THE EFFECT OF BEHAVIOURAL FACTORS ON INDIVIDUAL INVESTOR CHOICES AT THE NAIROBI SECURITIES EXCHANGE

BY

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OCTOBER, 2014
DECLARATION
I the undersigned do hereby declare that the work contained in this Master of Science in Finance Degree Research Project is my own 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

I dedicate this project to my family & friends who supported me. May the Almighty God bless you all.
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LIST OF ABBREVIATIONS

CAPM   Capital Asset Pricing Model
CRSP   Center for Research in Security Prices
EMH    Efficient Market Hypothesis
IPO    Initial Public Offer
MPT    Modern Portfolio Theory
NASI   NSE All Share Index
NSE    Nairobi Securities Exchange
NYSE   New York Securities Exchange
SPSS   Statistical Package for the Social Sciences
USA    United States of America
The study of individual investors’ behavior, based on the behavioral finance theory, is of interest and a relatively important phenomenon in Kenya. Behavioral finance theories are based on psychological attempts aimed at explaining how sentiments and cognitive errors influence the individual investors’ behaviors, especially in regard to the investment decision making process. The objective of this study is to determine the effects of behavioral factors on individual investor choices at the NSE. There are few studies relating to the individual investors’ behavior at the NSE. This research examines some of the existing theories relevant to the behavioral factors and behavioral finance under the theoretical literature review. Descriptive design study was used.

Data for the study is primary data collected by the use of interviews and questionnaires administered to individual investors at the NSE through the sixty three individual investors selected from the twenty one listed investment and stock brokerage firms where 93.65% response rate was registered. Cronbach’s Alpha Test was used to test the internal consistency reliability of measurements, which are in formats of continuous variables 5-point Likert measurements. Analysis was done using Statistical Packages for Social Scientists. Descriptive statistics and correlation analysis were used to summarize the research findings. The findings of the study established factors that determine the individual investor behavior at the NSE. These factors were established to be varied, with herding, loss aversion, regret aversion, price changes, market information ,past trends of stocks, overconfidence and anchoring being highly affected by their decisions while Mental Accounting emerging as the least significant factor determining the individual investors’ behavior with a low mean . Future studies are recommended to confirm the findings of this research on behavioral finance related to individual investors’ decision making processes. Securities and investment firms should use these findings as reference for their analysis and prediction of the trends of the security market. Investors should be educated in order to manage and balance the effect of behavioral influences with respect to decision making. Investors should also carefully consider and carry out research before making investment decisions and should not be carried away by their earlier loss for their future investment decisions.
CHAPTER ONE
INTRODUCTION

1.1 Background of the Study
Behavioral finance is the study of the influence of psychology on the behavior of financial practitioners and the subsequent effect on markets (Sewell, 2005). It attempts to better understand and explain how emotions and cognitive errors influence investors. Much of economic and financial theories presume that individuals act rationally and consider all available information in the investment decision-making process. Bernstein (1996) notes that there is evidence to show repeated patterns of irrationality, inconsistency and incompetence in the way human beings arrive at decisions and choices when faced with uncertainty. There is also emerging evidence that institutional investors behave differently from individual investors, in part because they are agents acting on behalf of the ultimate investors.

Behavioral finance theories are based on cognitive psychology, which suggests that human decision processes are subject to several cognitive illusions. These cognitive illusions can be grouped into two classifications: illusions due to heuristic decision processes and illusions caused by the adoption of mental frames, which are conveniently grouped in the prospect theory. These two categories form the basis of the behavioral theories: (Waweru, 2008).

In finance and economics, behavioral biases refer to the tendency of decision making that result in irrational financial decisions caused by faulty cognitive reasoning and/or reasoning influenced by emotions (Pompian, 2012). The interest in biases caused by
faulty cognitive reasoning or emotions that affect individual financial outcomes has seen the emergence of research on behavioral finance as a concept. Sewell (2005) construed behavioral finance as the study of the influence of psychology on the behavior of financial practitioners and the subsequent effect on markets. Singh, R. (2010) assumed that the information structure and the characteristics of market participants systematically influence individuals' investment decisions as well as market outcomes.

Investment in the stock market (equity investment) is the buying and holding of shares of stocks on a stock market by individuals and funds in anticipation of income from dividends and capital gain as the value of the stock rises. The buying of equity can be done by direct holding where an investor places a buy order through his broker or this can be done via pooled investment vehicles; many of which have quoted prices that are listed in financial newspapers. (www.bdafrica.com, 2011).

1.1.1 Behavioral Factors

Behavioral finance considers how various psychological traits affect how individuals or groups act as investors, analysts, and portfolio managers (Brown & Reilly, 2004). Heuristics can be defined as the use of experience and practical efforts to answer questions or to improve performance. Raines & Leathers (2011) argue that when faced with uncertainty, people rely on heuristics or rules of thumb to subjectively assess risks of alternatives, which reduces the complex tasks of assessing probabilities and predicting values to simpler judgmental operations.
Behavioral factors according to Shleifer (2000) can be measured by relating the usual assumptions of traditional finance by incorporating observable, systematic and very human departures from rationality into models of financial markets and behavior. By combining psychology and finance, researchers hope to better explain certain features of securities markets and investor behavior that appear irrational. They include: loss aversion, cognitive dissonance, mental accounting, representativeness, anchoring, overconfidence and herding behavior.

Cognitive dissonance refers to the psychological conflict resulting from incongruous beliefs and attitudes held simultaneously. This concept was introduced by psychologist Leon Festinger in the late 1950s. He and other researchers showed that when confronted with challenging new information most people seek to preserve their current understanding of the world by rejecting, explaining away, or avoiding the new information or by convincing themselves that no conflict really existed (Chandra, 2008).

Mental accounting describes the tendency of people to place particular events into different mental accounts based on superficial attributes (Shiller, 1997). Shiller (1997) suggests that investors place their investments into arbitrarily separate mental compartments and react separately and in different ways to the investment based on which compartment they are in.

Heuristics are rules of thumb, which people use to make decisions in complex, uncertain environments. Decision-making is not strictly rational where all relevant information is
collected and objectively evaluated; rather the decision-maker takes mental shortcuts (Kahneman and Tversky, 1979). Examples of illusions resulting from the use of heuristics include: Representativeness, Anchoring, and Overconfidence.

Representativeness can manifest itself when investors seek to buy “hot” stocks and to avoid stocks, which have performed poorly in the recent past. Investors may form judgments’ based on patterns that are simply random in a data and not representative of the facts. This behavior could provide an explanation for investor overreaction (DeBondt and Thaler, 1995).

Anchoring arises when a value scale is fixed (anchored) by recent observations. Investors usually use their purchase price as a reference point (Kahneman and Riepe, 1998) and react to changes in price relative to the initial purchase price. According to Shiller (1998), prices of today are often determined merely by those of the past.

Overconfidence according to Ritter (2003) manifests itself when there is little diversification because of a tendency to invest too much in what one is familiar with. Selecting common stocks that will outperform the market is a difficult task in that predictability is low and feedback is noisy thus, stock selection is the type of task for which people are most overconfident (Barber and Odean, 2001). Overconfidence explains why portfolio managers trade so much, why pension funds hire active equity managers, and why even financial economists often hold actively managed portfolios-they all think they can pick winners (DeBondt & Thaler, 1994).
Graham (1999) defined herding behavior as often said to occur when many people take the same action, perhaps because some mimic the actions of others in making investment. It is where individuals are led to conform to the majority of the individuals present in the decision making environment by following their decisions (Chelangat, 2011). Herd behavior can lead people astray when they follow blindly. According to Prechter (1999), herd behavior in humans results from impulsive mental activity in individuals responding to signals from the behavior of others. Due to the fact that more and more information is spread faster and faster, (Fromlet, 2001), life for decision makers in financial markets has become more complicated. According to Johnson et al (2002) the interpretation of new information may require heuristic decision-making rules.

1.1.2 Individual Investor Choices

Investment according to Bodie et al. (2008) is the current commitment of money or other resources in the expectation of reaping future benefits. Investment management is the professional management of investment funds for individuals, families and institutions. It can be done either by the consumer or a professional and can be passive, active, aggressive or conservative. The level of return will depend on internal factors and characteristics such as type of investment, quality of management, and how the investment is financed (Griffith, 1990).

Investors have difficulties making long term financial decisions for reasons such as shortsightedness, a lack of financial sophistication and inability to self regulate (Winchester et al.2011). The individual investors can employ a team of investment
professionals under the direction of a portfolio or a fund manager. These individuals work full time on studying the markets, market trends, and individual stocks (Fischer & Jordan, 1995). Investment decisions should be guided by predefined asset allocation decisions that incorporate an acceptable level of risk for the overall portfolio and are consistent with the goals and time horizon of the investor. The willingness to act prudently and maintain an appropriately balanced investment portfolio in the face of falling security prices requires the ability to avoid behavioral impulses when making long term asset allocation decisions (Winchester et al. 2011).

A number of studies have been conducted pointing to market anomalies that cannot be explained with the help of financial theories, such as abnormal price movements in connection with IPOs, mergers, stock splits, and spin-offs (Johnson et al. 2002). The high trading volume on organized exchange is perhaps the most embarrassing fact to standard finance paradigm. High volume is not produced by amateur investors but the average turnover for institutional investors is much higher than the rate for individuals (DeBondt & Thaler, 1994).

