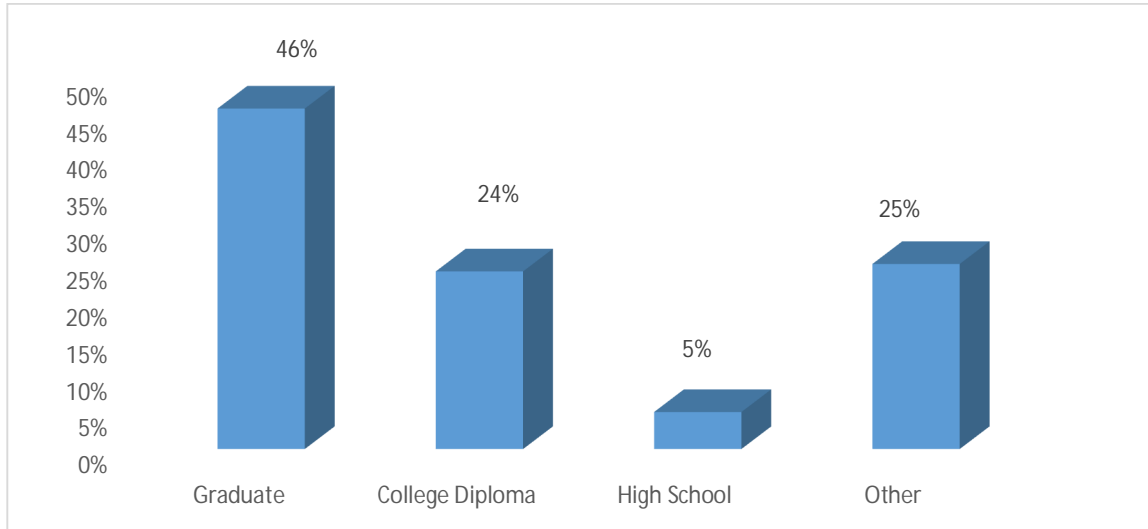
Source: Research Findings

The study established that majority (68%) of the investors were male while (32%) were female as illustrated in Figure 4.2 above. This implied that most of the investors in the NSE were male, thus there was no parity in gender.

4.2.3 Level of education attained by the Investors

The highest level of education attained by investors was sought and the findings are as shown in Figure 4.3 below.

Figure 4.3 Level of education attained by the Investors



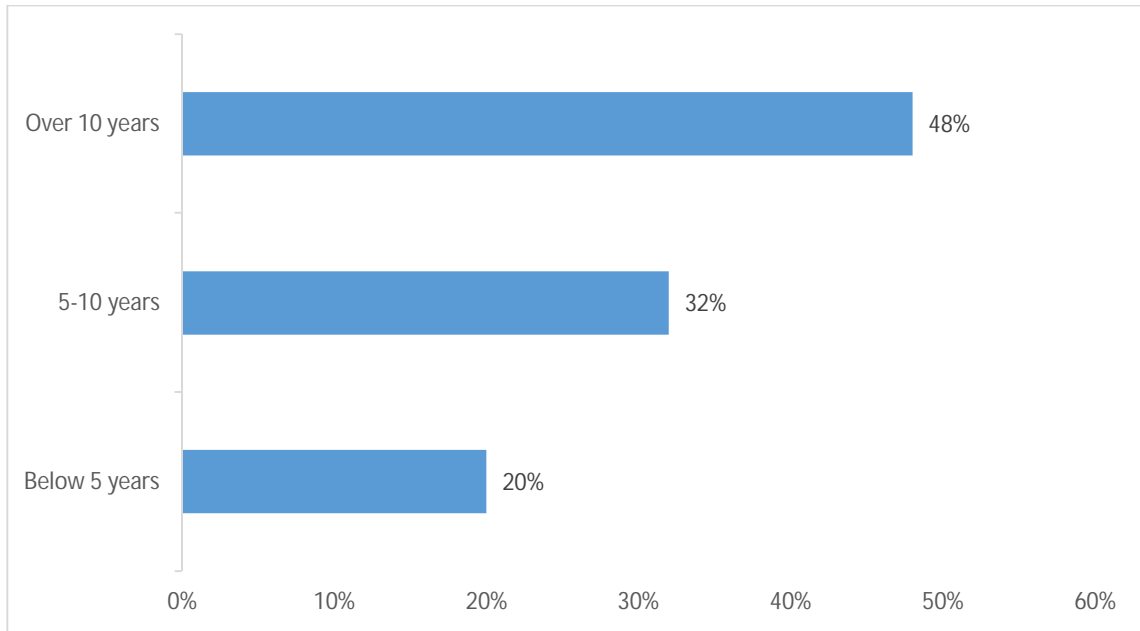
Source: Research Findings

The study findings were that 46% of the investors were graduates, 25% had ‘other’ qualifications, 24% had college diploma and 5% had high school qualifications. This depicts that the investors were reasonably educated thus they were suitable respondents for the study.

4.2.4 Length of time of investing/trading shares on the NSE

The study sought to establish the length of time the investors had been investing/trading shares on the NSE. The findings were as shown on Figure 4.4 below.

Figure 4.4 Length of time of investing/trading securities on the NSE



Source: Research Findings

The study established that 48% of the investors had traded securities in the NSE for over 10 years, 32% for between 5-10 years while 20% had traded securities for under 5 years. This depicted that the investors had the necessary experience of trading securities with the NSE and were therefore suitable to provide information regarding investment at the NSE.

4.3 Type of share portfolio held

The study sought to find out the type of share portfolios held by the individual investors. The various individual shares held were consolidated into 5 categories as shown on Table 4.2 below.

