DETERMINANTS OF INDIVIDUAL INVESTORS' BEHAVIOUR IN THE NAIROBI SECURITIES EXCHANGE

BY:

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DECLARATION

I the undersigned do hereby confirm that the work contained in this Master of Science in Finance Degree Project (research/study) is my own original work and has not previously in its entirety or in part been submitted for a degree in any other university.

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DEDICATION

To;

My Parents for their love and truly being a blessing and encouragement,

My Siblings for their love, encouragement and much needed support,

The wonderful, loving and fun kids: David, Stephanie and Perez.

ABSTRACT

The study of individual investors' behaviour, anchored on the behavioural finance theory, is of interest and a relatively new phenomenon in Kenya. Behavioural finance theories are based on psychological attempts aimed at comprehending how sentiments and cognitive errors influence the individual investors' behaviours, especially in regard to the investment decision making process.

The objective of this study is to identify the determinants of individual investors' behavior in the NSE. In cognizance that there are few studies relating to the individual investors' behaviour at the NSE, it is expected that this study will contribute significantly to this area of study in Kenya.

This research examines some of the existing theories relevant to the investors' behaviour and behavioural finance under the theoretical literature review. Subsequently, a review of some of the behavioural studies is covered under the empirical studies section. Data for the study is primary data collected by the use of interviews and questionnaires administered to individual investors at the NSE via identified investment brokerage firms, per a pre-determined judgemental sampling.

The results of the study establish factors that determine the individual investors' behaviour at the NSE. The degree of influence of these factors is established to be varied, with Market emerging as the most significant factor determining the individual investors' behaviour.

Future studies are recommended to confirm the findings of this research as well as on behavioural finance related to individual investors' decision making processes.

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ABBREVIATIONS

IPOs	:	Initial Public Offerings
KShs.	:	Kenya Shillings
M&A	:	Mergers and Acquisitions
MPT	:	Modern Portfolio Theory
NSE	:	Nairobi Securities Exchange
SPSS	:	Statistical Package for the Social Sciences

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CHAPTER ONE

INTRODUCTION

1.1 Background

The nature of the individual investors' behavior in the investment decision making process at the Securities Exchanges is varied the world over. As such studies have been undertaken in the past as well as recently, especially under behavioral finance, with a view to understanding and explaining the phenomenon of the individual investor behavior. In this context, Lintner (1998) defines behavioural finance as being 'the study of how humans interpret and act on information to make informed investment decisions'. Sewell (2001) defines behavioural finance as the study of the influence of psychology on the behaviour of financial practitioners

The interest and importance accorded to the individual investors' behaviour is further granted credence by the recent use of behavioral finance theories and studies by psychologists and investment analysts to solve some financial puzzles, such as explaining grossly overpriced markets, or why sophisticated investors make imprudent investment decisions. Questions concerning human motives and fears are now being recognized as an inherent part of investor behavior. How people invest, what stocks or funds they select, and their attraction to risky investments are among the factors being examined as part of the path investors walk between objectively evaluating financial advice and succumbing to psychological traps which cause financial losses. Therefore importance has been accorded to the understanding and predicting of individual investors' behavior.

1.1.1 Investors' Behaviour

The numerous literatures of investors' behavior have been empirically extended on behavioral scientists in recent as well as past years (Shiller, 2000; Shefrin, 2000). They rely chiefly on two key assumptions of traditional finance theory under condition that investors firstly make rational decisions, and then, they are unbiased in their predictions about future returns of the securities (Sultana, 2010). Individuals attempt to maximize their utility based on classic wealth criteria to make a choice between consumption and investment through time (Merikas et al., 2004).

1.1.2 Nairobi Securities Exchange

A securities market is an institution that deals in exchange of securities issued by publicly quoted companies and the government. The securities market is part of the broader market referred to as financial market (Reilly, 1997; Fabbozi 1995). The major role that the securities markets have played, and continues to play in many economies is that they promote a culture of thrift, or saving.

The very fact that institutions exist where savers can safely invest their money and in addition earn a return is an incentive to investors to consume less and save more. The growth of related financial services sector such as unit trusts investments clubs, pension and provident fund schemes have extensively contributed towards the deepening of the securities market.

It should be appreciated that in as much as an economy can have savings, there is usually lack of established mechanisms for channeling those savings into activities that create wealth. Therefore encouraging a culture of saving in less developed financial markets may first track economic growth. If an economy does not have

efficient financial markets there is always the risk that scarce capital could be channeled to non-productive investments as opposed to productive ones, leading to wastage of resources and economic decline (Lee, 1998).

1.2 Statement of the Problem

The nature of the individual investors' behavior in the investment decision making process pertaining to investments in securities listed in the Securities Exchanges is varied the world over. As such studies have been undertaken in the past as well as recently, especially under behavioral finance, with a view to understanding and explaining the phenomenon of the individual investor behavior.

Behavioral finance moved to the international forefront of economic study when the Nobel Prize was awarded to Daniel Kahneman, a psychologist, and Vernon Smith, an experimental economist, in 2002 for their work in developing tools to study individual investor behavior. This area of study, referred to as behavioral finance, has with time identified some key tendencies, which can affect rational decision-making by thoughtful individuals and turn this process into actions marred by bias, overconfidence and unchecked emotions. It is widely believed that when this happens, it reduces the chances of making justifiable and profitable investment decisions. To date, some broad empirical studies in some countries, some of which are discussed in this research, have been undertaken on investors' behavior regarding investments decision making.

The interest and importance accorded to this area of behavioral finance is further granted credence by the recent use of behavioral finance theories and studies by psychologists and investment analysts to solve some financial puzzles, such as

explaining grossly overpriced markets, or why sophisticated investors make imprudent investment decisions. Questions concerning human motives and fears are now being recognized as an inherent part of investor behavior. How people invest, what stocks or funds they select, and their attraction to risky investments are among the factors being examined as part of the path investors walk between objectively evaluating financial advice and succumbing to psychological traps which cause financial losses.

Kwenga (2012) carried out a survey on investors' attitudes towards investment in financial securities. Kalunda and Mbaluka (2012) in their study appraised the decision making process of individual investors at the NSE. However, whereas these and similar related behavioral studies are of essence, they have failed to specifically narrow into and address the key factors determining the individual investors' investment decision in the NSE. These remain unclear and merely speculative. Furthermore, the extent to which stakeholders are aware of these influencing factors and the extent of their prevalence still remain quite unclear. This study therefore sought to establish the factors that influence an individual Kenyan investor who invests in securities traded at the NSE.

1.3 Objectives of the Study

The objective of the study was to identify the factors influencing the individual investors' behaviour within the context of the Kenyan Securities Exchange, the NSE.

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1.4 Significance of the Study

A better understanding of behavioral processes and outcomes is important to several stakeholders key among them being financial planners, investors, the government, investment managers, scholars and researchers.

A better understanding of behavioral processes and outcomes is important for financial planners because an understanding of how investors generally respond to market movements should help investment advisors in devising appropriate asset allocation strategies for their clients.

The study is important for all investors; individual, companies non-listed and those listed in the NSE. For investors as decision makers, the most influencing factor(s) on their investment decisions is crucial because this would affect their future financial plans. For investing companies, identifying the most influencing factors on their investors' behavior would affect their future policies and strategies.

As for the government, identifying the most influencing factors on investors' behaviour would affect the required legislations and the additional procedures needed in order to satisfy investors' desires and also to give more support to market efficiency. Furthermore, understanding the psychological foundation of human behaviour in financial markets facilitates the formation of macroeconomic policy, the devising of new financial institutions and the creation of a more enabling and enhancing financial environment.

The research can help guide portfolio allocation decisions, both by helping stakeholders to understand the kinds of errors that individual investors tend to make in

managing their portfolios and also by allowing for a better understanding on how to appropriately allocate resources for investment managers.

For scholars and interested researchers, the study offers an appropriate insight and foundation to understanding the investors' behavior and for future studies on such related topics. These salient concerns, amongst others, are the motivation behind this research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Decision making is generally a process by which an individual responds to the opportunities and threats that confront him/her by analyzing the options and making determinations or decisions about specific goals and course of action (Atkintoye, 2006). So, investors in securities also go through a decision making process.

According to Eastlick (1996), while many securities investments may involve several participants who play such role as initiator, influencer, buyer and user just as in buying behaviour, the investment decision-maker goes through a decision making process consisting of problem recognition, information search, evaluation of alternatives purchase decision and post purchase behaviours.

This implies that investors in securities go through a decision making process which is usually influenced by a number of factors. There are however, contending empirical studies and theories on the factors that influence investment decisions some of these such as the efficient market hypothesis, risk tolerance, planned behaviour, modern portfolio, prospect theory amongst others are highlighted below.

2.2 Theoretical Literature Review

A number of theories have been developed to explain how and why people make decisions when they spend, invest, save and borrow money (Belsky and Gilovich, 1999) and the factors that influence shares investment decision making.

Extensive reviews of the main theories range from theory of Risk tolerance by investors (Bernheim *et al.*, 2001), theory of Planned behaviour (Ajzen, 1985, theory of Efficient market hypothesis (Fama, 1965), Modern portfolio theory (Markowitz, 1952 and theory of Behavioural finance (Tversky and Kahneman, 1974). Some of these theories are as summarized here below.

2.2.1 The Efficient Market Hypothesis

According to the efficient market hypothesis, financial prices incorporate all available information and prices can be regarded as optimal estimates of true investment value at all times. The efficient market hypothesis is based on the notion that people behave rationally, maximize expected utility accurately and process all available information (Shiller, 1998).

In other words, financial assets are always priced rationally, given what is publicly known. Security prices approximately describe random walks through time: the price changes are unpredictable since they occur only in response to genuinely new information, which by the very fact that it is new, is unpredictable (Shiller, 2000). Due to the fact that all information is contained in securities prices, it is impossible to make an above average profit and beat the market over time without taking excess risk.