Investors have been shown not to react logically to new information but to be over confident to alter their choices when given superficial changes in the presentation of investment information (Olsen, 1998). These anomalies suggest that the underlying principles of rational behavior underlying the efficient market hypothesis are not entirely correct, and that we need to look at other models of human behavior, as have been studied in other social sciences (Shiller, 1998).
1.1.3 Effect of Behavioral factors on Individual Investor Choices

Individual investments behavior is concerned with choices about purchases of small amounts of securities for his or her own account (Nofsinger and Richard, 2002). The different behavior in the individual investors is caused by various factors which compromise the investor rationality. Rational investors will use diversification to optimize their portfolios according to Modern Portfolio Theory (MPT). MPT proposes how a risky asset should be priced. The basic concepts of the theory are Markowitz diversification, the efficient frontier, capital asset pricing model, the alpha and beta coefficients, the capital market line and the securities market line (Sharpe, 1964). Most economic and financial models explicitly or implicitly assume that investors are efficient and rational. Investors are always assumed to make the best choices for themselves nevertheless; the choice does not provide an adequate foundation for a descriptive theory of decision making.

Rational investors are evident in many theories that include: the Efficient Market Hypothesis (EMH), which value securities for its fundamental value (i.e., net present value of its future cash flows, discounted using risk characteristic); quickly respond to new information and bid up when news is good and down when the news is bad. EMH assumes that securities price incorporate all available information almost immediately and price adjust to new levels corresponding to the new present value of cash flow. Rational investors assume that it is impossible to earn superior risk adjusted return (Fama, 1970).
Tversky and Kahneman (1986) argued that the deviation of actual behavior from the normative model are too widespread to be ignored, too systematic to be dismissed as random error, and too fundamental to be accommodated by relaxing the normative system. This is in line with other scholars who have questioned rationality of investors. Further in the study by Waweru et al (2008), institutional investors were found to have relied on fundamental analysis as the most widely used decision making model at the NSE. Heuristic processes and prospect theory were found evident with heuristics strongly dominating prospect theory. Market information and the fundamentals of the underlying stock were found to have the highest impact on the investment decision making. Investors want to find out the information about the financial products, return, risk involved and tax-benefit. Investors collects the information from different sources like Personal and public sources.

Waweru et al. (2008) investigated the role of behavioral finance and investor psychology in investment decision-making at the Nairobi Stock Exchange with special reference to institutional investors. The population in the study included all the 40 institutional investors operating at the NSE as on 30 June 2004. This covered the banks, mutual funds, pension funds, endowment schemes, investment banks, companies, collective investment schemes, and insurance companies. The study established that behavioral factors such as representativeness, overconfidence, anchoring, gambler’s fallacy, availability bias, loss aversion, regret aversion and mental accounting affected the decisions of the institutional investors operating at the NSE.
1.1.4 Individual Investors at Nairobi Securities Exchange

Investor behavior is defined as how the investors judge, predict, analyze and review the procedures for decision making, which includes investment psychology, information gathering, defining and understanding, research and analysis. Investors need to make rational decisions for maximizing their returns based on the information available by taking judgments that are free from emotions (Brabazon, 2000). Investor behavior is characterized by overexcitement and overreaction in both rising and falling security markets and various factors influences their decision making processes.

At the NSE, security price move in excess of the fundamental market expectations. The most recent being the IPO where the Safaricom shares were oversubscribed by almost twice and some investors went to the extent of taking loans to purchase the shares which resulted to losses as the share price did not increase as expected. This is a case of herding in that the investors bought the shares because everybody did. This is also witnessed during the corporate earnings announcement. When the performance of the company is good the share price goes up for a short while then they fall in prices. This is attributed to disposition effect where investors rush to sell the stock when the prices are up in the fear that it may go down.

A study done by Chelangat (2011) showed that male investors are more overconfident as compared to the female investors. They believe in the precision of their knowledge. Female investors are affected more by herding where they seek advice from friends and observe what others are doing. They are also prone to regret aversion bias. Other biases
affected both the male and female investors alike, the differences in effect being negligible.

The study also revealed that the age of investors matters in the way they make their investment decisions. The older investors who have much experience at the NSE were more rational in making investment decisions and they displayed overconfidence bias as they believe they can predict the market correctly. Younger investors are prone to herding as the trend in the market seems to affect their decisions. They are also prone to other biases more than the older investors.

Investigations into the IPO market in Kenya by Fredrick (2012) showed that, on average, IPOs provided abnormal return in the immediate aftermarket to investors who purchased at the initial offering. This for instance led to an oversubscription of IPOs, some of whose aftermarket performance has since been dismal. The Capital Investment Group (2008) provided a snapshot of the inconsistency in IPO short run returns to investors. The analysis showed that investors anticipated abnormal returns as evidenced in previous IPOs like Ken Gen and rushed for IPOs like Safaricom which led to an oversubscription. Eveready on the other hand did not last long enough, leaving millions of investors with depreciated stocks. This suggests that investor decisions were potentially influenced by cognitive and emotional biases that led to their faulty investment decisions as explained by behavioral finance theorists.
Olwenyet et al., (2012) investigated the effect of stock market experience on risk tolerance and in their finding, investors with previous experience in the market were found to be more tolerant to risk compared to those without experience due to previous exposure to market volatility to which newcomers may be reluctant to risk.

1.2 Research Problem

There is huge psychology literature documenting that people make mistakes in the way they think in that they are overconfident and put too much weight on recent experience. This preference may create distortion. The field of behavioral finance attempts to investigate the psychological and sociological issues that influence investment decision making process of individuals and institutions (Subrahmanyam, 2007).

The Kenyan market has recently witnessed tremendous rise in the number of companies applying to be listed on the Nairobi Securities Exchange. Investors on the other hand have responded positively as it is evidenced through repeated oversubscriptions of shares. However many investors have had to endure the pain of losses due to following the masses and being overconfident as it was exemplified in the Safaricom and Eveready Initial Public Offers.

Researchers have however proved that due to the market inefficiencies, the standard finance models employed by market practitioners have failed to account for the market anomalies. One can therefore presume that individuals are rational and therefore strictly observe and follow the standard finance models in decision making. It is emerging from the literature that individual investors have embraced heuristics or rule of thumb in their
investment decision making. Local studies have not adequately addressed the effects of behavioral aspects of investment decisions at the NSE.

Investors need to make rational decisions for maximizing their returns based on the information available by taking judgments that are free from emotions (Brabazon, 2000). Investor behavior is characterized by overexcitement and overreaction in both rising and falling security markets and various factors influences their decision making processes.

According to Kimani (2011) there were five behavioral factors that were at play. These were: herding, market, prospect, overconfidence and anchoring bias. However, it was not clear whether these behavioral biases affected individual investor decisions concerning IPOs. Additionally, a recent study related to IPOs conducted by Kipngetich et al. (2011) modeled investor sentiments in their equation of determinants of IPO pricing in Kenya using secondary data obtained from the NSE. However, their study did not explore the behavioral biases that underpin individual investor behavior during IPOs. This means that most of the studies on investor behavior that have been reported were carried out in mature markets. There is a gap in relevant literature on developing countries markets particularly Kenya which is an emerging security market.

This study intends to address the research question: What is the effect of behavioral factors on individual investor decisions at the Nairobi Securities Exchange?

1.3 Objective of the Study
To determine the behavioral factors that affect individual investor choices.
1.4 Value of the Study

To theory; this study will contribute to the general body of knowledge in the field of finance and act as a reference material for future scholars and researchers who would like to advance their knowledge in behavioral finance and use the study to formulate their research problems.

For Policy makers; it will help them to formulate appropriate strategies that will help to minimize the negative impact of such influences.

To investors; the findings of the study are expected to assist investors and investment managers in understanding the contribution of psychological and emotional factors towards their investment decisions as well as forming a basis for self evaluation by individuals in light of their previous decisions to gauge the extent of their biasness and make necessary adjustment.
CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction
This chapter reviews the existing literature on behavioral finance and investment decision making. It reviews both the theoretical and empirical studies on both the standard models of finance and the behavioral models.

2.2 Theoretical Review
Standard finance is the body of knowledge built on the pillars of the arbitrage principles of Miller and Modigliani, the Portfolio Principles of Markowitz, the Capital Asset Pricing theory of Sharpe, Lintner and Black, and the Option-Pricing theory of Black Scholes (Statman, 1999). These approaches consider markets to be efficient and highly analytical and normative.

The basic question facing all investors is which securities to invest in. Most investors according to Samal (1995) have eight common needs from their investments: security of original capital, wealth accumulation, comfort factor, tax efficiency, life cover, income, simplicity, ease of withdrawal and communication.

2.2.1 Modern Portfolio Theory
Markowitz (1952) developed modern portfolio theory (MPT). This basic portfolio model suggests that the variance of the rate of return is a significant measure of portfolio risk under a certain set of assumptions related to investor behavior. Markowitz suggested that to choose profitable investments, it is not enough to look at the relationship between risk and return. Investors should not only focus on the significance of diversification to reduce the total portfolio risk, but also learn how they can effectively diversify.
The basic assumption of the modern portfolio theory is that investors are willing to maximize their return on investment for a given level of risk. However investors are fundamentally risk averse which means that if they have to choose between two assets with equal rates of returns they are more likely to choose the asset with the lower level of risk. Markowitz further demonstrated that because investors are risk averse they need to combine assets into efficiently diversified portfolios. MPT assumes that portfolio risk can be reduced if investors focus on the variability of expected returns and to achieve that, investors should pick assets that tend to have dissimilar price movement.