Table 4.2 Type of share portfolio held

| | Frequency | Percent |
|--------------------------|------------------|----------------|
| Banking | 7 | 11% |
| Manufacturing and Allied | 13 | 21% |
| Commercial and Services | 22 | 35% |
| Investment | 6 | 10% |
| Telecom and Technology | 15 | 23% |
| Total | 69 | 100% |

Source: Research Findings

The findings indicated that 35% of the investors had shares in Commercial and Services sector, 23% had shares in the Telecom and Technology sector, 21%, Manufacturing and Allied, 11% Banking sector and 10% had shares in the Investment sector. This was an indication that different investors at the NSE preferred investing in some sectors as opposed to others.

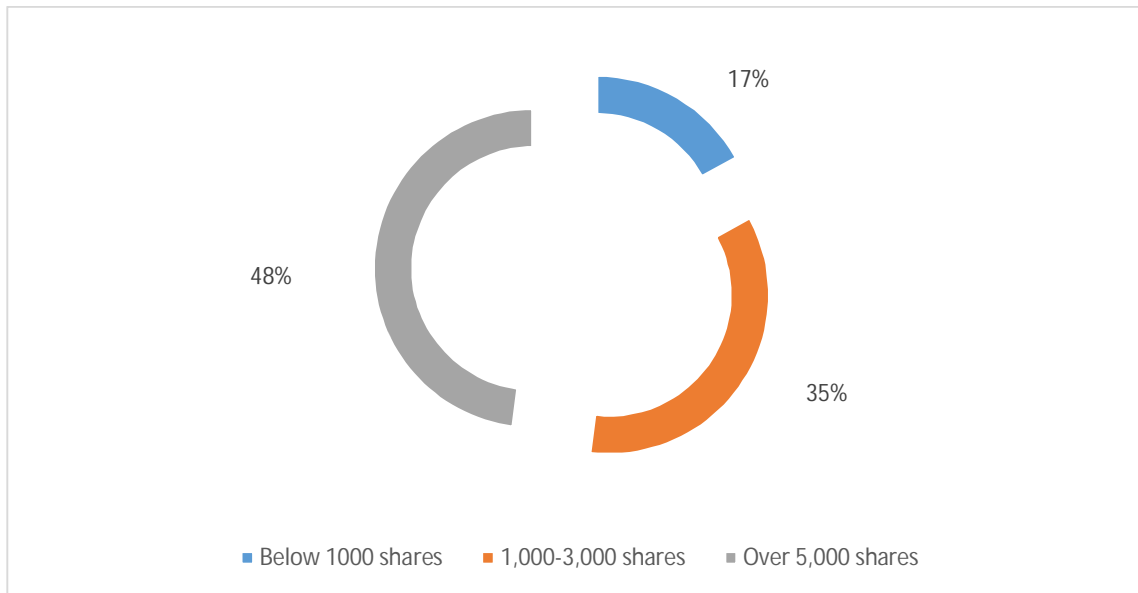
4.4 Volume of shares held in each portfolio

The study sought to establish the volume of shares held by the individual investors in each portfolio. The findings were as discussed in the following sub-sections.

4.4.1 Volume of shares held in the Banking Sector

The endeavored to establish the volume of shares held by the individual investors in the banking sector. The findings were as shown on Figure 4.5 below.

Figure 4.5 Volume of shares held in the Banking Sector



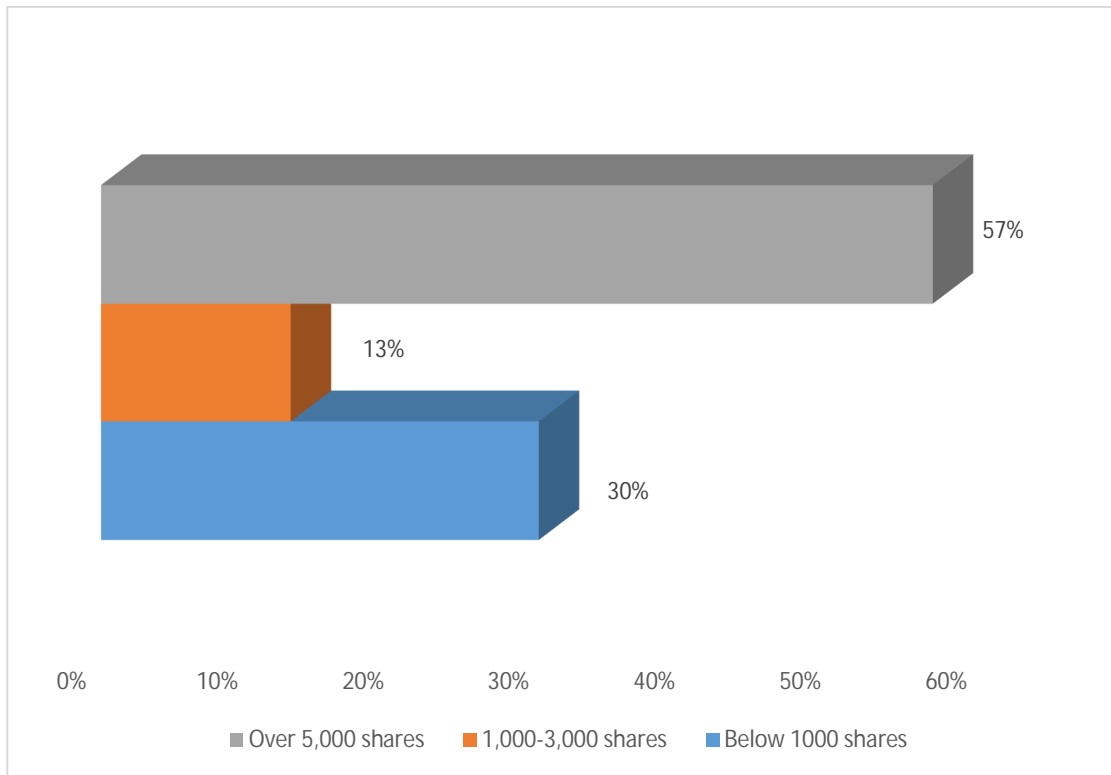
Source: Research Findings

48% of the investors in the banking sector held over 5,000 shares, 35% held 1,000-3,000 shares while 17% held below 1,000 shares. This showed that majority of the investors at the NSE held over 5,000 shares in the banking sector.