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2.2.2 The Theory of Risk Tolerance

The theory of Risk tolerance following from the research of Bernheim *et al.* (2001) is a construct stipulating that the decision to invest depends on willingness to accept higher risk or volatility in exchange for higher potential returns. Accordingly, investors are classified into two as: Risk tolerant investor and Risk averse investor. Risk tolerant investors are aggressive investors, willing to accept the possibility of losing their capital in search for higher returns while the risk averse are more conservative investors who are more concerned with capital preservation. A risk tolerant investor will pursue higher potential reward investments even when there is a greater potential for a loss. In addition, a risk tolerant person would seek out high-risk investments, even if they add little to his or her portfolio.

Bernheim *et al.* (2001) further argued that risk tolerance is not enough. The thrust of the argument is that risk tolerance is only a measure of how much risk an individual can handle but that is not necessarily the same as the appropriate amount of risk an individual should take. The appropriate amount of risk an individual could take, it is argued is dependent on the financial risk capacity of the individual. Moreover, since there are often investment options, individuals strives towards optimal risk of their portfolios by attempting to minimize the variance (risk) at the same time they try to maximize their returns. It was therefore concluded that the long-term investment strategy and strategic asset mix of an individual investor is a mix of the risk tolerance of the investor, the financial capacity for risk and the optimal risk.

2.2.3 The Modern Portfolio Theory

Modern Portfolio Theory also called portfolio theory or portfolio management theory is a sophisticated investment approach/strategy and is the philosophical opposite of traditional stock picking. It is the creation of economists who try to understand the market as a whole, rather than business analysts who look for what makes each investment opportunity unique. Investments are described statistically in terms of their expected long-term return rate and their expected short-term volatility. The volatility is equated with risk, measuring how much worse than average an investment's bad years are likely to be. The goal is to identify the acceptable level of risk tolerance and then to find a portfolio with the maximum expected return for that level of risk (Markowitz, 1952).

The key tenet of MPT therefore is that if one wishes to increase the performance and reduce the risk in an overall investment portfolio, he or she should combine investments that are non-correlated with one another. Simply put a diversified portfolio of non-correlated investments can provide the highest returns with the least amount of volatility given that the risk of loss in futures trading can be substantial and an investor could potentially lose more than the initial investment (Markowitz,1952).

2.2.4 Behavioral Finance

Behavioural finance is a relatively new paradigm of finance, which seeks to supplement the standard theories of finance by introducing behavioural aspects to the decision making process. Contrary to the Markowitz (1952) approach, behavioural finance deals with individuals and ways of gathering and using information.

Behavioural finance seeks to understand and predict systematic financial market implications of psychological decision processes. In addition, it focuses on the application of psychological and economic principles for the improvement of financial decision making (Olsen, 1998). Market efficiency, in the sense that market prices reflect fundamental market characteristics and that excess returns on the average are leveled out in the long run, has been challenged by behavioural finance. There have been a number of studies pointing to market anomalies that cannot be explained with the help of standard financial theory, such as abnormal price movements in connection with IPOs, M&A, stock splits and spin-offs. In the recent past, statistical anomalies have continued to appear which suggests that the existing standard finance models are, if not wrong, probably incomplete. Investors have been shown not to react "logically" to new information but to be overconfident and to alter their choices when given superficial changes in the presentation of investment information (Olsen, 1998).

During the past few years there has, for example, been a media interest in technology securities. Most of the time, as has been evidenced in retrospect, there has been a positive bias in assessments especially in the media which might lead investors in making incorrect investment decisions. These anomalies suggest that the underlying principles of rational behaviour underlying the efficient market hypothesis are not entirely correct and that there is need to look, as well, at other models of human behaviour as have been studied in other social sciences (Shiller, 1998).

2.2.5 The Prospect Theory

Prospect Theory is a mathematically formulated alternative to the theory of expected utility maximization. The utility theory offers a representation of truly rational behaviour under certainty. According to the expected utility theory, investors are risk averse. Risk aversion is equivalent to the concavity of the utility function, i.e. the marginal utility of wealth decreases (Kahneman & Tversky, 1979).

Every additional unit of wealth is valued less than the previous equivalent increase in wealth. Despite the obvious attractiveness of this expected utility theory, it has long been known that the theory has systematically failed to predict human behaviour, at least in certain circumstances (Kahneman & Tversky, 1979).

Another foundation of the prospect theory is the Kahneman and Tversky (1979) value function. The value function differs from the utility function in expected utility theory due to a reference point, which is determined by the subjective impression of individuals. According to the conventional expected utility theory, the utility function is concave downward for all levels of wealth.

Kahneman and Tversky (1979) asserted that people are risk lovers for losses. These two phenomena, the preference for certain outcomes and the preference for risk when faced with losses, may explain some premises of investors' irrational behaviour. Due to the fact that the reference point in the value function always moves with wealth to stay at the perceived current level of utility, investors will always behave in a risk adverse manner even when small amounts of wealth are in question. Subsequently, they will always prefer taking a risk when confronted with losses. This phenomenon,

called loss aversion, is also explained below. Likewise, regret is an aspect of the prospect theory that can be traced to the value function theory.

2.2.6 Loss Aversion

Kahneman and Tversky (1991) sought to provide a theory that describes how decision makers actually behave when confronted with choices under certainty. The value function shows the sharp asymmetry between the values that people put on gains and losses. This asymmetry is called loss aversion. Empirical tests indicate that losses are weighted about twice as heavily as gains – losing $1 is about twice as painful as the pleasure of gaining $1 (Kahneman and Tversky, 1991). This can also be expressed as the phenomena in which people will tend to gamble in losses, i.e. investors will tend to hold on to losing positions in the hope that prices will eventually recover.

Under loss aversion there is also myopic loss aversion, which is the combination of a greater sensitivity to losses than to gains and a tendency to evaluate outcomes frequently Benartzi and Thaler (1995). Investors' behavior is sometimes said to be myopic, short-sighted, in that it ignores everything that might happen after the end of the single-period horizon and therefore all investors plan for one identical holding period (Bodie et al., 2000).

Loss aversion can help to explain the tendency of investors to hold on to loss making stocks while selling winning stocks too early. Shefrin and Statman (1985) called this occurrence of "selling winners too early and riding losses too long" as the disposition effect. When investors view stocks on an individual basis, then risk aversion in gains

will cause them to sell too quickly into rising stock prices, thereby depressing prices relative to their fundamental value.

2.2.7 Mental Accounting

Frames and mental accounting are a part of the prospect theory. It describes the tendency of people to place particular events into different metal account based on superficial attributes (Shiller, 1998). The main idea underlying mental accounting is that decision-maker tends to separate the different types of gambles they face into separate accounts, and then apply prospect theoretic decisions rules to each account by ignoring possible interaction between the accounts. Mental accounts can be isolated not only by content, but also in respect to time (Goldberg, von Nitsch, 2001).

Mental accounting can serve to explain why investors are likely to refrain from readjusting his or her reference point for a stock (Shefrin and Statman, 1985). When the stock is purchased, e.g. a stock of Ericsson, a new mental account for the particular stock is opened. The natural reference point is the asset purchase price. A running score is the kept on this account indicating gains or losses relative to the purchase price. When another stock is purchased, e.g. Nokia, another separate account is created.

A normative frame recognizes that there is no substantive difference between the returns distributions of the two stocks, only a difference in names. However, a situation involving the sale of the Ericson stock when it has decreased in price and using the proceeds to buy Nokia stock may be as closing the Ericsson account at a loss. It has been argued that decision-makers encounter considerable difficulty in closing a mental account at such a loss (Johnson and Thaler, 1990).

2.2.8 Self-Control

Mental accounting and framing may also be used to mitigate self-control problems, for example, by setting up special account that are considered off-limits to spending urges (Thaler and Shefrin, 1981). Glick (1957) reports that the reluctance to realize losses constitutes a self-control problem: he describes professional traders who are very prone to let their losses "ride". It is the control of losses that constitutes the essential problem. The traders' problem was to exhibit sufficient self-control to close account at a loss even though they were clearly aware that riding losses was not rational.

Self-control is also exhibited in the dividends puzzle, mentioned in the previous section. For example, old investors, especially retirees who finance their living expenditures from their portfolios, worry about spending their wealth too quickly, thereby outliving their assets. They fear a loss of self-control, where the urge for immediate gratification can lead them to overspend (Shefrin, 2000).

2.2.9 Regret

There is a human tendency to feel the pain of regret for having made errors, even small errors. It's a feeling of ex post remorse about a decision that led to a bad outcome. If one wishes to avoid the pain of regret, one may alter one's behavior in ways that would in some cases be irrational. Regret theory may help explain the fact that investors, as observed under loss aversion, defer selling stocks that have gone down in value and accelerate the selling of stocks that have gone up in value (Shefrin and Statman, 1985).

The theory may be interpreted as implying that investors avoid selling stocks that have gone down in order not to finalize the error they make and in that way avoid feeling regret. They sell stocks that have gone up in order not to feel regret of failing to do so before the stock later fell. The theory of regret may attribute to the phenomenon of money flowing more rapidly into mutual funds or stocks that have performed well than flowing out of stocks or funds that have performed extremely poorly (Shefrin and Statman, 1985).

2.2.10 Heuristics

The definition for heuristics refers to the process by which people find things out for themselves, usually by trial and error. Trial and error often leads people to develop "rules of thumb", but this process often leads to other errors (Shefrin, 2000). Heuristics can also be defined as the "use of experience and practical efforts to answer the questions or to improve performance". Due to the fact that more and more information is spread faster and faster, life for decision make in financial markets has become more complicated. This implies increased use of heuristics which is often a mostly inevitable approach, but not always beneficiary (Fromlet, 2001).