Modern portfolio theory suggests that traditional approach to portfolio analysis, selection, and management may well yield less than optimum results—that a more scientific approach is needed based on estimates of risk and return of the portfolio and the attitude of the investor toward a risk-return trade-off stemming from the analysis of the individual security (Fischer & Jordan, 1995). Investors make two types of decisions in constructing their portfolio: the asset allocation decisions are the choice among the broad asset classes; while security selection is the choice of which particular securities to hold within each asset class (Bodie et al. 2008).
2.2.2 Capital Asset Pricing Model

In 1964, Sharpe extended Markowitz’s theory to introduce the notion of systematic risk and non-systematic risk. Sharpe developed the Capital Asset Pricing Model (CAPM) that considers a simplified world where all investors aim to maximize economic utility, are rational and risk averse, are price takers, can lend and borrow unlimited under the risk free rate of interest, trade without transaction or taxation costs, deal with securities that are all highly divisible into small parcels, have identical investment horizons, have identical options about expected returns, volatilities and correlations of available investments, and assume all information is at the same time available to all investors.

Sharpe (1964) found that the return on an individual stock or a portfolio of stocks should equal to the cost of capital. The CAPM model is of the form:

\[ E(R_i) = R_f + \beta_i (R_m - R_f); \]

Where;

- \( E(R_i) \) is the expected return on the security I;
- \( R_f \) is the risk free rate of interest;
- \( \beta_i \) is the beta coefficient which is the sensitivity of the expected asset returns to the expected market returns;
- \( \beta_i (R_m - R_f) \) is the market premium.

CAPM starts with the idea that individual investments contain two types of risks. First, systematic risk is the risk of holding the market portfolio. These are market risks that cannot be diversified away. As the market moves each individual asset is more or less
affected. To the extent that any asset participates in such general market moves, that asset entails market risk. Secondly, non-systematic risk is the risk which is unique to an individual asset. This risk can be diversified away as the investor increases the number of stocks in his or her portfolio. It represents the component of an asset’s returns which is uncorrelated with general market moves (Pandey, 2008).

Modern portfolio theory shows that non-systematic risk can be removed through diversification. The trouble is that diversification does not solve the problem of systematic risk; even a portfolio of all the shares in the stock market cannot eliminate that risk. Therefore, when calculating a deserved return, systematic risk is what plagues investors most. CAPM therefore evolved as a way to measure this systematic risk (Brigham &Ehrhardt, 2005).

2.2.3 Option Pricing Theory
The model is named after Black and Scholes, who developed it in 1973. The model, assumes the option price follows a Geometric Brownian motion with constant drift and volatility. Among other more complicated variables, the formula takes into consideration the price of the underlying stock, the strike price of the option, and the amount of time before the option expires.

Empirical studies show that the Black-Scholes model is very predictive, meaning that it generates option prices that are very close to the actual price at which the options trade. However, various studies show that the model tends to overvalue deep out-of-the-money calls and undervalue deep in-the-money calls. It also tends to mis price options that involve high-dividend stocks. Several of the model's assumptions also make it less than
100% accurate. The model assumes: that the risk-free rate and the stock's volatility are constant, that stock prices are continuous and that large changes (such as those seen after a merger announcement) don't occur, that a stock pays no dividends until after expiration and that analysts can only estimate a stock's volatility instead of directly observing it, as they can for the other inputs. Analysts have developed variations of the Black-Scholes model to account for these limitations.

2.2.4 The Efficient Market Hypothesis

Fama in 1965 published his dissertation arguing for the random walk hypothesis, and Samuelson published a proof for a version of the efficient-market hypothesis. In 1970, Fama published a review of both the theory and the evidence for the hypothesis. Fama presented the efficient market theory in terms of a fair game model, contending that investors can be confident that a current market price fully reflects all available information about a security and the expected return based upon this price is consistent with its risk.

Fama divided the overall efficient market hypothesis (EMH) and the empirical tests of the hypothesis into three sub hypotheses depending on the information set involved: (1) weak-form EMH, (2) semi strong-form EMH, and (3) strong-form EMH.

The weak-form EMH assumes that current stock prices fully reflect all security market information, including the historical sequence of prices, rates of return, trading volume data, and other market-generated information, such as odd-lot transactions, block trades, and transactions by exchange specialists. This implies that past rates of return and other
historical market data should have no relationship with future rates of return (that is, rates of return should be independent). Therefore, this hypothesis contends that you should gain little from using any trading rule that decides whether to buy or sell a security based on past rates of return or any other past market data.

The semi strong-form EMH asserts that security prices adjust rapidly to the release of all public information; that is, current security prices fully reflect all public information. It encompasses the weak-form hypothesis, because all the market information considered by the weak-form hypothesis, such as stock prices, rates of return, and trading volume, is public.

The strong-form EMH contends that stock prices fully reflect all information from public and private sources. This means that no group of investors has monopolistic access to information relevant to the formation of prices. Therefore, this hypothesis contends that no group of investors should be able to consistently derive above-average risk-adjusted rates of return.

2.2.5 Behavioral Theories

They are based on traditional finance whereby the traditional finance model assumes that people are rational. However, psychologists challenged this assumption. They argued that people often suffer from cognitive and emotional biases and act in a seemingly irrational manner.
In its attempt to model financial markets and the behavior of firms (DeBondt & Thaler, 1994), modern finance theory starts from a set of normatively appealing axioms about individual behavior. Specifically people are said to be risk averse, expected utility maximizes and unbiased forecasters, that is agents make rational choices based on rational expectations. As noted by Olsen (1998), behavioral finance advocates recognize that the standard finance models of rational behavior and profit maximization can be true within specific boundaries, but they assert that it is an incomplete model since it does not consider individual behavior. It is argued that some financial phenomena can be better explained using models where it is recognized that some investors are not fully rational or realize that it is not possible for arbitrageurs to offset all instances of mispricing (Barberis & Thaler, 2003).

Over the past years psychologists have found again and again that the usual axioms of finance theory are descriptively false. Raines & Leathers (2011) argue that institutional conducts allow the psychological propensities to drive financial behavior. With rational calculation of long-term yields from investments being impossible, Raines and Leather argue that investors lack confidence in their own judgment and rely instead on conventional judgment. Professional investors according to Keynes (1936) are only concerned with what the market will value it at, under the influence of mass psychology in three months to a year. Some of the basic factors and principal theories within behavioral finance that contradict the basic assumptions of standard finance theories include: Representativeness, Anchoring, cognitive dissonance, regret avoidance, mental accounting, loss aversion and overconfidence.
Representativeness can manifest itself when investors seek to buy “hot” stocks and to avoid stocks, which have performed poorly in the recent past. Investors may form judgments based on patterns that are simply random in a data and not representative of the facts. This behavior could provide an explanation for investor overreaction. According to DeBondt & Thaler, 1995, people tend to categorize events as typical or representative of a well-known class, and to overstress the importance of such a categorization. For example, share prices often rise when a company reports increased earnings several quarters in a row, because investors tend to infer a high long-term earnings growth rate (Barberis, 2001).

Anchoring and adjustment is a psychological heuristic that influences the way people intuitively assess probabilities. The anchoring and adjustment heuristic was first theorized by Tversky and Kahneman (1974). In one of their first studies, the two showed that when asked to guess the percentage of African nations that are members of the United Nations, people who were first asked “Was it more or less than 10%?” guessed lower values (25% on average) than those who had been asked if it was more or less than 65% (45% on average). The pattern has held in other experiments for a wide variety of different subjects of estimation.

Cognitive dissonance refers to the psychological conflict resulting from incongruous beliefs and attitudes held simultaneously. It was developed by Festinger in 1957. The theory asserted that individuals are distressed by conflicting cognitive elements such as
discrepancy between empirical evidence and past choice, and that they alter their beliefs to reduce this discomfort. The key feature of dissonance is that individuals alter their beliefs to conform to their past actions.

In the context of investment decision making, cognitive dissonance can be considered a psychological cost that investors seek to reduce by adjusting their beliefs about the efficacy of past investment choices. Cognitive dissonance theory is thus based on three fundamental assumptions: humans are sensitive to inconsistencies between actions and beliefs, we all recognize, at some level, when we are acting in a way that is inconsistent with our beliefs/attitudes/opinions. Dissonance will be resolved in one of three basic ways: change beliefs, change actions or change perception of action.

Regret refers to people’s emotional reaction on making a mistake (Plous, 1993). According to DeBondt & Thaler (1987) regret avoidance is consistent with both the size and book-to-market effect. Higher book-to-market firms tend to have depressed stock prices. These firms are “out of favor” and more likely to be in a financially precarious position. Similarly, smaller less well known firms are also less conventional investments. Such firms require more courage on the part of the investor which increases the required rate of return. If investors focus on the gains or losses of individual stocks rather than on broad portfolios they can become more risk averse concerning stocks with recent poor performance, discount their cash flows at higher rate and thereby create a value-stock risk premium.
Investors consistently engage in behavior that they regret later (Evans, 2002). They avoid selling shares that have decreased in value, and readily sell shares that have increased in value (Shiller, 1998; Lebaron, 1999). Psychologists have found that individuals who make decisions that turn out badly have more regret (blame themselves more) when the decision was more unconventional. For example buying a blue chip portfolio that turns down is not as painful as experiencing the same losses on unknown start-up firm. Any losses on a blue-chip stock can be more easily attributed to bad luck rather than bad decision making and cause less regret.