4.4.2 Volume of shares held in Manufacturing and Allied Sector

The study sought to establish the volume of shares held by the individual investors in the banking sector. The findings were as shown on Figure 4.6 below.

Figure 4.6 Volume of shares held in Manufacturing and Allied Sector



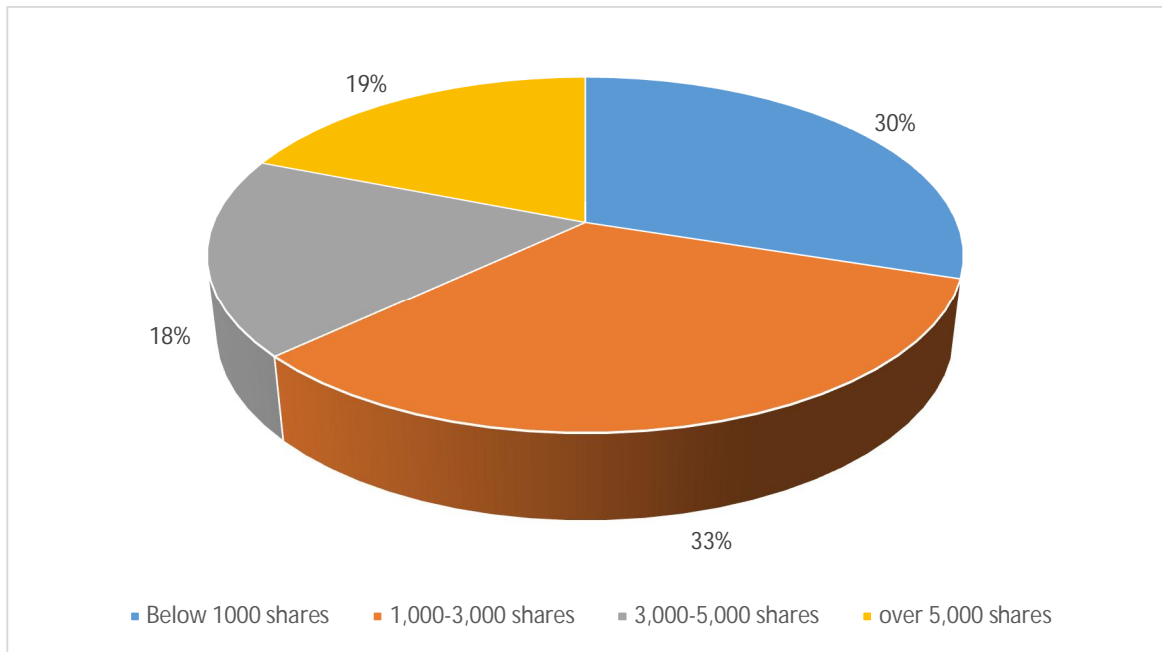
Source: Research Findings

Majority (57%) of the investors in the Manufacturing and Allied sector held over 5,000 shares, 30% held below 1,000 shares while 13% held 1,000 -3,000 shares. This implied that majority of the investors at the NSE held over 5,000 in the manufacturing and allied sector.

4.4.3 Volume of shares held in Commercial and Services Sector

The study sought to find out the volume of shares held by the individual investors in the banking sector. The findings were as shown on Figure 4.7 below.