Heuristics may help to explain why the market sometimes acts in an irrational manner, which is opposite to the model of perfectly informed markets. The interpretation of new information may require heuristics decision making rules, which might later have to be reconsidered.

2.2.11 Herd Behavior

A fundamental observation about the human society is that people who communicate regularly with one another think similarly. Part of the reasons people's judgments are

similar at times is that they are recreating to the same information (Shiller, 2000). The social influence has an immense power on individual judgment. When people are confronted with the judgment of a large group of people, they tend to change their "wrong" answers. They simply think that all the other people could not be wrong. They are reacting to the information that a large group of people had reached a judgment different from theirs. This is a rational behavior (Shiller, 2000).

In everyday living we have learned that when a large group of people is unanimous in its judgments they are certainly right (Shiller, 2000). People are influenced by their social environment and they often feel pressure to conform. Fashion is a mild form of herd behavior while an example of the strong form is furores that constitute speculative bubbles and crushes. Herd behavior may be the most generally recognized observation on financial markets in a psychological context.

Even completely rational people can participate in herd behavior when they take into account the judgment of others, and even if they know that everyone is behaving in herd like manner. The behavior, although individually rational, produces group behavior that is irrational and causes fluctuations in the market. The "noise trading" theory stems from the fact that investors with a short time horizon are influencing the stock price more than the long- term investors are. Investors, with no access to inside information, irrationally act on noise as if it were information that would give them an edge (Thaler, 1993).

Another important variable to herding is the word of mouth. People generally trust friends, relatives and working colleagues more than they do to the media. The conventional media, printed information, televisions, and radio have a profound

capability for spreading ideas, but their ability to generate active behaviors is still limited. Talking to other people and other kind of interpersonal communication are among the most important social connections humans have. It is therefore likely that news about a buying opportunity will rapidly spread (Thaler, 1993).

2.2.12 Overconfidence and Over and Under Reaction

The key behavioral factor and perhaps the most robust finding in the psychology of judgment needed to understand market abnormalities is overconfidence. People tend to exaggerate their talents and underestimate the likelihood of bad outcomes over which they have no control. The greater confidence a person has in himself, the more risk there is of overconfidence. This applies, in particular, to areas where people are not well informed – self confidence usually bears no relation to their actual knowledge (Goldberg, von Nitsch, 2001). De Bondt and Thaler (1985) show that people tend to overreact to unexpected and dramatic news events. Consistent with the predictions of the overreaction hypothesis, portfolios of prior "losers" are found to outperform prior "winners".

Overconfidence seems to be related to some deep-set of psychological phenomena. Ross (1987) argues that much overconfidence is related to a broader difficulty in making adequate allowance for the uncertainty in one's own view points.
Recent empirical research in finance (Barberis, et al., 1998) has uncovered two families of pervasive regularities: under reaction of stock prices to news such as earnings announcements, and overreaction of stock prices to a series of good or bad news. The under reaction evidence shows that over horizons of one to twelve months,

security prices under react to news. As a consequence, news is incorporated only slowly into prices, which tend to exhibit positive autocorrelations over these horizons. The overreaction evidence shows that over longer horizons of three to five years, security prices overreact to consistent patterns of news pointing in the same direction. That is, securities that have a long record of good news tend to become overpriced and have low average returns afterwards.

2.2.13 Anchoring

Anchoring refers to the decision making process where quantitative assessments are required and where these assessments may be influenced by suggestions (Shiller, 2000). People have in mind some reference points (anchors), for example of previous stock prices. When they get new information they just adjust this past reference insufficiently (under reaction) to the new information acquired.

Anchoring describes how individuals tend to focus on recent behaviour and give less weight to longer time trends. In the absence of any better information, past prices are likely to be important determinants of prices today. Therefore, the anchor is the most recently remembered price. The tendency of investors to use this anchor enforces the similarity of stock prices from one day to the next (Shiller, 2000).

Other possible anchors are remembered historical prices, and the tendency for past prices to serve as anchors may explain the observed tendency for trends in individual stock prices to be reversed. For individual stocks, price changes may tend to be anchored to the price changes of other stocks, and price earnings ratio may be anchored to the firms' price-earnings levels.

This kind of anchoring may explain why individual stock prices move together as much as they do, and thus why stock indices are as volatile as they are (Shiller, 1989). As long as past prices are taken as a suggestion of new prices, the new prices will tend to be close to past prices. The more ambiguous the value of a commodity, the more important a suggestion is and the more important anchoring is likely to be for price determination (Shiller, 1998).

2.3 Empirical Studies Arising from Theories in Behavioural Finance

As a result of the of theories developed by scientists and scholars to explain how and why people make decisions when they spend, invest, save and borrow money (Belsky and Gilovich, 1999) and the factors that influence shares investment decision making, a number of empirical tests have also been undertaken with a view to testing the extent of credibility and reliability of these theories. Some of these studies are as follows:

Kahneman and Tversky present in Prospect Theory (1979), the following experimental evidence to illustrate how investors systematically violate the utility theory; When their subjects were asked to choose between a lottery offering a 25% chance of winning 3,000 and a lottery offering a 20% chance of winning 4,000, 65% of their subjects chose the latter (20%; 4,000). On the contrary, when the subjects were asked to choose between a 100% chance of winning 3,000 and 80% chance of winning 4,000, 80% chose the former (100%; 3,000).

Expected utility theory predicts that they should not choose differently in these two cases since the second choice is the same as the first except that all probabilities are

multiplied by the same constant. Therefore, according to the prospect theory, the individuals' preference for the first choice in the lottery, when it is certain in this example, illustrates what is called the "certainty effect" a preference for certain outcomes. People behave as if they regard extremely improbable events as impossible and extremely probable events as certain.

In his study of loss aversion, Samuelson (1963) undertook an empirical test of loss aversion. To achieve this, he asked a colleague whether he would accept a bet that paid him $200 with a probability of 0.5 and lost him $100 with a probability of 0.5. The colleague said he would not take the bet, but that he would take a hundred of them. With a hundred such bets, his expected total winnings are $5,000 and he has virtually no chance of losing any money.

The failure to accept several such bets when one considers them individually has been called "myopic loss aversion" by Benartzi and Thaler (1995).

The important ingredient in behavioral finance models is the assumption about preferences, or how investors evaluate risky gambles and assign weights to them. Kahneman and Tversky (1979) argue that decision-makers facing risky prospects consistently confuse issues of form and substance.

Thaler, (cited by Bernstein, 1996) decided to ask a few friends how much they would be willing to pay to eliminate a one-in-1, 000 chance of immediate death and how much they would have to pay to willingly accept an extra one-in-1,000 chance of immediate death. What he found was that they wouldn't pay much for the extra margin of safety but demanded huge sums to accept additional risk, which is not, strictly speaking, rational. The deviation from rationality and the continued

indifference between form and substance in investment decision making is as a result psychological biases and these behavioral anomalies violate the standard theories in economics.

Thaler (1980) described the endowment effect, founded by Kahneman, Knetsch and Thaler (1991) as the fact that people often demand much more to give up an object than they would be willing to pay to acquire it. It implies that when a person comes into possession of a good, he/she gives to it a higher value than before possessing it. The endowment effect is founded in Kahneman, Knetsch and Thaler (1991) experiment. 77 students were randomly assigned to three conditions. One group, the Sellers, where given mugs and asked whether they would be willing to sell the mugs. A second group of Buyers were asked whether they would be willing to buy the mug. The third group, called choosers, were not given a mug but were asked to choose, for the prices, between receiving a mug or that amount of money. The choosers behaved more like the Buyers than sellers. Kahneman, Knetsch and Thaler (1991) believe that the endowment effect is an implication of loss aversion.

2.4 Deriving Determinants of Individual Investors' Behaviour

In view of the theories and empirical studies in behavioural finance discussed above, some of the factors determining the individual investors' behaviour, and which this research hopes to assess, can be divided into four key groups as follows:

2.4.1 Heuristic Theory

Heuristics are defined as the rules of thumb, which makes decision making easier, especially in complex and uncertain environments (Ritter, 2003, p.431) by reducing

the complexity of assessing probabilities and predicting values to simpler judgments (Kahneman & Tversky, 1974, p.1124). Three factors relating to heuristics are; representativeness, availability bias, and anchoring (Kahneman & Tversky, 1974, p.1124-1131). Waweru et al. also list two factors named Gambler's fallacy and Overconfidence into heuristic theory (Waweru et al., 2008, p.27). These are briefly explained as follows:

2.4.1.1 Representativeness

Representativeness refers to the degree of similarity that an event has with its parent population (DeBondt & Thaler, 1995, p.390) or the degree to which an event resembles its population (Kahneman & Tversky, 1974, p.1124). Representativeness may result in some biases such as people put too much weight on recent experience and ignore the average long-term rate (Ritter, 2003, p.432). A typical example for this bias is that investors often infer a company's high long-term growth rate after some quarters of increase (Waweru et al., 2008, p.27).

Representativeness also leads to the so-called "sample size neglect" which occurs when people try to infer from too few samples (Barberis & Thaler, 2003, p.1065). In stock market, when investors seek to buy "hot" stocks instead of poorly performed ones, this means that representativeness is applied. This behavior is an explanation for investor overreaction (DeBondt and Thaler, 1995, p.390).

2.4.1.2 Availability Bias

Availability bias happens when people make use of easily available information excessively. In stock trading area, this bias manifest itself through the preference of investing in local companies which investors are familiar with or easily obtain

information, despite the fundamental principles so-called diversification of portfolio management for optimization (Waweru et al., 2008, p.28).