Regret avoidance may also result in what is known as herding behavior. Shiller (2000) outlines psychological experiment by Deutsh & Gerrard where the human tendency to concur with the majority view was shown. In the experiment, people questioned their own opinions and found everybody disagreed with it. These human tendencies are individually sensible, but collectively can lead to irrational and herding behavior. Any investor may feel more comfortable investing in a popular stock if everybody else believed that it is a good one however responsibility of it falling will be shared with the other investors who originally expected it to do well.

Mental accounting describes the tendency of people to place particular events into different mental accounts based on superficial attributes (Shiller, 1997). Shiller (1997) suggest that investors place their investments into arbitrarily separate mental compartments and react separately and in different ways to the investment based on which compartment they are in.
According to Statman (1997) mental accounting is consistent with some investors’ irrational preference for stocks with high cash dividends (they feel free to spend dividend income but do not dip into capital by selling a few shares of another stock with the same total rate of return) and with a tendency to ride losing stocks position for too long (because “behavioral investors” are reluctant to realize losses).

Mental accounting affects not only the personal finances but is common phenomenon in the complex world of investment. When an investor buys a new stock, he starts maintaining a new virtual account for this stock in his mind. Each decision, action, and outcome about that stock is placed in that account. So has each investment of its own. Once an outcome is assigned a mental account it is difficult to view that outcome in another way. When interaction among assets indifferent accounts is overlooked, this mental process can adversely affect investor wealth (Chandra, 2008).

“Losing $100 hurts more than gaining $100 yields pleasure. The influence of loss aversion on mental accounting is enormous” According to (Thaler, 1999). “The positive counterpart to regret is pride. While closing a stock account at a loss induces regret, closing at a gain induces pride. The quest for pride and the avoidance of regret leads to a disposition to realize gains and defer losses” (Shefrin & Statman, 1985). However, there is asymmetry between the strength of pride and regret and losses loom larger than gains (Kahnamen & Tversky, 1979). Asymmetry between the strength of pride and regret (regret is stronger) leads inaction to be favored over action (Kahnamen & Tversky, 1979;
Thaler, 1999). Thus, investors who are prone to this bias may be reluctant to realize both gains and losses (Shefrin & Statman, 1985).

Overconfidence According to Ritter (2003) manifests itself when there is little diversification because of a tendency to invest too much in what one is familiar with. Selecting common stocks that will outperform the market is a difficult task. Predictability is low; feedback is noisy. Thus, stock selection is the type of task for which people are most overconfident (Barber and Odean, 2001).

Barber & Odean in 2001 compared trading activity and average returns in brokerage accounts of men and women. They found that men (in particular single men) trade far more actively than women, consistent with the greater overconfidence among men documented in the psychology literature. People tend to overestimate the precision of their beliefs or forecasts, and they tend to overestimate their abilities. Such overconfidence may be responsible for the prevalence of active versus passive investment management itself an anomaly to adherents of the efficient market hypothesis.

Overconfidence leads investors to overestimate their predictive skills and believe that they can time the market. Studies have shown that one side effect of investor overconfidence is excessive trading (Evans, 2006; Allen and Evans, 2005). People are overconfident in their own abilities, and investors and analysts are particularly overconfident in areas where they have some knowledge (Shiller, 1998; Evans, 2006). There is evidence (Evans, 2006) that financial analysts are slow to revise their previous
assessment of a company’s likely future performance, even when there is strong evidence that their existing assessment is incorrect.

2.2.6 Prospect Theory

This theory was developed by Kahneman & Tversky in 1979. It focuses on changes in wealth, whereas expected utility theory focuses on level of wealth (Ritter, 2003). The theory describes how people frame and value decisions involving uncertainty by looking at choices in terms of potential gains or losses in relation to a specific reference point which is often the purchase price. Kahneman & Tversky (1979) argue that investors value gains/losses according to an S-shaped utility function.

Kahneman & Tversky asserted that people are risk lovers for losses (Johnson et al. 2002). The utility function is concave for gains meaning that people feel good when they gain, but twice the gain does not make them feel twice as good is convex for loss meaning that people experience pain when they lose, but twice the loss does not mean twice the pain.

2.3 Factors that influence Individual Investor Choices

The factors that influence individual investor choices are behavioural factors which include: Overconfidence, regret avoidance, loss aversion and herding behavior and other factors such as market factors, market efficiency and market information.

2.3.1 Behavioral Factors

The behavioral factors that influence individual investor choices include: Overconfidence, regret avoidance, loss aversion and herding behavior.

Odean 1998, explores that many investors trade too much due to their overconfidence. These investors totally rely on the information quality of the market or stocks that they
have when making decisions of investment. Waweru et al. 2008, indicate that price change of stocks has impact on their investment behavior at some level and also that investors may revise incorrectly estimates of stock returns to deal with the price changes so that this affects their investment decision-making. Odean 1999, states that investors prefer buying to selling stocks that experience higher price changes during the past two years. Change in stock price in this context can be considered as an attention-grabbing occurrence in the market by investors.

Many investors tend to focus on popular stocks or hot stocks in the market and that past trends of stocks are also explored to impact the decision making behavior of the investors at a certain level by. In this concept, investors usually analyze the past trends of stocks by technical analysis methods before deciding an investment. Behavioral investors prefer selling their past winners to postpone the regret related to a loss that they can meet for their stock trading decisions (Waweru et al., 2008).

Aduda et al. (2012) found out that, influence from friends; where most investors relied on advice from friends and colleagues (3.65 on a likert scale of 1-5) before deciding to go for stocks and; popular opinion about the market (3.58) and recent trend in share price movements (3.53), were clear indication of herding behavior existing in NSE.

Additionally, Caparrelli et al. 2004, propose that investors are impacted by herding effect and tend to move in the same flow with the others when price changes happen. Nagy & Obenberger (1994) examined factors influencing investor behavior. They developed a
questionnaire that included 34 questions. Their findings suggested that classical wealth–
maximization criteria are important to investors, even though investors employ diverse
criteria when choosing stocks while important concerns such as local or international
operations, environmental track record and the firm’s ethical posture appear to be given
less consideration. The recommendations of brokerage houses, individual stockbrokers,
family members and co-workers go largely unheeded. Many individual investors discount
the benefits of valuation models when evaluating stocks.

2.3.2 Market Factors
DeBondt & Thaler (1995), 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), 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.
Market factors 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.
He further, indicates that price changes of stocks have an impact on their investment behavior at some level. Odean 1999, states that investors prefer buying to selling stocks that experience higher price changes during the past two years. Change in stock price can be considered as an attention-grabbing occurrence in the market by investors.

2.3.3 Market Efficiency

Market efficiency (Luu, 2012), in the sense that market prices reflect fundamental market characteristic and that excess returns on the average which are leveled out in the long run, have been challenged by behavior finance. In the past few years there has, for example, been a media interest in technology stocks. Most of the time, there has been a positive bias in media assessment, which might have led investors in making incorrect investment decisions. These anomalies suggest that the underlying principles of rational behavior underlying the efficient market hypothesis are not entirely correct and that we need to look, as well, at other models of human behavior, as have been studies in other social sciences (Shiller, 1998).

2.3.4 Market Information

Normally, changes in market information, fundamentals of the underlying stock and stock price can cause over/under-reaction to the price change. These changes are empirically proved to have the high influence on decision-making behavior of investors. Researchers convince that over-reaction (DeBondt & Thaler, 1985) or under-reaction (Lai, 2001) to news may result in different trading strategies by investors and hence influence their investment decisions.
Waweru et al. 2008, conclude that market information has very high impact on making decision of investors and this makes the investors, in some way, tend to focus on popular stocks and other attention-grabbing events that are relied on the stock market information. Moreover, Barber and Odean 2000, emphasize that investors are impacted by events in the stock market which grab their attention, even when they do not know if these events can result good future investment performance.

Many investors tend to focus on popular stocks or hot stocks in the market and that past trends of stocks are also explored to impact the decision making behavior of the investors at a certain level. (Waweru et al.,2008). Odean1999, propose that investors usually choose the stocks that attract their attention. Besides, the stock selection also depends on the investors’ preferences. Momentum investors may prefer stocks that have good recent performance while rational investors tend to sell the past losers and this may help them to postpone taxes. In contrast, behavioral investors prefer selling their past winners to postpone the regret related to a loss that they can meet for their stock trading decisions.

2.4. Empirical Review
This section highlights the various types of behavioral biases that influence investor decisions based on previous research concerning behavioral finance and investment decisions. Theoretical and empirical reviews are done leading to review of the theories that explain the concept of behavioral finance.

2.4.1 International Evidence
Empirical tests on the behavior of individual investors have been done predominately on U.S. individual investor portfolios. In a study of market efficiency, DeBondt & Thaler
investigated whether such behavior affects stock prices. They used monthly return data for New York Stock Exchange (NYSE) common stocks, as compiled by the Center for Research in Security Prices (CRSP) of the University of Chicago, for the period between January 1926 and December 1982. An equally weighted arithmetic average rate of return on all CRSP listed securities serve as the market index.

The results are consistent with the overreaction hypothesis. Loser portfolios of 35 stocks outperform the market by, on average, 19.6%, 36 months after portfolio formation. Winner portfolios, on the other hand, earn about 5% less than the market, so that the difference in cumulative average residual between the extreme portfolios equals 24.6%. Their findings have other notable aspects. First, the overreaction effect is asymmetric; it is much larger for losers than for winners. Secondly, most of the excess returns are realized in January. Finally the overreaction phenomenon mostly occurs during the second and third year of the test period.