Figure 4.7 Volume of shares held in Commercial and Services Sector



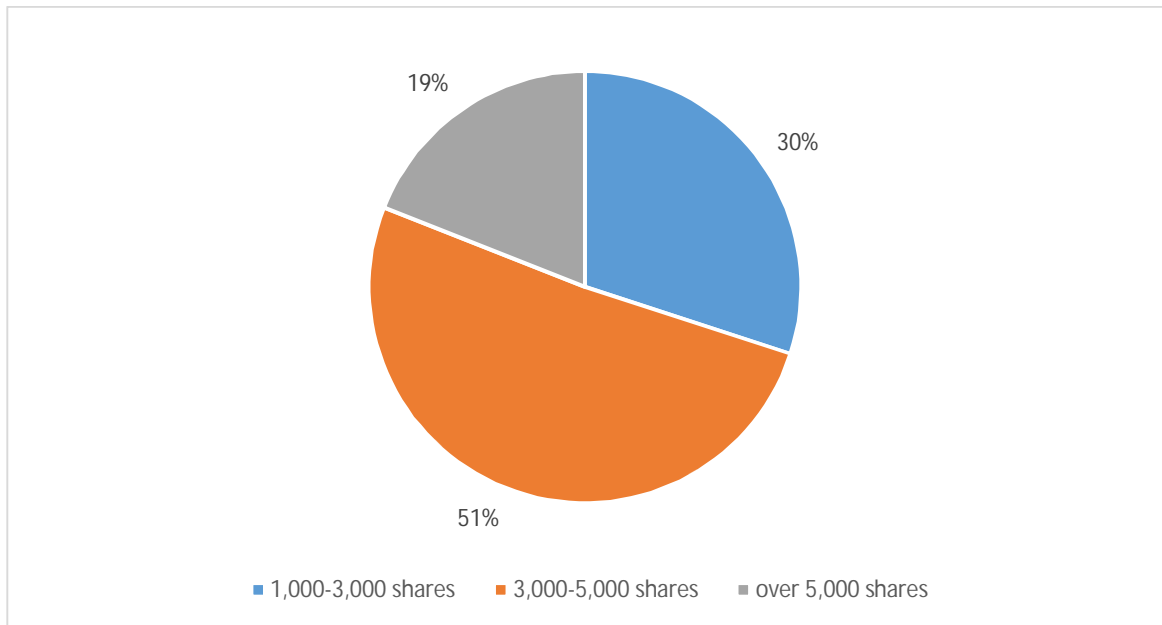
Source: Research Findings

The findings indicated that 33% of the investors in the Commercial and Services Sector held 1,000-3,000 shares, 30% held below 1,000 shares, 19% held over 5,000 shares while 18% held 3,000-5,000 shares. This implied that majority of the investors at the NSE held below 3,000 shares in the commercial and services sector.

4.4.4 Volume of shares held in the Investment Sector

The study sought to establish the volume of shares held by the individual investors in the investment sector. The findings were as shown on Figure 4.8 below.

Figure 4.8 Volume of shares held in the Investment Sector



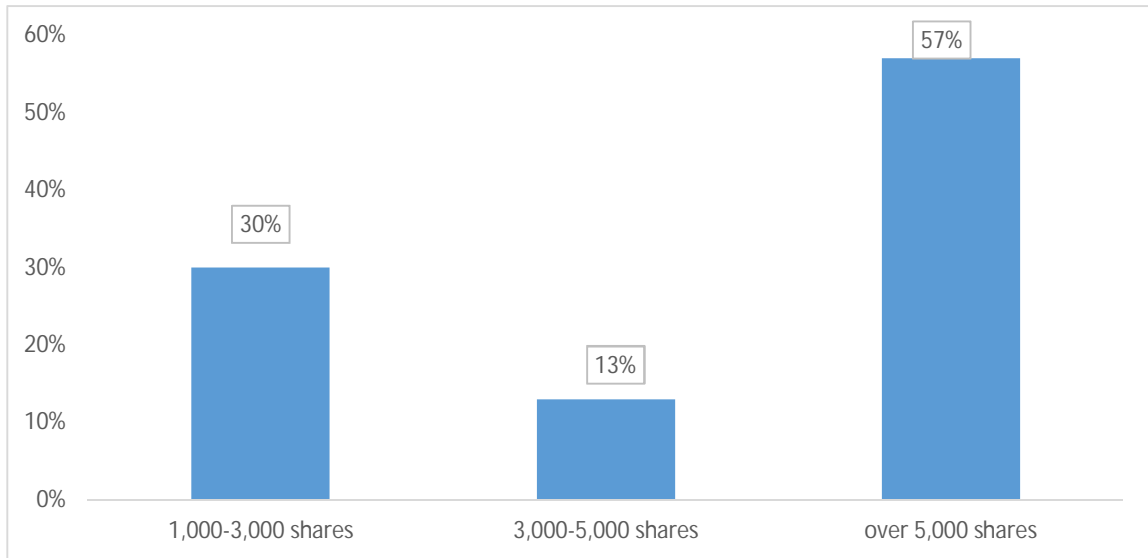
Source: Research Findings

Majority (51%) of the investors in the Investment Sector held 3,000-5,000 shares, 30% held 1,000-3,000 shares while 19% held over 5,000 shares. This implied that majority of the investors at the NSE held 3,000-5,000 in the investment sector.

4.4.5 Volume of shares held in Telecom and Technology Sector

The study endeavored to find out the volume of shares held by the individual investors in the investment sector. The findings were as shown on Figure 4.9 below.

Figure 4.9 Volume of shares held in Telecom and Technology Sector



Source: Research Findings

Majority (57%) of the investors in the Telecom and Technology Sector held over 5,000 shares, 30% held 1,000-3,000 shares while 13% held 3,000-5,000 shares. This implied that majority of the investors at the NSE held over 5,000 shares in the Telecom and Technology sector.

4.5 Cognitive Biases

The study sought to find out the cognitive biases held by the individual investors in the NSE. The findings were as discussed in the following sub-sections.

4.5.1 Random Walk

In order to find out whether there was influence of Random Walk bias among investors, they were required to indicate their level of agreement with certain statements. Their responses were rated on a five point Likert scale where: 1=Strongly Disagree

2=Somehow Disagree 3=Agree 4=Somehow Agree and 5=Strongly Agree. SPSS was used for generation of standard deviation and mean as illustrated on Table 4.3 below. A mean range of 1-3 would mean little influence while 3-5 would mean great influence.

Table 4.3 Opinion on influence of Random Walk Bias

| Opinion on Random walk bias | Mean | Std. Dev. |
|--|-------------|------------------|
| I prefer to invest in High Cap shares | 4.0794 | 1.1818 |
| I prefer to invest in Mid Cap shares | 1.5238 | .91329 |
| I prefer to invest in Low Cap shares | 1.0635 | .24580 |
| I consider past price trends of a stock before investing in it | 1.4603 | .50243 |
| I think stock prices on the NSE are unpredictable hence qualify to be regarded as random in nature | 4.3810 | .77102 |
| Many times I have made investment decisions without considering past prices trends on the target security | 4.2540 | .76133 |
| Going forward I think it is worthwhile to continue making decisions on which stock to buy or sell based on this notion | 3.7460 | 1.19094 |

Source: Research Findings

The study established that Random Walk bias had a significant influence on the individual investment decisions as reflected by the level of agreement on statements with a mean of 3 to 4. The investors were in agreement to a great extent that they thought stock prices on the NSE were unpredictable hence qualified to be regarded as random in nature (Mean 4.3810), many times they had made investment decisions without

considering past prices trends on the target security (Mean 4.2540), they preferred to invest in High Cap shares (Mean 4.0794), going forward they thought it was worthwhile to continue making decisions on which stock to buy or sell based on that notion (Mean 3.7460).