2.4.1.3 Anchoring

Anchoring is a phenomena used in the situation when people use some initial values to make estimation, which are biased toward the initial ones as different starting points yield different estimates (Kahneman & Tversky, 1974, p.1128). In financial market, anchoring arises when a value scale is fixed by recent observations. Investors always refer to the initial purchase price when selling or analyzing. Thus, today prices are often determined by those of the past. Anchoring makes investors to define a range for a share price or company's income based on the historical trends, resulting in under-reaction to unexpected changes. Anchoring has some connection with representativeness as it also reflects that people often focus on recent experience and tend to be more optimistic when the market rises and more pessimistic when the market falls (Waweru et al., 2008, p.28).

2.4.1.4 Gamler's Fallacy

The belief that a small sample can resemble the parent population from which it is drawn is known as the "law of small numbers" (Rabin, 2002, p.775; Statman, 1999, p.20) which may lead to a Gamblers' fallacy (Barberis & Thaler, 2003, p.1065). More specifically, in stock market, Gamblers' fallacy arises when people predict inaccurately the reverse points which are considered as the end of good (or poor) market returns (Waweru et al., 2008, p.27). In addition, when people subject to status quo bias, they tend to select suboptimal alternative simply because it was chosen previously (Kempf and Ruenzi, 2006, p.204).

2.4.1.5 Overconfidence

When people overestimate the reliability of their knowledge and skills, it is the manifestation of overconfidence (DeBondt & Thaler, 1995, p.389, Hvide, 2002, p.15). Many studies show that excessive trading is one effect of investors. There is evidence showing that financial analysts revise their assessment of a company slowly, even in case there is a strong indication proving that assessment is no longer correct. Investors and analysts are often overconfident in areas that they have knowledge (Evans, 2006, p.20).

Overconfidence is believed to improve persistence and determination, mental facility, and risk tolerance. In other words, overconfidence can help to promote professional performance. It is also noted that overconfidence can enhance other's perception of one's abilities, which may help to achieve faster promotion and greater investment duration (Oberlechner & Osler, 2004, p.3).

2.4.2 Prospect Theory

As discussed earlier, prospect theory describes some states of mind affecting an individual's decision-making processes including Regret aversion, Loss aversion and Mental accounting (Waweru et al., 2008, p.28).

2.4.3 Regret

This is an emotion which occurs after people make mistakes. Investors avoid regret by refusing to sell decreasing shares and willing to sell increasing ones. Moreover, investors tend to be more regretful about holding losing stocks too long than selling winning ones too soon (Forgel & Berry, 2006, p.107; Lehenkari & Perttunen, 2004, p.116).

2.4.4 Loss Aversion

This refers to the different levels of mental penalty people have from a similar size loss or gain (Barberis & Huang, 2001, p.1248). There is evidence showing that people are more distressed at the prospect of losses than they are pleased by equivalent gains (Barberis & Thaler, 2003, p.1077). Moreover, a loss coming after prior gain is proved less painful than usual while a loss arriving after a loss seems to be more painful than usual (Barberis & Huang, 2001, p.1248). In addition, Lehenkari and Perttunen (2004, p.116) find that both positive and negative returns in the past can boost the negative relationship between the selling trend and capital losses of investors, suggesting that investors are loss averse. Risk aversion can be understood as a common behavior of investor, nevertheless it may result in bad decision affecting investor's wealth (Odean, 1998a, p.1899).

2.4.5 Mental Accounting

This is a term referring to "the process by which people think about and evaluate their financial transactions" (Barberis & Huang, 2001, p.1248). Mental accounting allows investors to organize their portfolio into separate accounts (Barberis & Thaler, 2003, p.1108; Ritter, 2003, p.431). From own empirical study, Rockenbach (2004, p.524) suggests that connection between different investment possibilities is often not made as it is useful for arbitrage free pricing.

2.4.6 Herding Effect

Herding effect in financial market is identified as tendency of investors' behaviors to follow the others' actions. Practitioners usually consider carefully the existence of herding, due to the fact that investors rely on collective information more than private

information can result in the price deviation of the securities from fundamental value; therefore, many good chances for investment at the present can be impacted. Academic researchers also pay their attention to herding; because its impacts on stock price changes can influence the attributes of risk and return models and this has impacts on the viewpoints of asset pricing theories (Tan, Chiang, Mason & Nelling, 2008, p.61).

In the security market, herding investors base their investment decisions on the masses' decisions of buying or selling stocks. In contrast, informed and rational investors usually ignore following the flow of masses, and this makes the market efficient. Herding, in the opposite, causes a state of inefficient market which is usually recognized by speculative bubbles. In general, herding investors act the same ways as prehistoric men who had a little knowledge and information of the surrounding environment and gathered in groups to support each other and get safety (Caparrelli et al., 2004, p.223).

2.4.7 Market Factors

DeBondt and Thaler (1995, p.396) state that financial markets can be affected by investors'behaviors in the way of behavioral finance. If the perspectives of behavioral finance are correct, it is believed that the investors may have over- or under-reaction to price changes or news; extrapolation of past trends into the future; a lack of attention to fundamentals underlying a stock; the focus on popular stocks and seasonal price cycles. These market factors in turn influence the decision making of investors in the stock market. Waweru et al. (2008, p.36) identifies the factors of market that have impact on investors' decision making: Price changes, market information, past

trends of stocks, customer preference, over-reaction to price changes, and fundamentals of underlying stocks.

In general, market factors are not included in behavioral factors because they are external factors influencing investors' behaviors. However, the market factors influence the behavioral investors and rational investors in different ways, so that it is not adequate if market factors are not listed when considering the behavioral factors impacting the investment decisions (Waweru et al., 2008).

2.5 Summary and Conclusion

As asserted by Atkintoye (2006), decision making is generally a process by which an individual responds to the opportunities and threats that confront him/her by analyzing the options and making determinations or decisions about specific goals and course of action. So, investors in securities also go through a decision making process.

From the literature review, we appreciate some of the salient theories which have been developed to explain how and why people make decisions when they spend, invest, save and borrow money (Belsky and Gilovich, 1999) and the factors that influence shares investment decision making. Extensive reviews of the main theories range from theory of Risk tolerance by investors (Bernheim *et al.*, 2001), theory of Efficient market hypothesis (Fama, 1965), Modern portfolio theory (Markowitz, 1952 and theory of Behavioural finance (Tversky and Kahneman, 1974).

We further appreciate that behavioural finance seeks to understand and predict systematic financial market implications of psychological decision processes. In

addition, it focuses on the application of psychological and economic principles for the improvement of financial decision making (Olsen, 1998).

In summary, behavioral factors influencing the investors' decision-making are divided into four groups: heuristic, prospect, herding effect and market factors. These groups reflect a total picture of almost all the behavioral factors that can impact the investors' decisions at the Securities Exchanges. Therefore, they can be used in order to recognize the behaviors of individual or even institutional investors in security trading, regardless of the stock market types: frontier, emerging or developed.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

A descriptive research design was used in this study. A descriptive research includes surveys and fact-finding enquiries of different kinds and portrays an accurate profile of persons, events, or situations (Robson, 2002). The research also utilized both the qualitative and quantitative method. A qualitative method is formalized to a lesser extent and is directed at testing if the information is generally valid. The approach is characterized by the use of verbal descriptions instead of purely numerical data and aims to create a common understanding of the subject being studied.

A quantitative method on the other hand is formalized, structured and is characterized by selectivity as well as a distance from the source of information (Holmes and Sugden, 1999). The approach centralizes on numerical observations and aims at generalizing a phenomenon through formalized analysis of chosen data where statistical indicators play a central role.

The remainder of this chapter gives a brief description of the population, sample technique, data; type, sources, collection, analysis, validity and reliability.

3.2 Population

According to Mugenda and Mugenda, a population is a complete set of individuals, cases or objects with some common observable characteristics (Mugenda 1999, 41). The population of study comprised of all the individual investors who had invested and/or were holding securities listed in the NSE during the study period.

3.3 Sampling Techniques

The sampling technique used was judgemental sampling. Judgemental sampling is a non-probability sampling technique where the researcher selects units to be sampled based on knowledge and professional judgement (Castillo, 2009).

A sample of fifty (50) local individual investors from Kenya was obtained from a brokerage firm. The individual investor selection criteria, was mainly based on the determined established frequency and trend of investment transactions they have exhibited during the period of study.

3.4 Data Type and Source

The study period was the financial years 2006 to 2010 and mainly utilized secondary data sourced from extensive studies, reviews and summaries of credible financial reports and publications, to obtain the required literature review.

Secondary data refers to the existing collected and summarized material of the subject in question. This data originates from sources such as databases, literature, journals and the Internet (Wiedersheim-Paul and Eriksson, 1997). The secondary data to be used in this research refers to the existing theories in finance, more specifically behavioural finance, such as articles in journals and literature on the subject as well as Internet data sources.

The study also considered primary data from the sampled brokerage firm and individual investors. Primary data refers to data, which is collected for a specific purpose and which is required in order to complement secondary data (Wiedersheim-Paul and Eriksson, 1997).

3.5 Data Collection

An appropriately designed questionnaire meant not only for collection of primary data but in some instances for authentication of available secondary data was used alongside interviews. A questionnaire is a technique in which various persons are asked to answer the same set of questions (DeVaus, 1996).

Proper care was taken to ensure that the information needed matched the objectives, which in turn matched the data collected through the questionnaire and interviews. The basic cardinal rules of questionnaire design like using simple and clear words, the logical and sequential arrangement of questions were adhered to.

Scheduling of interviews was done well in advance, especially to the representatives of the brokerage firm, so as to facilitate the smooth flow of the research process.

3.6 Data Cleaning, Refinement and Analysis

This is mainly the whole process which starts immediately after data collection and ends at the point of interpretation and processing of data. The volume of data collected was coded and classified into similar categories dependent on the nature of interviewee response and similarity of findings. The obtained data was analyzed and processed through use of tabulations, graphs, means, standard deviation and factor analysis.