Odean (1998) tested the disposition effect, the tendency of investors to hold losing investments too long and sell winning investments too soon, by analyzing trading records for 10,000 active accounts at a large nationwide discount brokerage house from 1987 through 1993. There were two hypotheses to be tested. The first was that investors tend to sell their winners and hold their losers. The second hypothesis was that in December investors are more willing to sell losers and less willing to sell winners than during the rest of the year. The statistical method used is the t-test. These investors demonstrated a strong preference for realizing winners rather than losers. Their behavior did not appear
to be motivated by a desire to rebalance portfolios, or to avoid the higher trading costs of low priced stocks. Nor was it justified by subsequent portfolio performance. For taxable investments, it is suboptimal and leads to lower after-tax returns. Tax-motivated selling is most evident in December.

A study by Lin (2011) titled ‘Elucidating rational investment decisions and behavioral biases: Evidence from the Taiwanese Stock Market’, examined how rational decision making and behavioral biases varies in different demographic characteristics. He examined how personal characteristics influenced behavioral biases. He used a sample of 450 individual investors from the Taiwan Stock Market. Primary data was collected through questionnaires. Cross section analysis was used via structure equation modeling. He found out that gender explains the difference in behavioral biases. Females display a greater disposition effect than males. Males are more overconfident than the females. Females are most affected by herding as they tend to follow blindly other investors doing the same investment decisions. The results further revealed that younger investors are more prone to herding than the older investors. There is no significant evidence between the level of income and behavioral biases.

A study by Obamuyi (2013) showed that the five most influencing factors on investors’ investment decision in the Nigerian capital market in order of importance were: past performance of the company stock, expected stock split/capital increases/bonus, dividend policy, expected corporate earnings and get-rich-quickly. The results indicated that the five most important factors are usually categorized as wealth maximizing criteria. The
finding is consistent with the works of Nagy & Obenberger (1994)). On the other hand, the five least influencing factors include: religions, rumors, loyalty to the company’s products or services, opinions of members of the family) and expected losses in other investments.

2.4.2 Local Evidence

Werah (2006) did a study to survey the influence of behavioral biases on investor activities at the NSE. The study population composed of both individual and institutional investors at the NSE. Data was collected through questionnaire and analysis was done to establish the influence of herd behavior, mental accounting, loss aversion, anchoring, over reaction and under reaction, overconfidence, confirmation bias, regret aversion on investor activities at the NSE. The results obtained from the research suggested that the behavior of investors at the NSE were to some extent irrational when considered from the rationality of the investors in their disregard of fundamental estimations as a result of herd behavior, regret aversion, overconfidence and anchoring.

Mbaluka (2008) study established the existence of behavioral effects on individual investment decision making process. His results showed that investors had their rationality affected by psychological aspects. The study found out that investors did not invest as expected as they showed unwillingness to change their portfolio despite unattractive macroeconomic outlook. The endowment effect was identified with investors in the experiment with 23% of them changing their portfolio mix while 77% failed to change even when the economic outlook demanded that change.
Aduda et al. (2012) while conducting their study on “the behavior and financial performance of individual investors in the trading shares of companies listed at the Nairobi Stock Exchange, Kenya” with the first objective of their study being ‘to find out how individual investors make their investment decisions’, found out that, influence from friends; where most investors relied on advice from friends and colleagues (3.65 on a likert scale of 1-5) before deciding to go for stocks and; popular opinion about the market (3.58) and from recent trend in share price movements (3.53), were clear indication of herding behavior existing in NSE. There were varied behaviors and financial performance of individual investors in Kenya with some investors exhibiting rational behavior while making investment decisions.

Mwaka (2013) showed that demographic characteristics of investors determine the investors’ decision making behavior. Investors of different demographic characteristics made decisions differently. Some investors made decisions rationally but most of them were affected by behavioral biases. The biases tested include herding, over confidence, anchoring and loss aversion. All these biases affected investors as they traded in shares though others were more prominent than others.

2.5 Summary of Literature Review

The literature has reviewed both cognitive errors and emotional biases that potentially influence individual investor decisions. It has discussed biases such as representativeness bias, cognitive dissonance, loss aversion, regret avoidance, overconfidence and mental accounting biases which show that investors are rational when making investment decisions and therefore regret when it is too late and further contradict the basic
assumptions of standard finance theories which are concerned with what the market will value at. They do not consider individual behavior. It is argued that some financial phenomena can be better explained using models where it is recognized that some investors are not fully rational.

Empirical evidence instead, does not extensively support these. There exists contradictory literature which suggests that investors are not immune from the effects of the popular investing culture. There were varied behaviors on financial performance of individual investors with some investors exhibiting rational behavior in their disregard of fundamental estimations and some irrational to some extent when considered from the rationality of others. Studies have shown that both individuals and institutional investors are affected by emotions and cognitive influences when making investment decisions but not to the extent of showing all the factors and how they affect investment decisions. These are the gaps which this research will attempt to fill.
CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction
This chapter describes the methodology that will be used in the study. It forms a framework for specifying the relationships among the study variables. The chapter covers various aspects of the target population, sampling techniques, and data collection procedure and data analysis.

3.2 Research Design
Research design is the plan and structure of investigation so conceived as to obtain answers to research questions. The plan is the overall scheme or program of the research. According to Cooper & Schinder (2001), there are many definitions of research design but no one definition impacts the full range of important aspects.

Descriptive survey design was used. It describes the characteristics of the variables of interest. Descriptive research according to Mugenda & Mugenda (1999) is a process of collecting data in order to answer questions concerning the status of the subjects in the study. This type of research attempts to describe things such as possible behavior, attitudes, values and characteristics. This design is appropriate for this study because it ensures in-depth analysis and description of the various phenomena under investigation and it establishes how the decision making framework and behavior of investors in reality is consistent with the existing theories of finance.

3.3 Population
The study involved surveying individual investors who trade at the Nairobi Securities Exchange. There are about 1,315,616 investors at the NSE as at 30.06.2014 with
1,254,696 being the total number of individual investors. This represents 95.4% of the total investors, Capital Markets Authority (CMA) Quarterly Statistical Bulletin (2014).

3.4 Sample
Out of the investors trading at the Nairobi Securities Exchange, a sample of 63 individual investors was chosen using random sampling technique to represent all the individual investors’ in the country. The sample was selected from each of the twenty one registered stock brokerage and investment banks with three investors selected from each. This is a result of the large number of investors trading, limitations of time to facilitate faster collection and analysis of data, financial constraints to reduce the research costs as it is reduced to a smaller manageable sample which is handled easily and limited human resource in undertaking the study. The sample will be obtained by presenting 3 questionnaires each to 21 identified stock brokerage firms. This sample is considered appropriate as the availability of investors is usually to be high. The study adopted a probability sampling technique whereby sampling technique is used to randomly select 3 respondents from each of the 21 brokerage firms. A respondent was selected after every three customers being served in a brokerage firm in a given day.

3.5 Data Collection
Primary data was collected using an exploratory survey method where a standard questionnaire with both closed and open ended questions were administered to capture important information. The selected individuals were given the questionnaire to fill where those with any difficulties were guided and assisted and thereafter the questionnaires were collected. The questionnaire will incorporate three sections with the first section enquiring respondent’s background information, the second part consisting of factors that attribute to investors making certain decisions and the behavioral factors influencing
investment decisions and the third part consisting of individual investor choices. A 5-point likert scale, widely used for asking respondents’ opinions and attitudes was utilized to ask the individual investors to evaluate the degrees of their agreement with the impacts of behavioral factors on their investment decision. The 5 points in the scale are respectively from 1 to 5: highly disagree, somehow disagree, agree, somehow agree and highly agree.

3.5.1 Data Reliability and Validity

According to Neuman & Kreuger (2003), “Reliability and validity are central issues in all measurements. Reliability means dependability or consistency, and validity means truthfulness. It refers to the bridge between the construct and the data (Neuman & Kreuger 2003). When an interview is conceived as an opportunity for construction of meaning, one “cannot expect a replication of answers because they emerge from different circumstances of production” (Holstein & Gubrun, 1995). Thus, the trustworthiness of the data can only be evaluated by the participants themselves.

Cronbach’s Alpha Test was used to test the internal consistency reliability of measurements, which are in formats of continuous variables (for example, 5-point Likert measurements). It includes a statistical summary that describes the consistency of a specific sample of respondents across a set of questions or variables that will help to estimate the reliability of participants’ responses to the measurements (Helms et al, 2006). Cronbach’s alpha is usually used as an indicator of reliability (Liu, Wu & Zumbo, 2010). As such, the Cronbach’s alpha is suitable for this research because the
questionnaire consists of 5-point Likert measurements and the research is in behavioral finance.

Nunnally (1978) suggests that Cronbach’s alpha should be at least 0.7 to make sure that the measurements are reliable. However, many statisticians believe that it can be acceptable if the Cronbach’s alpha is over 0.6 and recommend that it is necessary to consider the corrected item-total correlations when using the Cronbach’s alpha index. Measurement validity deals with the question of whether a measure can actually provide measurements of a concept (Bryman & Bell, 2011). As the questionnaire is designed based on the theoretical models from previous studies, indicators for measurements are applied to reflect the concept of “behavioral factors influencing investors’ decisions”. Besides, the 5-point Likert measurements removing the neutral opinions, they also increase the measurements’ accuracy, measurement validity is obtained throughout this study.