However, they disagreed that they preferred to invest in Mid Cap shares (Mean 1.5238), they considered past price trends of a stock before investing in it (Mean 1.4603) and they preferred to invest in Low Cap shares (Mean 1.0635).

This implied that majority of the respondents invested without reference to previous performance in the market and they considered stock prices unpredictable which were both indications of Random Walk bias.

4.5.2 Anchoring bias

In order to find out whether there was influence of Anchoring bias among investors, they were required to indicate their level of agreement with certain statements. Their responses were rated on a five point Likert scale where: 1=Strongly Disagree 2=Somehow Disagree 3=Agree 4=Somehow Agree and 5=Strongly Agree. SPSS was used for generation of standard deviation and mean as illustrated on Table 4.4 below. A mean range of 1-3 would mean little influence while 3-5 would mean great influence.

Table 4.4 Opinion on influence of Anchoring bias

| Opinion on influence of Anchoring bias | Mean | Std.Dev. |
|---|-------------|-----------------|
| I often consider the past performance of a stock before investing in it | 4.2857 | .83141 |
| I often use stop losses in my trades | 2.2222 | 1.22401 |
| My portfolio performance in the financial market for the last 5 years has been excellent | 4.1270 | 1.19801 |
| My portfolio performance in the financial market for the last 5 years has been fair | 3.3810 | .65816 |
| My portfolio performance in the financial market for the last 5 years has been poor | 2.9683 | .98322 |
| Investors build their investment portfolios based purely on quantitative analysis of past information of individual asset within the portfolio without the influence of emotional and psychological factors | 3.9365 | .94822 |

Source: Research Findings

The study established that Anchoring had a significant influence on individual investor decisions as reflected by the level of agreement on statements with a mean of 3 to 4. The investors were in agreement to a great extent that they often considered the past performance of a stock before investing in it (Mean 4.2857), their portfolio performance in the financial market for the last 5 years had been excellent (Mean 4.1270), investors built their investment portfolios based purely on quantitative analysis of past information of individual asset within the portfolio without the influence of emotional and psychological factors (Mean 3.9365) and their portfolio performance in the financial market for the last 5 years had been fair (Mean 3.3810).

However, they disagreed that their portfolio performance in the financial market for the last 5 years had been poor (Mean 2.9683) and they often used stop losses in their trades (Mean 2.2222). This implied that majority of the investors attached a lot of importance to previous market performance and they never stopped losses in a certain stock which were indications of Anchoring bias.

4.5.3 Excessive Optimism

In order to find out whether there was influence of Excessive Optimism bias among investors, they were required to indicate their level of agreement with certain statements. Their responses were rated on a five point Likert scale where: 1=Strongly Disagree 2=Somehow Disagree 3=Agree 4=Somehow Agree and 5=Strongly Agree. SPSS was used for generation of standard deviation and mean as illustrated on Table 4.5 below. A mean range of 1-3 would mean little influence while 3-5 would mean great influence.

Table 4.5 Opinion on influence of Excessive Optimism

| Opinion on influence of Excessive Optimism | Mean | Std. Dev. |
|--|-------------|------------------|
| I use predictive skills to time and outperform the market | 4.3968 | .58309 |
| I am optimistic on stock returns beyond market expectations | 4.5079 | .50395 |
| I ignore the connection between different investment possibilities | 4.2063 | .80640 |

Source: Research Findings

The study established that excessive optimism had a significant influence on individual investor decisions as reflected by the level of agreement on statements with a mean of 4. The investors were in agreement to a great extent that they were optimistic on stock

returns beyond market expectations (Mean 4.5079), they used predictive skills to time and outperform the market (Mean 4.3968) and they ignored the connection between different investment possibilities (Mean 4.2063). This depicted that they depended on optimism and predictive skills when investing which were indicative of excessive optimism bias.

4.5.4 Accounting Information

In order to find out whether there was influence of Accounting Information bias among investors, they were required to indicate their level of agreement with certain statements. Their responses were rated on a five point Likert scale where: 1=Strongly Disagree 2=Somehow Disagree 3=Agree 4=Somehow Agree and 5=Strongly Agree. SPSS was used for generation of standard deviation and mean as illustrated on Table 4.6 below. A mean range of 1-3 would mean little influence while 3-5 would mean great influence.

Table 4.6 Opinion on influence of Accounting Information

| Opinion on influence of Accounting Information | Mean | Std. Dev. |
|--|-------------|------------------|
| I treat each element/account in my investment portfolio individually | 4.2857 | .79166 |
| If an account shows a loss, I will sell that investment | 4.6349 | .48532 |
| Market information is important for my personal investing in the NSE | 4.2540 | .71771 |

Source: Research Findings

The study established that Accounting Information had a significant influence on individual investor decisions as reflected by the level of agreement on statements with a mean of 4. The investors were in agreement to a great extent that they would sell an

investment because the account showed a loss (Mean 4.6349), they treated each element/account in their investment portfolio individually (Mean 4.2857) and Market information was important for their personal investing in the NSE (Mean 4.2540).

This implied that the investors were keen on individual shares rather than the general portfolio and they would consider it as an entity based on the market information. These were all aspects of accounting information bias.