Factor analysis is a common name of multivariable statistical methods, which aim at defining the core structure in a matrix of data. It helps to analyze the structure of correlations among many variables by identifying a set of core dimensions, called factors (Ghauri & Gronhaug, 2010, p.189). In factor analysis, variables (or items) of

the questionnaire are included in homogeneous domains which represent the similar characteristics (O'brien, 2007, p.143).

To facilitate this, a computer program, SPSS version 11.5, was used for survey authoring and deployment, data mining, text analytics and statistical analysis. Preliminary reports based on the findings were generated to facilitate, reviews, refinements and subsequent finalization.

3.7 Data Validity and Reliability

Validity refers to how well the data collection and data analysis of the research captures the reality being studied (Yin, 1994). A research has high validity if the study only contains what one wants to study and nothing else (Thuren, 1991).

For the purposes of this research, validity mainly refers to the possibility of generalizing the findings among the sampled individual investors to a more broadly defined population.

On the other hand, reliability demonstrates that the operations of a study, i.e. data collection procedures, can be repeated with the same outcome (Yin, 1994). The objective is to be sure that if a later researcher followed exactly the same procedures as described by an earlier researcher and conducted the same case study all over again; the later researcher should arrive at the same findings and conclusions (Yin, 1994).

To achieve validity and reliability, pilot tests were undertaken prior to undertaking the study as well as ensuring appropriate and adequate documentation of procedures and methods applied.

CHAPTER FOUR

DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 Introduction

This chapter describes the data results of the data collected, the results of factor analysis and the extent of the respondents' participation. Subsequently, the chapter undertakes a data analysis and discussion and compares the findings with the theories in the literature review chapter. The focus is on finding the answers to the research question so as to meet the objective of the research.

As discussed under literature review, the behavioural factors affecting investment decisions are classified into four main groups namely; Heuristics, Market, Prospect and Herding. The heuristic factors are divided into two sub factors called; overconfident-gambler's fallacy and anchoring-availability bias.

The impact levels of these factors on the investment decisions of individual investors at the NSE are discussed in this chapter. The discussions are in cognizance of the answers from the respondents and the comments from the investment bank and brokerage firm officials.

4.2 Data Overview on Personal Information

The number of questionnaires hand delivered to individual investors was 50. This being individual investors who had invested at the NSE during the study period. 50 duly filled respondents' questionnaires were received hence implying a commendable respondent rate of 100%. The 50 respondent sample with the characteristics of gender,

age, marital status, education level, work and/or business experience. average income, period of trading at the NSE, investment segment, training on securities investments and the average investment amount are as discussed below:

Figure 1 below shows that the sample number of females is 17 (34%) and male 33 (66%) implying a male dominated investor trend. Issues related to gender bias may not necessarily apply as the questionnaire distribution was pegged on the individual investors' frequency of investment with their investment banks or brokerage firms.
Majority of the individual investors from the sample are between the ages of 26 – 35 since these were 19 in number (38%), followed by the age groups of between 36-45 and 46 – 55 which both had 9 investors (18%). These age groups were closely followed by the age group of 18 – 25 who were 8 (16%), while the age group with the least investors was that of 55 years and over which had 5 investors (10%).
The sample results indicate the fact that a high proportion of individual investors at the NSE are at a relatively young age of 35 years and below.

Figure 1 also indicates that majority of the investors sampled numbering 36 (72%) are married while 14 (28%) are single. This implies that married investors are more attracted to investments at the NSE. In terms of level of education and training on securities, majority of the investors sampled are highly educated, with more than 28 investors (56%) having an education level of degrees and above.
On the other hand, the training on securities traded at the NSE evens out since out of the number of investors sampled: 10 (20%) have past training, 15 (30%) are under training, whereas 25 (50%) were observed to have no training on investment securities.
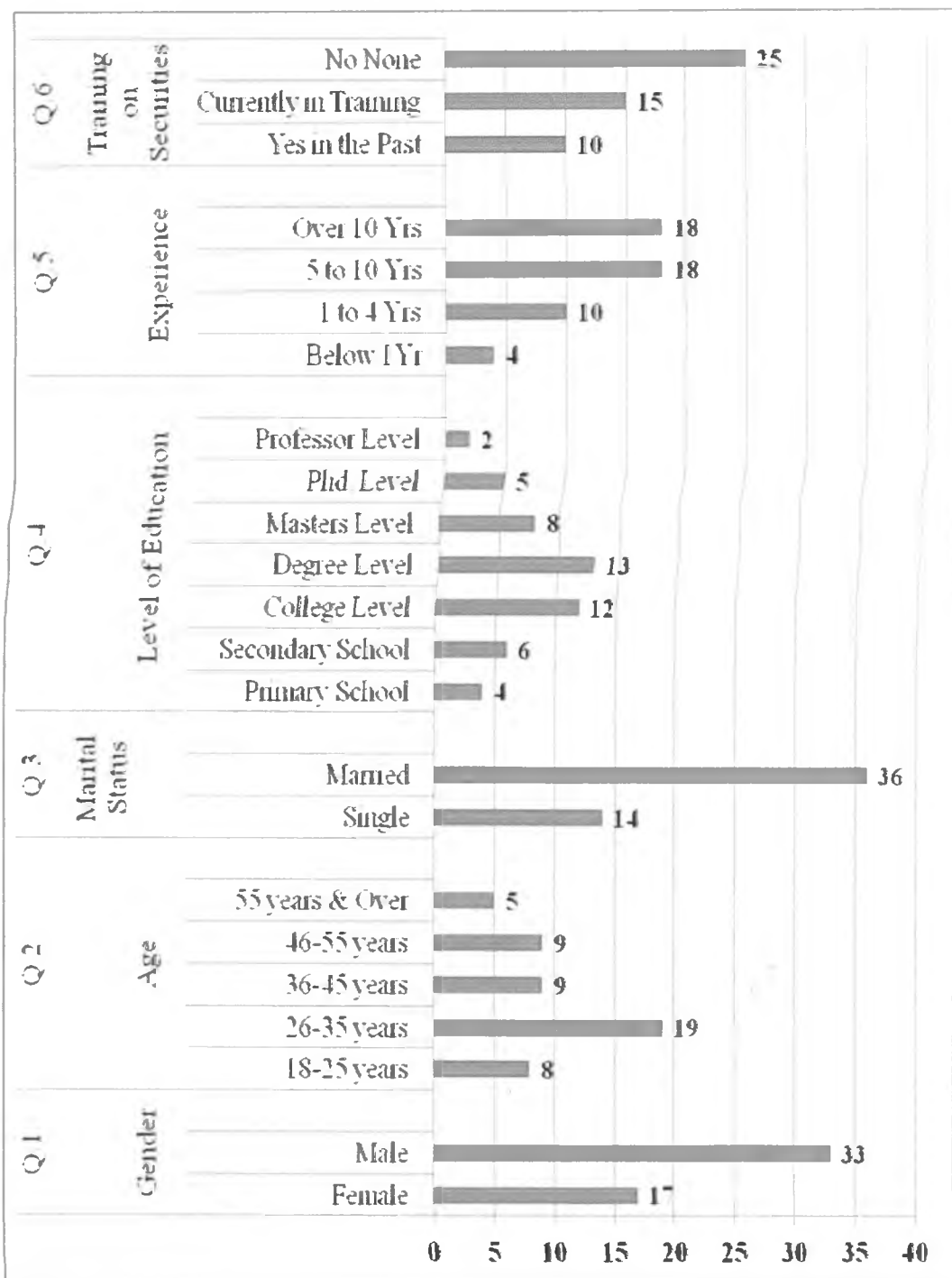
Figure 1: Sample distributions of Gender, Age, Marital Status, Education Level,
Trading Experience at the NSE and Training of Securities.
(Source: The Researcher).

Figure 1 illustrates the monthly average incomes of the investors sampled. Majority of the investors, 15 (30%), earn above KShs. 100,000/= but below KShs. 200,000/=. On the other hand, minority of the investors, 8 (16%) earn below KShs. 15,000/=. From the sample, we observe that a large proportion of the investors (15, 30%) have traded at the NSE for less than 1 year, followed by 14 investors (28%) who have traded for a period of between 3 to 5 years. A minority of the investors (4, 8%) have traded at the NSE for a period of more than 10 years.

Interesting to note is the share of investments by the investors in the various market investment segments at the NSE, which are 10 in number. The investment preference is evidenced to be varied across the various segments. Of the sampled investors, majority (9, 18%) have invested in the banking segment followed closely by commercial and services with 8 investors (16%), whereas the minority of investors (1, 2%), are in the manufacturing and allied segment.