3.6 Data Analysis

Data was analyzed using the statistical package for social sciences SPSS software package. Content analysis was used in summarizing the finding. The data was coded to enable the responses to be grouped into various categories. Internal consistency of the multi-item scales was tested using Cronbach’s alpha. Factor analysis was used to test the reliability of the items in the multi-item scales. Descriptive statistics was used to summarize the data. This includes percentages and frequencies. Tables and figures were used to present the data.
3.6.1 Analytical Model

The study will adopt linear regression model to explain the relationship between behavioral biases and individual investor decisions using multiple regression model given by Ghauri & Gronhaug (2005) as follows:

$$IID = \beta_1 HEB + \beta_2 LAB + \beta_3 RAB + \beta_4 MAB + \beta_5 PCB + \beta_6 MIB + \beta_7 PSB + \beta_8 OCB + \beta_9 ANB + \epsilon_i$$

Where:

$Y_i =$ Dependent variable is the individual investor decision and was measured by the interval level of measurement since it was computed. Scores were got from the likert scale for each behavioral factor.

$B_{1, ..., \beta_n} =$ Betas for each behavioral factor.

$X_{1, ..., \beta_n} =$ Predictors are the behavioral factors which influence investor choices. They were measured by the ordinal level of measurement whereby the respondent indicated 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.

$\epsilon =$ Error term with a significance level of 5%.
Where:

IID = Individual Investor Decision
HEB= Herding Bias
LAB = Loss Aversion Bias
RAB = Regret-Avoidance Bias
MAB= Mental Accounting Bias
PCB= Price Changes Bias
MIB= Market Information Bias
PSB= Past trends of Stocks
OCB = Overconfidence Bias
ANB= Anchoring Bias

The variables were measured using a 5-point likert scale to evaluate the degrees of the respondents’ agreement with the impacts of behavioral factors on their investment decisions. The 5 points in the scale are respectively from 1 to 5: highly disagree, somehow disagree, agree, somehow agree, and highly agree.

The dependent variable was measured by asking the respondent to assign a weight on reason(s) why their investment decision is based on that behavioral factor.

3.7 Test of Significance
The Analysis of Variance (ANOVA) was used which contains the sum of squares SS, the mean square MS, the F-statistic and the degrees of freedom df. All these were analyzed after data had been collected.
CHAPTER FOUR
DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction
This chapter covers data presentation and analysis. The main objective of the study was to determine the effect of behavioral factors on individual investor choices at the Nairobi Securities Exchange. In order to simplify the discussions, the researcher provided tables and figures that summarize the collective reactions and views of the respondents.

4.2 Descriptive Statistics
This section shows demographic information for gender, age, marital status, level of education and average monthly income for the respondents as well as the response rate. It also shows the mean and standard deviation of the behavioural factors in relation to investors’ decisions.

4.2.1 Response Rate
The targeted sample size was 63 investors. Those filled and returned questionnaires were 59 respondents making a response rate of 93.65 %. According to Mugenda and Mugenda (1999), a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent. This means that the response rate for this study was excellent and therefore enough for data analysis and interpretation.
4.2.2 Data Validity

To establish validity, the research instrument was used to evaluate the relevance of each item in the instrument in relation to the objectives. The same were rated on the scale of 1 (very relevant) to 4 (not very relevant). Validity was determined by use of content validity index (CVI). CVI was obtained by adding up the items rated 3 and 4 by the experts and dividing this sum by the total number of items in the questionnaire. A CVI of 0.747 was obtained. Since, the alpha coefficients were all greater than 0.7, a conclusion was drawn that the instruments had an acceptable reliability coefficient and were appropriate for the study.
Table 4.1: Reliability Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Cronbach’s Alpha</th>
<th>Items</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual Investor Decision</td>
<td>.79</td>
<td>6</td>
</tr>
<tr>
<td>Herding Bias</td>
<td>.77</td>
<td>15</td>
</tr>
<tr>
<td>Loss Aversion Bias</td>
<td>.78</td>
<td>3</td>
</tr>
<tr>
<td>Regret-Avoidance Bias</td>
<td>.77</td>
<td>3</td>
</tr>
<tr>
<td>Mental Accounting Bias</td>
<td>.76</td>
<td>4</td>
</tr>
<tr>
<td>Price Changes Bias</td>
<td>.77</td>
<td>2</td>
</tr>
<tr>
<td>Market Information Bias</td>
<td>.73</td>
<td>5</td>
</tr>
<tr>
<td>Past trends of Stocks</td>
<td>.71</td>
<td>7</td>
</tr>
<tr>
<td>Overconfidence Bias</td>
<td>.79</td>
<td>9</td>
</tr>
<tr>
<td>Anchoring Bias</td>
<td>.75</td>
<td>5</td>
</tr>
</tbody>
</table>

Source: Research Findings

4.2.3 Gender of Respondents

The table displays demographic information according to gender.

Table 4.2: Gender of the respondents

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>39</td>
<td>66.10</td>
</tr>
<tr>
<td>Female</td>
<td>20</td>
<td>33.90</td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: Research Findings

The study found it important to determine the respondents’ gender in order to ascertain whether there was gender parity in the positions indicated by the respondents. It was evident in the analysis that majority of the respondents were male which represented 66.10% while 33.90% were female. It can therefore be deduced that male investors were the most dominant gender at the Nairobi Securities Exchange.
4.2.4 Age Bracket of the Respondents

The researcher sought to determine if the respondents were old enough to provide valuable responses that pertain to the effects of behavioral factors on individual investor choice at the Nairobi securities exchange.

Table 4.3: Age Bracket of the Respondents

<table>
<thead>
<tr>
<th>Age Bracket</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 30 years</td>
<td>7</td>
<td>11.86</td>
</tr>
<tr>
<td>31-40 years</td>
<td>17</td>
<td>28.81</td>
</tr>
<tr>
<td>41-50 years</td>
<td>22</td>
<td>37.29</td>
</tr>
<tr>
<td>More than 50 years</td>
<td>13</td>
<td>22.03</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>59</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Source: Research Findings

The study findings showed that majority (37.29%) indicated that their age bracket was between 41 and 50 years. Analysis of findings also indicated that 28.81% of the respondents were between the age of 31 and 40 years of age, 22.03% were more than 50 years and above while the remaining 11.86% were less than 30 years. The finding therefore implies that the respondents were old enough to provide valuable responses that pertain to the effects of behavioral factors on investor choice.

4.2.5 Marital Status of Respondents

The table displays demographic information according to marital status of the respondents.

Table 4.4: Marital Status of the Respondents

<table>
<thead>
<tr>
<th>Marital Status</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single</td>
<td>18</td>
<td>30.51</td>
</tr>
<tr>
<td>Married</td>
<td>41</td>
<td>69.49</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>59</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Source: Research Findings
The study found it important to determine the respondents’ marital status in order to ascertain whether it affected the positions indicated by the respondents. It was evident that majority of the respondents were married which was represented 69.49% while 30.51% were single. It can therefore be deduced that most of the investors interviewed were married.

4.2.6 Level of Education of the Respondents

The table shows the respondents level of education.

Table 4.5: Level of education of the respondents

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary Certificate</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Secondary Certificate</td>
<td>1</td>
<td>1.69</td>
</tr>
<tr>
<td>Other college education</td>
<td>5</td>
<td>8.47</td>
</tr>
<tr>
<td>Diploma</td>
<td>12</td>
<td>20.34</td>
</tr>
<tr>
<td>Degree certificate</td>
<td>22</td>
<td>37.29</td>
</tr>
<tr>
<td>Postgraduate/PhD</td>
<td>19</td>
<td>32.20</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>59</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Source: Research Findings

The study sought to find out the respondents level of education. From the findings, majority (37.29%) had degrees certificates followed by 32.20% who indicated that they had Postgraduate/PhD, 20.34% had diplomas, 8.47% had attained other college education and the remaining 1.69% indicated that they had attained secondary certificate. Therefore the findings conclude that most respondents had adequate education to execute their pertaining to behavioral factors affecting individual investor choice.

4.2.7 Average Monthly Income of the respondents

The table shows the respondents monthly income.
Table 4.6: Average monthly income of the respondents

<table>
<thead>
<tr>
<th>Income Range</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5,000</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>5,001 – 20,000</td>
<td>3</td>
<td>5.08</td>
</tr>
<tr>
<td>20,001-50,000</td>
<td>5</td>
<td>8.47</td>
</tr>
<tr>
<td>50,001-100,000</td>
<td>7</td>
<td>11.86</td>
</tr>
<tr>
<td>100,001-200,000</td>
<td>11</td>
<td>18.64</td>
</tr>
<tr>
<td>More than 200,000</td>
<td>32</td>
<td>54.24</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>59</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

**Source: Research Findings**

The study sought to find out the average monthly income of the respondents. From the findings, majority (54.24%) of the respondents indicated that they get an income of more than 200,000 Kenya shillings followed by 18.64% who get an income of 100,001-200,000 Kenya shillings, 11.86% get an income of 50,001 – 100,000 Kenya shillings, 8.47% get an income of between 20,001-50,000 Kenya shilling and 5.08% get an income of between 5,001 – 20,000.

### 4.2.8 Behavioral Factors Influencing Investment Decisions

The researcher wanted to find out the behavioral factors influencing investment decisions.