4.6 Inferential Statistics

In determining the relationship between the study variables, the researcher conducted a regression analysis whose results were as follows:

4.6.1 Model Summary

Coefficient of determination (R square) explains the percentage of variation in the dependent variable that is influenced by the independent variables. The four independent variables studied (that is, Random walk, Anchoring, Excessive optimism and Accounting information), explain 77.79% of variance in individual investment decisions as represented by the R^2 . Thus other factors not part of this study contributed 22.21% of variance in the dependent variable.

Table 4.7 Model summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------|----------|-------------------|----------------------------|
| 1 | 0.882 | 0.7779 | 0.756 | 0.0221 |

- a. Predictors: (Constant), random walk, anchoring, excessive optimism and accounting information.
b. Dependent Variable: individual investment decision

Source: Research Findings

4.6.2 Analysis of Variance (ANOVA)

Analysis of Variance (ANOVA) consists of calculations that provide information about levels of variability within a regression model and form a basis for tests of significance. From the study findings in Table 4.8, the significance value is 0.012 which is less than 0.05, thus the model is statistically significant in predicting how random walk, anchoring, excessive optimism and accounting information influence the individual investment decisions in the Nairobi Securities exchange. An F-test is any statistical test in which the test statistic has an F-distribution. It is used when comparing statistical models that have been fitted to a data set, to identify the model that best fits the population from which the data were sampled. The F statistic in this study was significant (as it was =7.32) and this showed that the model had a good fit.

Table 4.8 ANOVA (Analysis of Variance)

| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
|-------|------------|----------------|----|-------------|------|-------------------|
| 1 | Regression | 12.768 | 4 | 3.192 | 7.32 | .012 ^a |
| | Residual | 24.336 | 59 | 0.436 | | |
| | Total | 37.1 | 63 | | | |

a. Predictors: (Constant), random walk, anchoring, excessive optimism and accounting information.

b. Dependent Variable: individual investment decision

Source: Research Findings

Table 4.9: Coefficient of Correlation

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|-------|------------------------|-----------------------------|------------|---------------------------|-------|--------|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 6.182 | .826 | | 7.484 | 0.0000 |
| | Random walk | 0.742 | .278 | 0.146 | 2.669 | 0.0110 |
| | Anchoring | 0.815 | .289 | 0.126 | 2.820 | 0.0075 |
| | Excessive optimism | 0.567 | .234 | 0.045 | 2.423 | 0.0201 |
| | Accounting information | 0.476 | .205 | 0.142 | 2.322 | 0.0255 |

Source: Research Findings

Therefore; $Y = 6.182 + 0.742X_1 + 0.815X_2 + 0.567X_3 + 0.476X_4 + \epsilon$

The study discovered a significant positive relationship between Random walk bias and individual investment decision ($\beta=0.742$ and P value < 0.05); meaning that a raise in random walk bias leads to a raise in individual investment decision by 0.742.

The study discovered a significant positive relationship between Anchoring bias and individual investment decision ($\beta=0.815$ and P value < 0.05); meaning that a unit raise in anchoring bias leads to a raise in individual investment decision by 0.815.

The study discovered a significant positive relationship between Excessive optimism bias and individual investment decision ($\beta=0.567$ and P value < 0.05); meaning that a unit raise in Excessive optimism bias would lead to a raise in individual investment decision by 0.567.

The study discovered a significant positive relationship between Accounting information bias and individual investment decision ($\beta=0.476$ and P value < 0.05); meaning that a unit raise in Accounting information bias would lead to a raise in individual investment decision by 0.476.

4.7 Interpretation of the Findings

From the regression table above, the most significant variable was Anchoring ($\beta=0.815$), followed by Random Walk ($\beta=0.742$), then Excessive Optimism ($\beta=0.567$) while Accounting Information was the least significant variable ($\beta=0.476$).

The study endeavored to establish the effect of cognitive biases on individual investment decisions at the Nairobi Securities Exchange by analyzing data from the study variables.

The study discovered that Random Walk bias had a significant influence on the individual investor decisions in that majority of the investors invested without reference

to previous performance in the market, they considered stock prices unpredictable and they would continue investing using the same notion which were all indicators of Random Walk bias. This is corroborated by Bodie, Kane and Marcus, 2008 who argue that random walk refers to the notion that changes in stock prices are random and unpredictable. It is thus of no use, to attempt to predict future stock prices and past patterns of stock price movements should not be used as a basis to extrapolate future price trends. This is further supported by Anyumba (2010) who asserts that NSE follows a random walk under the weak form of market efficiency.

According to the study findings, anchoring had a significant influence on individual investment decisions in that individuals often studied the past performance of a stock prior to investing in it, investors built their investment portfolios based purely on quantitative analysis of past information of individual asset within the portfolio without the influence of emotional and psychological factors which were indicators of anchoring. This agrees with the argument by Reilly and Brown (2006) that anchoring can be a basis of disturbance in the financial world, as the investors focus their verdict on unrelated facts and data. For instance, a few of the investors put in the stocks of firms that have failed in very little time. In cases like this, the investor usually anchors on a current “loft” that the stock has attained and therefore believes that the fall in worth gives a chance to buy the stock at a cut rate (Brooks, 2011).

The study findings revealed that excessive optimism had a significant influence on individual investment decisions in that they were optimistic on stock returns beyond market expectations, they used predictive skills to time and outperform the market and they ignored the connection between different investment possibilities. These were

indications of excessive optimism. This is in agreement with Shefrin (2007) who posits that excessive optimism happens when individuals overrate the occurrence of favorable results and underrating the occurrence of unfavorable results. For instance people undervalue the possibility of getting a divorce or even getting a bad illness they always focus on having good health and living more than other and having having great and talented children (Shefrin, 2007). Also, ZhaoyangGu, (2007) supports this view and posits that individuals are likely to react excessively to the positive information and under react to the negative information.