In view of the investment segment preference, we further observe that a majority of investors' (18, 36%) had an average investment outlay ranging between KShs. 50,000/= to 200,000/=, followed by an average investment of below KShs. 15,000/= with 14 (28%) investors. From the investment sample, it is only 1 investor (2%) who had invested an average amount in excess of KShs. 1 million.
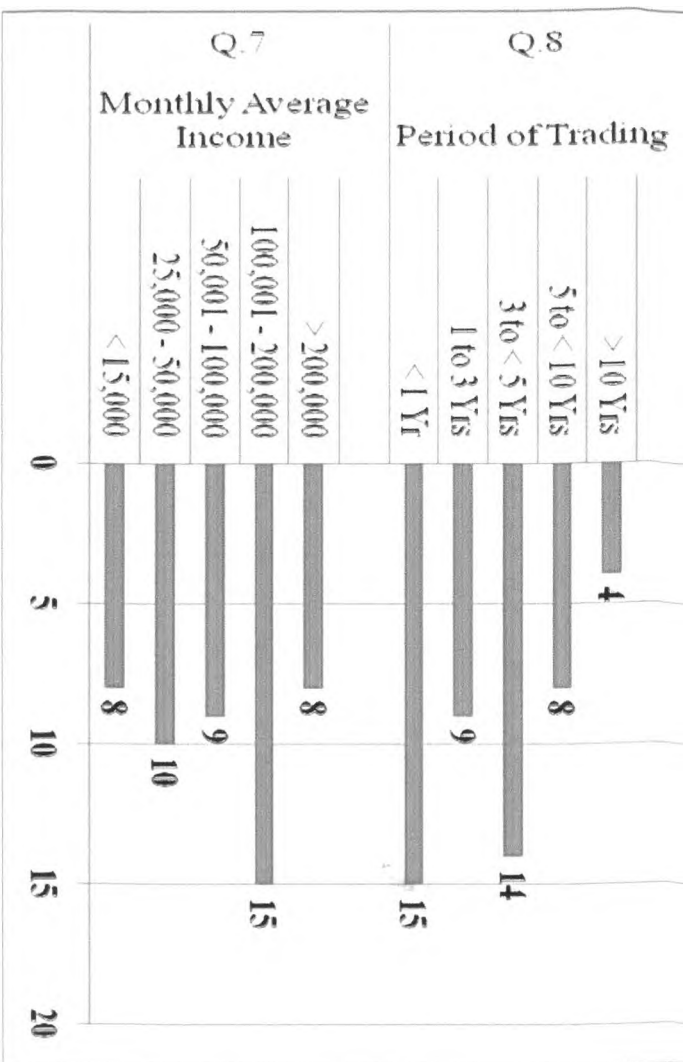
Figure 2: *Sample distributions of Average Income, Training Period, Investment Segment and Average Investment.*
(Source: The Researcher).

Q 9

Investment Segment

Segment	Value
Agri.	4
Auto. & Acss.	5
Banking	9
Comm. & Services	8
Construction & Allied	2
Energy & Petrol	7
Insurance	3
Investment	5
Manuf. & Allied	1
Telecom & Tech.	6

Q 10

Average Investment

Range	Value
< 50,000	14
50,000 - 200,000	18
200,001 - 500,000	12
500,001 - 1,000,000	5
> 1,000,000	1
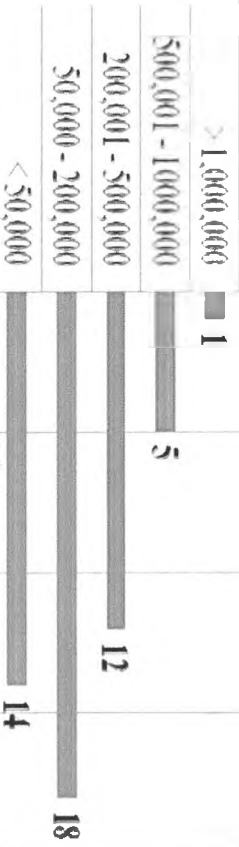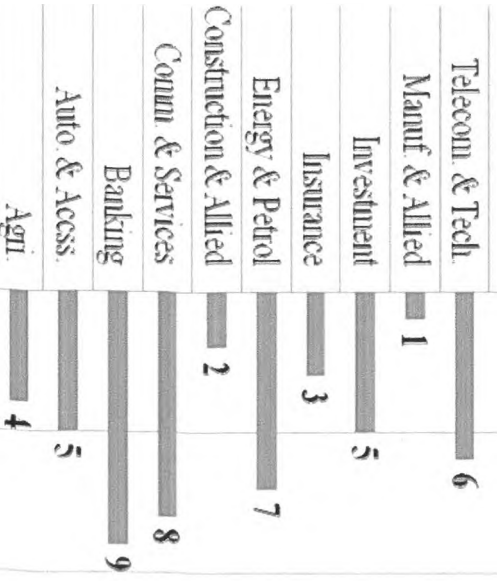
4.3 Factor Analysis on Variables Determining the Investors' Behaviour

The questions from 11 to 25 of the questionnaire have been coded as from Q11 to Q25 and designed to explore the levels of behavioral variables' determining the individual investors' behaviour on the investment decisions at the NSE. The questions ranging from 26 to 28 are coded as R26 to R28 and are designed to evaluate investors about their own investment performance satisfaction.

Factor analysis has been used for the behavioural variables (Q11 to Q25) and investment performance (Q26 to Q28) to identify the factors which these variables belong to. The requirements of factor analysis have been satisfied to reduce the variables. After some rounds of removing the unsuitable variables, the analysis results of the variables are grouped into their respective factors. The percentage of the total variance explained is 89.866%; all the factor loadings exceed 0.5. These indexes attest to the fact that the factor analysis for these variables is suitable and accepted. A comprehensive analysis of the SPSS results is as shown on **Appendix I**.

Factors	Q No.	Variables	Factor Loadings					
			F1	F2	F3	F4	F5	F6
Representativeness	11	You buy well performing securities and avoid stocks that have performed poorly in the recent past.		.765				

Representativeness	12	You use trend analysis of some representative securities to make investment decisions for all securities that you invest in.	.866					
Overconfidence & Gambler`s Fallacy	13	You believe that your skills and knowledge of the securities market can help you outperform the market.	.851					
Anchoring and Ability Bias	14	You rely on your previous experiences in the market in deciding your next investment.		.671				

Construct	No	Statement						
Overconfidence & Gambler's Fallacy	16	You are normally able to anticipate the end of good or poor market returns at the Nairobi Securities Exchange.		.688				
Prospect – Loss Aversion	18	After a prior gain, you become more of a risk taker than usual.		.874				
Prospect – Loss Aversion	19	After a prior loss, you become more risk averse than before.			.897			
Market	21	You consider carefully the price changes of securities that you intend to invest in.	.913					
Market	23	You consider past trends of securities when making your investment decision.	.954					

Market	24	You assess the market fundamentals of underlying securities before making investment decisions.	.912					
Herding	25	Investment decisions by other investors impact on your securities investment decisions.		.967				
Investment Performance	26	The rate of return of your recent securities investment meets your expectation.				.953		
Investment Performance	28	The investment decisions you have made for the period between 2006 and 2010 are satisfactory to you (including the selling, choosing				.953		

		securities, and deciding the securities volumes).						

Table 1: *Factor analysis of behavioural variables and investment performance (Source: The Researcher).*

Table 1 shows the variables of herding, prospect, and market grouped into only one respectively related factor. The heuristic variables belong to two factors; overconfidence-gambler's fallacy and anchoring-ability bias.

As such, there are five behavioural factors that impact the investment decisions of individual investors at the NSE. In the herding factor, the original variable from the questionnaire, question 25 (coded Q25) is kept after the factor analysis. Only three of four original items of market (questions 21 to 24, coded Q21 to Q24) and two out of the three prospect variables (question 18 to 20, coded Q18 to Q20) are accepted by factor analysis.

Furthermore, six out of the seven initial variables of heuristic (question 11 to 17, coded Q11 to Q17) remain after the analysis are divided into groups i.e. overconfidence-gambler's fallacy and anchoring-ability bias indicated above.

Table 1 also indicates that two out of the three original variables of the investment performance (question 26 to 28, coded Q26 to Q28) are accepted by factor analysis and both belong to one dimension. This implies that F4 (somehow Agree) is a representative factor for the three variables (Q26 to Q28). In view of this, similar

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interpretations and applications can also be made for F1 to F3 as representative factors for behavioural variables (Q11 to Q25).

4.4 Behavioural Factors and their Impact on Investment Decisions

The impact levels of behavioural variables on the investment decisions are identified by calculating the values of sample mean of each variable. Similarly, the variables of investment performance are scored by identifying the mean values of the respondents' evaluations for each variable. Only variables which meet the requirements of the indicated factor analysis are chosen to demonstrate their scores. With the use of a 6-point scale to measure the impact levels of the factor variables, the mean values of these variables can determine their impact levels on the investment decision making based on the following criteria:

No.	Mean Values Range	Interpretation
a)	< 2	Very Low Variable Impacts
b)	> 2 – 3	Low Variable Impacts
c)	> 3 – 4	Moderate Variable Impacts
d)	> 4 – 5	High Variable Impacts
e)	> 5	Very High Variable Impacts

*Table 2: Mean Values Range of Factor Variables and their Interpretation
(Source: The Researcher).*

4.4.1 Heuristic Variables Impact on the Investment Decision Making

The heuristic variables are grouped into factors i.e. overconfidence-Gambler's fallacy and Anchoring-Ability bias. The impacts of these factors are as shown in the following *Table 3* below:

Factors	No.	Variables	Mean	Std. Deviation
Representativeness	11	You buy well performing securities and avoid stocks that have performed poorly in the recent past.	5.1	0.839
Representativeness	12	You use trend analysis of some representative securities to make investment decisions for all securities that you invest in.	3.5	1.035
Overconfidence & Gambler's Fallacy	13	You believe that your skills and knowledge of the securities market can help you outperform the market.	4.2	1.737
Anchoring and Ability Bias	14	You rely on your previous experiences in the market in deciding your next investment.	4.2	2.157
Overconfidence & Gambler's Fallacy	16	You are normally able to anticipate the end of good or poor market returns at the Nairobi Securities Exchange.	2.1	0.543

Table 3: *Heuristic Variables Impact on the Investment Decision Making (Source: The Researcher).*

The Prospect analysis reveals that the underlying variables impact on the decision making of the investors. Individual investors at the NSE have a relatively high Representativeness impact (Q11 and Q12) with means of 5.1 and 3.5 respectively. The investors have a high tendency of relying on their skills and previous experiences in making investment decisions (as evidenced from Q13 and Q14, both with means of 4.2). However, the investors do not appear to be able to predict the end returns at the NSE as evidenced by Q16, with a low mean of 2.1.