Table 4.7: Behavioral Factors Influencing Investment Decisions

<table>
<thead>
<tr>
<th>Herding Factors (buying and selling, choice and volume of trading stocks, speed of herding)</th>
<th>Mean</th>
<th>Std. deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other investors’ decisions of choosing stock types have impact on my investment decisions.</td>
<td>4.51</td>
<td>1.027</td>
</tr>
<tr>
<td>Other investors’ decisions of the stock volume have impact on my investment decisions.</td>
<td>3.78</td>
<td>0.734</td>
</tr>
<tr>
<td>Other investors’ decisions of buying and selling stocks have impact on my investment decisions.</td>
<td>4.13</td>
<td>0.597</td>
</tr>
<tr>
<td>I usually react quickly to the changes of other investors' decisions and follow their reactions to the stock market.</td>
<td>3.94</td>
<td>0.802</td>
</tr>
<tr>
<td>After a prior loss, I become more risk averse.</td>
<td>4.51</td>
<td>1.023</td>
</tr>
<tr>
<td>I avoid selling shares that have decreased in value and readily sell shares that have increased in value.</td>
<td>4.18</td>
<td>0.724</td>
</tr>
<tr>
<td>I tend to treat each element of my investment portfolio</td>
<td>3.53</td>
<td>0.591</td>
</tr>
<tr>
<td>Prospect Factors - Loss Aversion</td>
<td>Mean</td>
<td>Std. deviation</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>------</td>
<td>---------------</td>
</tr>
<tr>
<td>After a prior loss, I become more risk averse.</td>
<td>3.98</td>
<td>0.712</td>
</tr>
<tr>
<td>Regret Avoidance</td>
<td>Mean</td>
<td>Std. deviation</td>
</tr>
<tr>
<td>I avoid selling shares that have decreased in value and readily sell shares that have increased in value.</td>
<td>4.21</td>
<td>1.047</td>
</tr>
<tr>
<td>Mental Accounting</td>
<td>Mean</td>
<td>Std. deviation</td>
</tr>
<tr>
<td>I tend to treat each element of my investment portfolio separately.</td>
<td>2.18</td>
<td>0.734</td>
</tr>
<tr>
<td>I ignore the connection between different investment possibilities</td>
<td>4.21</td>
<td>1.027</td>
</tr>
<tr>
<td>Market Factors - Price changes</td>
<td>Mean</td>
<td>Std. deviation</td>
</tr>
<tr>
<td>I consider carefully the price changes of stocks that I intend to invest in.</td>
<td>3.94</td>
<td>0.901</td>
</tr>
<tr>
<td>Market Information</td>
<td>Mean</td>
<td>Std. deviation</td>
</tr>
<tr>
<td>Market information is important for my stock investment.</td>
<td>3.91</td>
<td>0.712</td>
</tr>
<tr>
<td>Past Trends of stocks</td>
<td>Mean</td>
<td>Std. deviation</td>
</tr>
<tr>
<td>I put the past trends of stocks under my consideration for my investment.</td>
<td>4.63</td>
<td>0.972</td>
</tr>
<tr>
<td>Overconfidence</td>
<td>Mean</td>
<td>Std. deviation</td>
</tr>
<tr>
<td>I believe that my skills and knowledge of stock market can help me to outperform the market.</td>
<td>4.01</td>
<td>0.523</td>
</tr>
<tr>
<td>I am normally able to anticipate the end of good or poor.</td>
<td>Mean</td>
<td>Std. deviation</td>
</tr>
<tr>
<td>I am normally able to anticipate the end of good or poor.</td>
<td>4.14</td>
<td>0.749</td>
</tr>
<tr>
<td>Anchoring</td>
<td>Mean</td>
<td>Std. deviation</td>
</tr>
<tr>
<td>I forecast the changes in stock prices in the future based on the recent stock prices.</td>
<td>4.13</td>
<td>0.597</td>
</tr>
<tr>
<td>I prefer to buy local stocks than international stocks because the information of local stocks is more available.</td>
<td>3.64</td>
<td>0.802</td>
</tr>
</tbody>
</table>

**Source: Research Findings**
4.2.9 Individual Investor Choices

Estimate of the last number of shares bought (KSHS)

The table shows the estimates of the last number of shares bought by the respondents.

Table 4.8: Estimate of the last number of shares bought (KSHS)

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5,000</td>
<td>3</td>
</tr>
<tr>
<td>5,001 – 20,000</td>
<td>8</td>
</tr>
<tr>
<td>20,001-50,000</td>
<td>5</td>
</tr>
<tr>
<td>50,001-100,000</td>
<td>7</td>
</tr>
<tr>
<td>100,001-200,000</td>
<td>9</td>
</tr>
<tr>
<td>More than 200,000</td>
<td>27</td>
</tr>
<tr>
<td>Total</td>
<td>59</td>
</tr>
</tbody>
</table>

Source: Research Findings

The study sought to find out the estimates of the last number of shares bought by the respondents. The findings of the study are tabulated as in table above. From the findings, majority (45.76%) of the respondents indicated that they bought shares worth more than 200,000 Kenya shillings followed by 15.25% who indicated that they bought shares worth between 100,001-200,000 Kenya shillings, 13.56% of the respondents indicated that they bought shares worth 5,001 – 20,000 Kenya shillings, 11.86% indicated that they had bought share worth between 50,001-100,000 Kenya shilling, 8.47% of the respondents indicated that they bought shares worth between 20,001-50,000 Kenya shillings and the remaining 5.08% indicated that they bought shares worth less than 5,000 Kenya shillings.

4.2.10 Duration of Trading in Shares

The researcher sought to find out for how long the respondents have been trading in shares before.
Table 4.9: Duration of trading in shares

<table>
<thead>
<tr>
<th>Duration</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1 year</td>
<td>7</td>
<td>11.86</td>
</tr>
<tr>
<td>1 to 3 years</td>
<td>9</td>
<td>15.25</td>
</tr>
<tr>
<td>4 to 5 years</td>
<td>11</td>
<td>18.64</td>
</tr>
<tr>
<td>6 to 10 years</td>
<td>10</td>
<td>16.95</td>
</tr>
<tr>
<td>More than 10 years</td>
<td>22</td>
<td>37.29</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>59</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Source: Research Findings

The study finding indicate that majority (37.29%) had traded in shares for more than 10 years followed by 16.95% who indicated that they had traded in shares for the 6-10 years, 18.64% who indicated that they had traded in shares for the last 4 to 5 years, 15.25% of the respondents indicated that they had traded in shares for the last 1 to 3 years, and lastly 11.86% who indicated that they had traded in shares for the last less than a year. Most of the respondents further indicated that they have sold only part of their shares.

4.2.11 Duration of Participation in the Stock Market

The researcher sought to find out for how long the respondents have participated in the stock market.

Table 4.10: Duration of participation in the stock market

<table>
<thead>
<tr>
<th>Duration</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1 year</td>
<td>13</td>
<td>22.03</td>
</tr>
<tr>
<td>1 to 3 years</td>
<td>4</td>
<td>6.78</td>
</tr>
<tr>
<td>3 to 5 years</td>
<td>15</td>
<td>25.42</td>
</tr>
<tr>
<td>5 to 10 years</td>
<td>13</td>
<td>22.03</td>
</tr>
<tr>
<td>More than 10 years</td>
<td>14</td>
<td>23.73</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>59</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Source: Research Findings

The study finding indicate that majority (25.42%) had been participating in the stock market for between 3-5 years followed by 23.73% who indicated that they had been
participating in the stock market for more than 10 years, 22.03% who indicated that they had had been participating in the stock market for between 5-10 years and less than 1 year respectively and lastly 6.78% who indicated that they had been participating in the stock market for between 1-3 years.

The respondents indicated that most of the shares they buy are due to the knowledge they have about the stock market but sometimes they are convinced by friends to buy shares. Most of the respondent also agreed that they have attended courses that deal with stock exchange.

4.2.12 Market Sectors.

The researcher sought to find which market sector most of the respondents usually participate in.

**Figure 4.2: Market sectors**

![Market sectors chart]

**Source: Research Findings**

The study finding indicate that majority (35.59%) participate in the agricultural sector, followed by 28.81% who indicated that they participate in the Alternative Market
Segment, 15.25% indicated that they participate in commercial sector, 11.86% of the respondent indicated that they perform in the Finance & investment sector and lastly 8.47% who indicated that they participate in the Industrial & Allied Sector. Therefore it was deduced that the agricultural sector has more investors. Most of the investors also indicated that they are long term capital investors.

4.3 Inferential Statistics
This section presents a discussion of the results of inferential statistics. Correlation analysis was used measure the strength of the relationship between the independent variables that is the relationship between Individual Investor Decision, Herding Bias, Loss Aversion Bias, Regret-Avoidance Bias, Mental Accounting Bias, Price Changes Bias, Market Information Bias, Past trends of Stocks, Overconfidence Bias and Anchoring Bias. Regression analysis established the relative significance of each of the variables on investor choices.

4.3.1 Correlation Analysis
The Pearson product-moment correlation coefficient (or Pearson correlation coefficient for short) is a measure of the strength of a linear association between two variables and is denoted by $r$. The Pearson correlation coefficient, $r$, can take a range of values from +1 to -1. A value of 0 indicates that there is no association between the two variables. A value greater than 0 indicates a positive association, that is, as the value of one variable increases so does the value of the other variable. A value less than 0 indicates a negative association, that is, as the value of one variable increases the value of the other variable decreases.