The study findings revealed that accounting information had a significant influence on individual investment decisions in that the investors were willing to sell a losing investment because the account showed a loss, they tended to treat each element/account in their investment portfolio separately and market information was important for their personal investing in the NSE which were all measures of accounting information.

The findings agree with Merika (2008) and Easley (2010) who posit that financial information and the anticipated firm returns do have an important influence on the decision to invest in shares. Easley and O'Hara, (2010) indicated that when creating a target to invest, people normally start with examining the firm's position of finance based on a few aims that include earning per share and returns on equity.

Afterwards, their emotional thoughts of the evaluations come to affect and try to defend their decisions on investing in a given firm stock. Likewise, Chong and Lal, (2011) support the argument that available studies on financial information gives a practical start to obtain the past and future results of a company.

CHAPTER FIVE: SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 introduction

Discussed in this chapter are the summary of the study, conclusion and the recommendations under the following sub- headings.

5.2 Summary

From the study, most investors at the NSE considered stock prices unpredictable and therefore random in nature. Random walk also influenced individual investment decisions at the NSE. According to the study findings, before investors bought a particular stock, they evaluated its previous performance, therefore, Anchoring had a significant positive relationship on individual investment decisions at the NSE.

The study found that most investors at the NSE were optimistic on stock returns beyond market expectations and they used predictive skills to time and outperform the market. There was also a significant positive relationship between excessive optimism and individual investment decisions at the NSE.

According to the study findings, investors were willing to sell a losing investment because the account showed a loss and they treated each every account as a separate entity in their portfolio separately and market information was important for their personal investing in the NSE. Accounting information had a significant positive relationship on individual investment decisions at the NSE.

5.3 Conclusions

This study concludes that investor decisions are not rational but are influenced by behavioural biases. These biases are manifested in different forms. The factors that were most prevalent among individual investors manifested in the form of random walk where

investors considered the price of stock unpredictable and therefore random in nature.

Anchoring also affected investors as they purported to have pegged their investment decisions on the past performance of particular stocks. Similarly, individual investors were also affected by excessive optimism bias in that to time and outperform the market, they used their predictive skills. Finally, investor decisions were also influenced by accounting information through treating each account in their investment portfolios separately and acquiring market information before investing in the NSE.

5.4 Recommendations for Policy and Practice

Since behavioural biases influence investor decisions, this study recommends that individual investors be provided with investment education to lessen the effects of these biases so that existing and potential investors make rational decisions when investing.

The study also recommends that individual investors seek for knowledge from their fund managers before they commit money in particular stocks so that they put money in stocks that are likely to yield returns as opposed to random walk.

The NSE should also initiate investor education programs for potential and existing investors so they understand the happenings in the stock exchange which would guide proper investment.

Related to the above recommendation, the Capital Markets Authority as the regulator should track rogue brokers and or fund managers who may want to take advantage of uninformed investors by charging them a lot of money in exchange for market information.

5.5 Limitations of the study

The study used primary data (questionnaires) which can be general and vague and may not really help individuals make decisions on investment. The information and data may not be very accurate as this depended on the honesty of the respondents.

Findings from this study may not be conclusive as the study centered on three determinants of financial performance. Also, availability of data determined the elements for the study were purely determined by the availability of data. Therefore there was no probability criterion employed to pick on them. This means that any attempt to generalize the study results should be done cautiously.

5.6 Suggestions for Further Research

Similar studies may also need to be carried out outside the Nairobi Securities Exchange for purposes of generalization. Similar studies may be conducted on the effect of cognitive biases on corporate investment decisions at the NSE.

Similar studies may be done at the NSE but employing a larger sample for comparison purposes. Other studies may employ secondary data or mixed approaches in data collection in order to minimize subjectivity of the study.

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APPENDIX I: QUESTIONNAIRE

SECTION A: GENERAL INFORMATION

1) What is your age bracket?

18-24 years () 25-29 years () 30-34 years () 35-39 years () over 40 years ()

2) Please state your gender

Male () female ()

3) What is your highest level of education?

Graduate () College diploma () High school () other ()

4) For how many years have you been investing/trading shares on the NSE?

Below 5 years () 5-10 years () Over 10 years ()

SECTION B: INDIVIDUAL INVESTMENT DECISIONS

5. Please indicate the type of share portfolio held.

.....
.....

6. Please indicate the volume of shares held in each portfolio.

.....
.....

SECTION C: COGNITIVE BIASES

Please evaluate the degree of your agreement with the following statements. Use a scale of 1-5 where 1= Strongly Disagree 2=Somehow Disagree 3=Agree 4=Somehow Agree and 5=Strongly Agree

| (i) Random Walk | 1 | 2 | 3 | 4 | 5 |
|--|----------|----------|----------|----------|----------|
| I prefer to invest in High Cap shares | | | | | |
| I prefer to invest in Mid Cap shares | | | | | |
| I prefer to invest in Low Cap shares | | | | | |
| I consider past price trends of a stock before investing in it | | | | | |
| I think stock prices on the NSE are unpredictable hence qualify to be regarded as random in nature | | | | | |
| Many times I have made investment decisions without considering past prices trends on the target security | | | | | |
| Going forward I think it is worthwhile to continue making decisions on which stock to buy or sell based on this notion | | | | | |

| (ii) Anchoring | 1 | 2 | 3 | 4 | 5 |
|---|----------|----------|----------|----------|----------|
| I often consider the past performance of a stock before investing in it | | | | | |
| I often use stop losses in my trades | | | | | |
| My portfolio performance in the financial market for the last 5 years has been excellent | | | | | |
| My portfolio performance in the financial market for the last 5 years has been fair | | | | | |
| My portfolio performance in the financial market for the last 5 years has been poor | | | | | |
| Investors build their investment portfolios based purely on quantitative analysis of past information of individual asset within the portfolio without the influence of emotional and psychological factors | | | | | |