4.4.2 Market Variables Impact on the Investment Decision Making

The variability of security prices, market information and past trend of securities are the market variables that impact on the individual's investment decision at the NSE. The results from market variable appraisal are as shown on *Table 4* below:

Factors	No.	Variables	Mean	Std. Deviation
Market	21	You consider carefully the price changes of securities that you intend to invest in.	5.3	1.568
Market	23	You consider past trends of securities when making your investment decision.	4.6	1.442
Market	24	You assess the market fundamentals of underlying securities before making investment decisions.	4.2	1.551

Table 4: *Variables Impact on the Investment Decision Making*
(Source: The Researcher).

The Market analysis reveals that the underlying variables impact on the decision making of the investors. Individual investors at the NSE have a relatively very high market impact (Q21) with a mean of 5.3, implying that investors consider carefully the price changes of securities that they invest in.

Furthermore, investors when making investment decisions; consider past trends of securities (Q23) and market fundamentals (Q24), both with relatively high means of 4.6 and 4.2 respectively.

4.4.3 Prospect Variables Impact on the Investment Decision Making

In the various kinds of variables under Prospect, namely; mental accounting, loss aversion and regret aversion, only loss aversion (Q18 and Q19) appears to impact on the investors' decision making at the NSE. This means investors moderately become more of risk takers (mean of 3.2) and highly risk averse (mean of 4.4) after a prior loss. The results from the Prospect variable appraised are as shown on *Table 5* below:

Factors	No.	Variables	Mean	Std. Deviation
Prospect – Loss Aversion	18	After a prior gain, you become more of a risk taker than usual.	3.2	2.01
Prospect – Loss Aversion	19	After a prior loss, you become more risk averse than before.	4.4	1.125

Table 5: *Prospect Variables Impact on the Investment Decision Making (Source: The Researcher).*

4.4.4 Herding Variables Impact on the Investment Decision Making

In the Herding dimension, the impact on investors' decision making is evidenced to be relatively very low with a mean of 2.3 (Q25). This implies that investment decisions by other investors are of less influence to investors when making investment decisions at the NSE. The results from the Herding variable appraised are as shown on *Table 6* below:

Factors	No.	Variables	Mean	Std. Deviation
Herding	25	Investment decisions by other investors impact on your securities investment decisions.	2.3	1.199

Table 6: Herding Variables Impact on the Investment Decision Making
(Source: The Researcher).

4.5 Investment Performance

The results from the appraisal of the Investment Performance, indicate that the investors at the NSE are not satisfied with the returns on their investments (Q26, mean = 1.56) nor are they satisfied with the investment decisions they have made during the period of study (Q28, mean = 1.56). The results from the Investment Performance appraisal are as shown on *Table 7* below:

Factors	No.	Variables	Mean	Std. Deviation
Investment Performance	26	The rate of return of your recent securities investment meets your expectation.	1.56	0.501
Investment Performance	28	The investment decisions you have made for the period between 2006 and	1.56	0.501

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		2010 are satisfactory to you (including the selling, choosing securities, and deciding the securities volumes).		

Table 7: *Investment Performance Appraisal*
(Source: The Researcher).

4.6 Summary and Interpretation of Findings

This section summarizes and interprets the findings of the study as analyzed above and compares the analysis of these findings to the literature review discussed earlier under chapter three of this study. The findings summarized and interpreted are in relation to the variables relating to heuristic, market, prospect and herding. The results of the investment performance are also reviewed. The summary and interpretation of findings for the study are therefore as discussed below:

4.6.1 Heuristic Variables

The variables tested to have the acceptable reliability and consistency of measurement under heuristics are; representativeness, overconfidence-gambler's fallacy and anchoring-ability bias.

4.6.1.1 Representativeness

This variable has the highest mean at 5.1, which is a very high impact. The results imply that investors' at the NSE buy well performing securities and avoid those that have performed poorly in the past. However under another dimension of representativeness, a moderate mean of 3.5 is achieved implying that a considerable

number of investors at the NSE use trend analysis of some representative securities to make investment decisions for the securities that they invest in.

4.6.1.2 Overconfidence-Gambler's Fallacy

There appears to be a mixed reaction in regard to the dimension of overconfidence-gambler's fallacy. From the result findings, a high mean of 4.2 indicates that investors at the NSE believe that their skills and knowledge of the securities market can help them outperform the market. On the other hand, with a relatively low mean of 2.1; individual investors are not able to anticipate the end of a good or poor market return at the NSE.

4.6.1.3 Anchoring and Ability Bias

In terms of anchoring-ability bias, a high impact mean of 4.2, shows that investors at the NSE rely on their previous experiences in the market in deciding their next investment. This implies therefore that a considerably high number of investors use techniques to analyze and predict the changes of securities prices in the future based on their (securities) previous prices.

4.6.2 Market

The research findings indicate that the market impact has the highest influence on the investment decision making among the investors at the NSE. The market variables tested to have the acceptable reliability and consistency of measurement, ranging from Q21 – Q24, indicated high means of 5.3, 4.6 and 4.2 respectively.

These results are indicative that investors: consider carefully price changes of securities that they intend to invest in (5.3), they consider past trends of securities

when making their investment decisions (4.6) and they assess the market fundamentals of underlying securities before making investment decisions (4.2).

4.6.3 Prospect

The prospect factor comprises of three factors; loss aversion, regret aversion and mental accounting. Of these three factors, mental accounting and regret aversion did not evidence the acceptable reliability and consistency of measurement and hence concluded not to have an impact on investors' decision making at the NSE.

However loss aversion impacts on the decision making of the investors at the NSE. This is because at moderate mean of 3.2, investors at the NSE become more of risk takers after a prior gain and more risk averse than before after a prior loss at a high mean rate of 4.4.

4.6.4 Herding

The research findings indicate that herding variables have a low impact on the investors' decisions at the NSE, given a relatively low mean of 2.3. This does not strongly attest to Shiller's, 2000 assertion that a fundamental observation about the human society is that people who communicate regularly with one another think similarly and that part of the reasons people's judgments are similar at times is that they are recreating to the same information. Hence his (Shiller's) conclusion that the social influence has an immense power on individual's judgments.

4.6.5 Investment Performance

The results of the investment performance appraisal, indicates that the individual investors at the NSE have very low satisfaction rates with their rate of return on their investments given the mean rate of 1.56. Furthermore, a similar mean rate of 1.56 on their investment decisions during the period of study indicates that these too have not been satisfactory, implying that the various investment decisions in regard to choice, purchase, sale etc have been below the utility satisfaction threshold.

As would be expected, the results from the two investment performance variables are correlated and moving in the same direction. This is because a low rate of return on investment would only be expected to yield similarly low satisfaction on the individual investor's decision satisfaction.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

All the research findings are summarized in this chapter. These comprise of the behavioural factors that impact on the individual investor's decisions and performance. This chapter further gives valuable recommendations to the individual investors and other stakeholders at the NSE and important inputs in regard to future studies in this topic area.

5.2 Conclusions

The study has successfully been completed by achieving the research objective and answering the research question: What are the factors that determine the behaviour of individual investors' at the NSE?

From the data results, analysis and discussion (chapter five) we can conclude that there are four behavioural factors that determine the investment decisions of individual investors at the NSE and these are: Heuristics, Market, Prospect and Herding. Heuristic factors comprise of: representativeness, overconfidence-gambler's fallacy and anchoring-availability bias. Prospect factor involves loss aversion. Market factor comprises of variables of price volatility, market information and past trends of securities performance. Therefore, the behavioural factors evidenced to impact the individual investors the most at the NSE, by virtue of the reported means, are: Heuristics (representativeness, mean = 5.1) and Market (price changes, mean = 5.3).

In terms of the investment performance satisfaction, the individual investors at the NSE are not satisfied by the rate of return on their investments. The investors are also not satisfied with the investment decisions they have made on their securities investment. This is evidenced by the reported very low level mean of 1.56, in both cases.

In regard to the results of the individual investors' personal information, we appreciate that age and level of education are an influencing factor. This can be deduced from the high number of young investors in the sample (below 35 years) who have invested in securities and also the high level of education (30%) of the investors sampled. We further note that majority of the investors are male (66%) implying that most male investors are attracted to investments at the NSE. Furthermore, a majority of the investors sampled (72%) are in the married category probably implying that married couples are savers via investment in securities. Monthly income is not evidenced to be a significant influencing factor, given that majority of the sampled investors (54%) are income earners of below KShs. 100,000/=.

5.3 Contributions to the Study

Further to the discussion under the significance of this study, this research draws an overall picture of impacts of behavioral factors on the investment decisions and performance of individual investors at the NSE. The study is based on the approaches of behavioral finance, which is different from prior studies mostly undertaken in other countries that are normally based on traditional finance.

Behavioural finance and its measurements are relatively new to investors in Kenya, in view of this, the study tries to use a full set of behavioral factors to assess their

impacts on individual investors at the NSE. This study increases the numbers of application of behavioral finance in frontier and emerging securities markets.

The 6-point measurements are tested for their consistency and reliability by Factor Analysis which proves that behavioral finance can be used for the NSE. Besides, the measurements of investment performance in this research are designed to ask the investors to evaluate their own performance based on the criteria; the investment return rate and the level of investment satisfaction.

This study suggests that 6-point Likert measurements can be used to test the applications of behavior finance at the Securities Exchange. Beside the individual investors who may benefit directly from the findings of this study, the security organizations can use these findings as reference for their analysis and prediction of the trends of the security market. Investment companies, which raise capital from Individual investors can use the results of this study to have good decisions to attract the investors to buy their securities.

5.4 Limitations of the Study

In view of the data validity and reliability discussed above, it is reasonably believed that the sample and the research design adopted are sufficient to achieve the desired research objectives. However, the proposed research, like with any other study, is susceptible to variety of underlying challenges. Among them being: resource constraints comprising of time and money considerations.

Although the sample size is moderate (N=50 individual investors) and satisfies the requirements of statistical methods, a larger sample size in future researches is advised so as to more accurately reflect a realistic situation of the Kenyan NSE.