(iii) Excessive Optimism and Accounting Information

| Excessive Optimism | 1 | 2 | 3 | 4 | 5 |
|--|----------|----------|----------|----------|----------|
| I use predictive skills to time and outperform the market | | | | | |
| I am optimistic on stock returns beyond market expectations | | | | | |
| I ignore the connection between different investment possibilities | | | | | |
| Accounting Information | | | | | |
| I tend to treat each element/account in my investment portfolio separately | | | | | |
| I am willing to sell a losing investment because the account shows a loss | | | | | |
| Market information is important for my personal investing in the NSE | | | | | |

**APPENDIX II: LIST OF REGISTERED BROKERAGE FIRMS IN KENYA AS
AT JUNE 2016**

1. CFC /SBG Securities Ltd.
2. Kestrel/ Kestrel Capital (EA) Ltd
3. Dyer & Blair Investment Bank Ltd
4. Genghis /Genghis Capital Ltd
5. Faida Investment Bank Ltd
6. KCB Capital
7. Standard Investment Bank Ltd
8. Drummond/ Francis Drummond & Company Limited
9. NgenyeKariuki & Co. Ltd
10. Suntra Investment Bank Ltd
11. Old Mutual Securities Ltd
12. Sterling Capital Ltd
13. ApexAfrica Capital Ltd
14. Kingdom Securities Ltd
15. Afrika Investment Bank Ltd
16. ABC Capital Ltd
17. NIC Securities Limited
18. Discount Securities Ltd.
19. African Alliance Kenya Investment Bank Ltd
20. Renaissance Capital (Kenya) Ltd
21. CBA Capital Limited
22. Equity Bank/ Equity Investment Bank Limited
23. Barclays Financial Services

Source : www.nse.co.ke

APPENDIX III: FIRMS LISTED IN the NSE AS AT JUNE 2016

| | |
|---|--|
| <p>a) Agricultural Sector</p> <ol style="list-style-type: none"> 1. Eaagads Ltd. 2. Kapchorua Tea Co. Ltd. 3. Kakuzi 4. Limuru Tea Co. Ltd. 5. Rea Vipingo Plantations Ltd. 6. Sasini Ltd. 7. Williamson Tea Kenya <p>b) Commercial and Services</p> <ol style="list-style-type: none"> 8. Express Ltd. 9. Kenya Airways Ltd. 10. Nation Media Group 11. Standard Group Ltd 12. TPS Eastern Africa (Serena) Ltd. 13. Scangroup Ltd. 14. Uchumi Supermarket Ltd. 15. Hutchings Biemer Ltd. 16. Longhorn Kenya Ltd. <p>c) Banking</p> <ol style="list-style-type: none"> 17. Barclays Bank Ltd 18. CFC Stanbic Holdings Ltd. 19. I&M Holdings Ltd. 20. Diamond Trust Bank Kenya Ltd. 21. Housing Finance Co Ltd. 22. Kenya Commercial Bank Ltd. 23. National Bank of Kenya Ltd. 24. NIC Bank Ltd. 25. Standard Chartered Bank Ltd. 26. Equity Bank Ltd. 27. The Co-operative Bank of Kenya Ltd. <p>d) Manufacturing and Allied</p> <ol style="list-style-type: none"> 28. B.O.C Kenya Ltd. 29. British American Tobacco Kenya Ltd. 30. Carbacid Investments Ltd. 31. East African Breweries Ltd. 32. Mumias Sugar Co. Ltd. 33. Unga Group Ltd. | <ol style="list-style-type: none"> 34. Eveready East Africa Ltd. 35. Kenya Orchards Ltd. 36. A.Baumann Co Ltd. <p>e) Construction and Allied</p> <ol style="list-style-type: none"> 37. Athi River Mining. 38. Bamburi Cement Ltd. 39. Crown Berger Ltd. 40. E.A.Cables Ltd. 41. E.A.Portland Cement Ltd <p>f) Energy and Petroleum</p> <ol style="list-style-type: none"> 42. KenolKobil Ltd. 43. Total Kenya Ltd. 44. KenGen Ltd. 45. Kenya Power & Lighting Co. Ltd. 46. Umeme Ltd. Investment <p>g) Investment</p> <ol style="list-style-type: none"> 47. Olympia Capital Holdings Ltd. 48. Centum Investment Co Ltd. 49. Trans-Century Ltd <p>h) Growth Enterprise Market Segment</p> <ol style="list-style-type: none"> 50. Home Afrika Ltd <p>i) Telecommunication and Technology</p> <ol style="list-style-type: none"> 51. Safaricom Ltd <p>j) Automobile and Accessories</p> <ol style="list-style-type: none"> 52. Car and General (K) Ltd. 53. CMC Holdings Ltd 54. Sameer Africa Ltd 55. Marshalls (E.A.) Ltd Insurance <p>k) Insurance</p> <ol style="list-style-type: none"> 56. Jubilee Holdings Ltd 57. Pan Africa Insurance Holdings Ltd. 58. Kenya Re-Insurance Corporation Ltd. 59. Liberty Kenya Holdings Ltd. 60. British-American Investments Company (Kenya) Ltd 61. CIC Insurance Group Ltd. |
|---|--|

Source: www.nse.co.ke