The questionnaire is susceptible to the subjective opinions of the respondents. It is appreciated and expected that, when asking about previous events extending into the past, individual investors' responses are exposed to their subjective ability to recollect specific past events, persuasions and prevailing circumstances then. The respondents may also have changed their perception of past events according to the actual outcome of these events, particularly concerning questions regarding time periods during and after bullish and bearish market situations in the NSE.

There is also the aspect of hindsight bias which in this context refers to the chance that the answers given by the respondents can be biased toward what they think would have been the right course of action if they were given the same choice today instead of reflecting the actual decision that would have been made in the past. With the appreciation of the significance of the study, the analysis and interpretations of this research shall take cognizance of these research concerns in arriving at the appropriate summaries and conclusions.

5.5 Suggestions for Future Studies

It is necessary to have further future researches to confirm the findings of this study with a larger sample size and a more diversity of respondents. These future researches are important especially where aimed at enhancing the measurements of behavioural finance. The existing as well as emerging behavioural studies should be applied to further explore the factors impacting on decisions of investors at the NSE and how such results compare universally with similar results undertaken in other Securities Exchanges.

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APPENDICES

APPENDIX I

Factor Analysis

Descriptive Statistics

Question	Mean	Std. Deviation	Analysis N
Q11	5.1000	.83910	50
Q12	3.5000	1.03510	50
Q13	4.2000	1.73793	50
Q14	4.2000	2.15710	50
Q15	4.3000	1.01519	50
Q16	2.1000	.54398	50
Q17	3.9000	1.14731	50
Q18	3.2000	2.01018	50
Q19	4.4000	1.12486	50
Q20	3.2000	1.08797	50
Q21	5.3000	1.56818	50
Q22	5.6000	.49487	50
Q23	4.6000	1.44279	50
Q24	4.2000	1.55183	50
Q25	2.3000	1.19949	50
Q26	1.5600	.50143	50
Q27	1.4600	.50346	50
Q28	1.5600	.50143	50

Rotated Component Matrix(a)

Question	Component 1	Component 2	Component 3	Component 4
Q23	.954			
Q21	.913			
Q24	.912			
Q12	.866			
Q13	.851			
Q15	-.811			
Q25		.967		
Q18		.874		
Q17		-.861		
Q22		-.848		
Q11		.765		
Q16	.521	.688		
Q14	-.655	.671		
Q19			.897	
Q20			-.845	
Q26				.953
Q28				.953
Q27				-.696

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 5 iterations.

Appendix I: Factor Analysis (Continued)

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.554	36.410	36.410	6.554	36.410	36.410	5.565	30.917	30.917
2	4.678	25.987	62.396	4.678	25.987	62.396	5.298	29.432	60.349
3	2.775	15.414	77.811	2.775	15.414	77.811	2.878	15.987	76.336
4	2.170	12.055	89.866	2.170	12.055	89.866	2.435	13.530	89.866
5	.717	3.981	93.847						
6	.650	3.610	97.457						
7	.458	2.543	100.000						
8	3.658E-16	2.032E-15	100.000						
9	2.696E-16	1.498E-15	100.000						
10	9.217E-17	5.120E-16	100.000						
11	5.349E-17	2.972E-16	100.000						
12	1.180E-17	6.557E-17	100.000						
13	-1.170E-16	-6.498E-16	100.000						
14	-2.713E-16	-1.507E-15	100.000						
15	-4.418E-16	-2.454E-15	100.000						
16	-6.319E-16	-3.511E-15	100.000						
17	-8.470E-16	-4.706E-15	100.000						
18	-1.636E-15	-9.091E-15	100.000						

Extraction Method: Principal Component Analysis.

APPENDIX II

Douglas Ndungu
Research Team Leader
MSc. Finance
University of Nairobi
NAIROBI

Date:………..October, 2012
Ref: RMIF/DFI-513/10.12

The Corporate Affairs Manager
………………….Investment Brokerage
P.O. Box ………………
NAIROBI

Dear Sir/Madam.

RE: REQUEST FOR A RESEARCH STUDY INTERVIEW APPOINTMENT

I am a Master of Science in Finance (Finance & Investment) student at the University of Nairobi as well as a researcher in the finance field. Currently, I am heading a research team seeking to undertake a research that focuses on the Determinants of Individual Investors' Behaviour in the Nairobi Securities Exchange.

It is hoped that the findings of the study will not only provide the much needed insight into some of the local investor's behavioural influencing factors but also explain the extent to which these are prevalent among individual investors.

We have considered your esteemed investment bank to constitute our study sample amongst a few other investment brokerage firms in the country. We are therefore, kindly requesting for a preliminary audience with you, at your earliest convenience, so as to discuss with you in detail the specifics of the information and support we seek from you and the modalities of attaining it so as to successfully conduct the study.

We thank you in advance as we await your positive response.

Yours Sincerely,

Douglas Ndungu
MSc. Finance
University of Nairobi (Main Campus)

APPENDIX II

Questionnaire:

I am a Masters of Finance student from the University of Nairobi undertaking a Research Project in Finance.

My research focuses on the Determinants of Individual Investors' Behaviour in the Nairobi Securities Exchange.

The questionnaire consists of **28** questions and should take about **12** to **15** minutes to answer.

In each question, choose the alternative that best reflects you own opinion or experiences. Your answers will greatly help in contributing to the research on financial-decision making.

All answers can be handled anonymously and confidentially.

A. Personal Information

1. Gender:
   a) Male   ☐
   b) Female   ☐

2. Please choose your relevant age group (in years):
   a) 18 - 25   ☐
   b) 26 – 35   ☐
   c) 36 – 45   ☐
   d) 46 – 55   ☐
   e) 55 and over ☐

3. Marital status:
   a) Single   ☐
   b) Married   ☐

4. Which level of Education relates to you?

   a) Primary School ☐

   b) Secondary School ☐

   c) College Level ☐

   d) Degree Level ☐

   e) Masters Level ☐

   f) Phd. Level ☐

   g) Professor Level ☐

5. Please tick your years of work and/or business experience:

   a) Below 1 year ☐

   b) 1 to 4 years ☐

   c) 5 to 10 years ☐

   d) Over 10 years ☐

6. Indicate whether you have any formal training on securities investment:

   a) Yes in the past ☐

   b) Currently in Training ☐

   c) No None ☐

7. Please tick the category of income (in Kenya Shillings) that best approximates your monthly average income:

   a) Under 15,000 ☐

   b) 25,000 to 50,000 ☐

   c) 50,001 to 100,000 ☐

   d) 100,001 to 200,000 ☐

   e) Above 200,000 ☐

8. For how long have you traded at the securities market?

   a) Under 1 year   ☐

   b) 1 to under 3 years   ☐

   c) 3 to under 5 years   ☐

   d) 5 to under 10 years   ☐

   e) Over 10 years   ☐

9. Which investment segment at the Securities Exchange did you invest in or held securities investment? (if many, please indicate the main investment segment):

   a) Agricultural   ☐

   b) Automobiles & Accessories   ☐

   c) Banking   ☐

   d) Commercial & Services   ☐

   e) Construction & Allied   ☐

   f) Energy & Petroleum   ☐

   g) Insurance   ☐

   h) Investment   ☐

   i) Manufacturing & Allied   ☐

   j) Telecommunication & Technology   ☐

10. What is the average amount of money that you invested in the Nairobi Securities Exchange (NSE) between the years 2006 and 2010?

    a) Under KShs. 50,000/=   ☐

    b) KShs. 50,000/= to 200,000/=   ☐

    c) KShs. 200,001/= to 500,000/=   ☐

    d) KShs. 500,001/= to 1000,000/=   ☐

    e) Over KShs. 1,000,000/=   ☐

B. Behavioural Factors Impacting on the Investment Decisions

Please evaluate and indicate to what extent the following behavioural factors have impacted influenced your investment decision making.

Use the following scale: 1 = Fully Disagree; 2 = Highly Disagree; 3 = Somehow Disagree; 4 = Somehow Agree; 5 = Highly Agree; 6 = Fully Agree.

Q/No.	Influencing Factors	1	2	3	4	5	6
11.	You buy well performing securities and avoid stocks that have performed poorly in the recent past.						
12.	You use trend analysis of some representative securities to make investment decisions for all securities that you invest in.						
13.	You believe that your skills and knowledge of the securities market can help you outperform the market.						
14.	You rely on your previous experiences in the market in deciding your next investment.						
15.	You forecast the changes in securities prices in the future based on the recent securities prices.						
16.	You are normally able to anticipate the end of good or poor market returns at the Nairobi Securities Exchange.						
17.	You consider information from your close friends and relatives as the reliable reference for your investment decisions.						
18.	After a prior gain, you become more of a risk taker than usual.						
19.	After a prior loss, you become more risk averse than before.						
20.	You avoid selling securities that have decreased in value and readily sell those that have increased in value.						

Q/No.	Influencing Factors	1	2	3	4	5	6
21.	You consider carefully the price changes of securities that you intend to invest in.						
22.	Market information is important for your securities investment.						
23.	You consider past trends of securities when making your investment decision.						
24.	You assess the market fundamentals of underlying securities before making investment decisions.						
25.	Investment decisions by other investors impact on your securities investment decisions.						

C. Results of your Investment Performance

Please give your opinions about the levels of agreement for the following statements:

Use the following scale: 1 = Fully Disagree; 2 = Highly Disagree; 3 = Somehow Disagree; 4 = Somehow Agree; 5 = Highly Agree; 6 = Fully Agree.

Q/No.	Statements	1	2	3	4	5	6
26.	The rate of return of your recent securities investment meets your expectation.						
27.	The rate of return of your investment is equal to or higher than the average return rate of the market.						
28.	The investment decisions you have made for the period between 2006 and 2010 are satisfactory to you (including the selling, choosing securities, and deciding the securities volumes).						