4.3.2 Correlation Coefficients
The table 4.11 below shows the correlation coefficient matrix of the predictor variables.
Table 4.11: Correlation coefficient

<table>
<thead>
<tr>
<th></th>
<th>Individual Investor Decision</th>
<th>Herding Bias</th>
<th>Loss Aversion Bias</th>
<th>Regret-Avoidance Bias</th>
<th>Mental Accounting Bias</th>
<th>Price Changes Bias</th>
<th>Market Information Bias</th>
<th>Past trends of Stocks</th>
<th>Overconfidence Bias</th>
<th>Anchoring Bias</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individual Investor Decision</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Herding Bias</td>
<td>0.8345</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loss Aversion Bias</td>
<td>0.8507</td>
<td>0.8679</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regret-Avoidance Bias</td>
<td>0.7619</td>
<td>0.8163</td>
<td>0.7568</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mental Accounting Bias</td>
<td>0.5717</td>
<td>0.6231</td>
<td>0.8747</td>
<td>0.8191</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price Changes Bias</td>
<td>0.6710</td>
<td>0.7919</td>
<td>0.6742</td>
<td>0.8365</td>
<td>0.6714</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market Information Bias</td>
<td>0.7715</td>
<td>0.6615</td>
<td>0.7745</td>
<td>0.7271</td>
<td>0.8721</td>
<td>0.6912</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Past trends of Stocks</td>
<td>0.8712</td>
<td>0.7929</td>
<td>0.8741</td>
<td>0.8512</td>
<td>0.9313</td>
<td>0.7915</td>
<td>0.8174</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overconfidence Bias</td>
<td>0.7713</td>
<td>0.5721</td>
<td>0.7749</td>
<td>0.9723</td>
<td>0.7135</td>
<td>0.6615</td>
<td>0.912</td>
<td>0.856</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Anchoring Bias</td>
<td>0.6711</td>
<td>0.6915</td>
<td>0.9742</td>
<td>0.6934</td>
<td>0.5618</td>
<td>0.7814</td>
<td>0.7174</td>
<td>0.651</td>
<td>0.6915</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Research Findings

The study in table 4.11 shows that all the predictor variables were shown to have a strong positive association between them and Individual Investor Decision at a significant level of 0.05 and hence included in the analysis.
4.3.3 Regression Analysis

Analysis in the table 4.12 below shows that the coefficient of determination (the percentage variation in the dependent variable being explained by the changes in the independent variables) $R^2$ equals 0.843, that is, Loss Aversion Bias, Regret-Avoidance Bias, Mental Accounting Bias, Price Changes Bias, Market Information Bias, Past trends of Stocks, Overconfidence Bias and Anchoring Bias explains 84.3% of observed change in individual investor decision. The P-value of 0.000 (Less than 0.05) implies that the regression model is significant at the 95% significance level.

Table 4.12: Model Summary

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Change Statistics</th>
<th>R Square Change</th>
<th>F Change</th>
<th>df1</th>
<th>df2</th>
<th>Sig. F Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>.918(a)</td>
<td>.843</td>
<td>.805</td>
<td>.51038</td>
<td>.843</td>
<td>1.242</td>
<td>4</td>
<td>96</td>
<td>.000</td>
<td>.000</td>
</tr>
</tbody>
</table>

Source: Research Findings

Predictors: (Constant), Herding Bias, Loss Aversion Bias, Regret-Avoidance Bias, Mental Accounting Bias, Price Changes Bias, Market Information Bias, Past trends of Stocks, Overconfidence Bias and Anchoring Bias

Dependent Variable: individual investor decision

4.3.4 Analysis of Variance (ANOVA)

The researcher sought to compare means using analysis of variance.
Table 4.13: Analysis of Variance (ANOVA)

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regression</td>
<td>.852</td>
<td>4</td>
<td>.213</td>
<td>1.242</td>
<td>.000</td>
</tr>
<tr>
<td>Residual</td>
<td>20.35</td>
<td>119</td>
<td>.171</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>22.64</td>
<td>123</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Research Findings

Predictors: (Constant), Herding Bias, Loss Aversion Bias, Regret-Avoidance Bias, Mental Accounting Bias, Price Changes Bias, Market Information Bias, Past trends of Stocks, Overconfidence Bias and Anchoring Bias

Dependent Variable: Individual Investor Decision

ANOVA findings (P-value of 0.00) in table 4.13 show that there is correlation between the predictors’ variables (Herding Bias, Loss Aversion Bias, Regret-Avoidance Bias, Mental Accounting Bias, Price Changes Bias, Market Information Bias, Past trends of Stocks, Overconfidence Bias and Anchoring Bias) and response variable (individual investor decision).

The table shows the results of the regression coefficients required to form the multiple regression model.
Table 4.14: Regression coefficients

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>B</td>
<td>Std. Error</td>
<td>Beta</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>(Constant)</td>
<td>0.903</td>
<td>0.123</td>
<td></td>
</tr>
<tr>
<td>Herding Bias</td>
<td>0.734</td>
<td>0.027</td>
<td>0.101</td>
<td>7.367</td>
</tr>
<tr>
<td>Loss Aversion Bias</td>
<td>0.836</td>
<td>0.030</td>
<td>0.105</td>
<td>1.194</td>
</tr>
<tr>
<td>Regret-Avoidance</td>
<td>0.717</td>
<td>0.027</td>
<td>0.172</td>
<td>1.194</td>
</tr>
<tr>
<td>Mental Accounting</td>
<td>0.679</td>
<td>0.128</td>
<td>0.159</td>
<td>1.194</td>
</tr>
<tr>
<td>Price Changes Bias</td>
<td>0.599</td>
<td>0.039</td>
<td>0.093</td>
<td>1.679</td>
</tr>
<tr>
<td>Market Information</td>
<td>0.789</td>
<td>0.051</td>
<td>0.247</td>
<td>1.592</td>
</tr>
<tr>
<td>Past trends of Stocks</td>
<td>0.911</td>
<td>0.032</td>
<td>0.127</td>
<td>1.669</td>
</tr>
<tr>
<td>Overconfidence Bias</td>
<td>0.823</td>
<td>0.138</td>
<td>0.199</td>
<td>1.783</td>
</tr>
<tr>
<td>Anchoring Bias</td>
<td>0.798</td>
<td>0.091</td>
<td>0.147</td>
<td>1.657</td>
</tr>
</tbody>
</table>

a. Dependent Variable: individual investor decision

**Source: Research Findings**

From the Regression results in the table above, the multiple linear regression model is:

\[
IID = 0.734HEB + 0.836LAB + 0.717RAB + 0.679MAB + 0.599PCB + 0.789MIB + 0.911PSB + 0.823OCB + 0.798ANB + 0.903
\]

The multiple linear regression model indicate that all the independent variables have positive coefficient. The regression results above reveal that there is a positive relationship between dependent variable (individual investor decision) and independent variables (Herding Bias, Loss Aversion Bias, Regret-Avoidance Bias, Mental Accounting Bias, Price Changes Bias, Market Information Bias, past trends of Stocks, Overconfidence Bias and Anchoring Bias).
4.4 Interpretation of the Findings

The study finding indicated that concerning the herding factors (buying and selling, choice and volume of trading stocks, speed of herding), the respondents strongly agreed that other investors decisions of choosing stock types (mean of 4.51), decisions of the stock volume (mean of 3.78) and decisions of buying and selling stocks (mean of 4.13), have impacted on their investment decisions. On the other hand the respondents strongly agreed that they usually react quickly to the changes of other investors decisions following their reactions to the stock market (mean of 3.94) also, the respondents indicated that after a prior loss they become more risk averse (mean of 4.51). They strongly agreed that they avoid selling shares that have decreased in value and readily sell shares that have increased in value (mean of 4.18). However they moderately agreed that they tend to treat each element of their investment portfolio separately (3.53) and also they ignore the connection between different investment possibilities (mean of 3.64).

Further, the respondents strongly agreed that they consider carefully the price changes of stocks that they intend to invest in (mean of 4.41). Market information is important for their stock investment (mean of 4.18) in that they are normally able to anticipate the end of good or poor (mean of 4.11). Lastly the respondents agreed that they put the past trends of stocks under their consideration for their investment (mean of 3.73) and that they believe that their skills and knowledge of stock market can help me to outperform the market (mean of 3.74).

Concerning prospect factors- loss aversion, the respondents strongly agreed that they become more risk averse after a prior loss (mean of 3.98). They also strongly agreed that
they avoid selling shares that have decreased in value and readily sell shares that have increased in value (mean of 4.21) this is in order to avoid regrets.

Mental accounting was also looked at and the respondents disagreed that they tend to treat each element on their investment portfolio separately with a mean of 2.18, also strongly agreed that they that they ignore the connection between different investment possibilities with a mean of 4.21.

Concerning the market factors, price change and market information the respondents strongly agreed that they consider carefully the price changes of stocks that they intend to invest in with a mean of 3.94, also that market information is important for their stock investment with a mean of 3.91. They also strongly agreed that they put the past trends of stocks under their consideration for their investment with a mean of 4.63. overconfidence in the investors was strongly agreed upon by the investors in that they believe that their skills and knowledge of stock market can help them to outperform the market (mean of 4.01), and also that they are able to normally to anticipate the end of good or poor (mean of 4.14).

Lastly considering anchoring, the respondents strongly agreed that they forecast the changes in stock prices in the future based on the recent stock prices with a mean of 4.13 and they moderately agreed that they prefer to buy local stocks than international stocks because the information of local stocks is more available with a mean of 3.64.
CHAPTER FIVE
SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction
This chapter presents a summary of the research and conclusions based on the findings and discussions in the previous chapter and from this; the study makes policy recommendations and recommendations for further research.

5.2 Summary
Successful investing is more than choosing a particular stock; it is also how you go about doing it. This is achieved through staying rational, choosing a few stocks that are likely to outperform the market, being firm to hold on them during short-term market volatility, keeping track of them and controlling excess optimism and pessimism. However, this has not always been observed in practice. The field of behavioral finance has developed in response to the increasing number of stock market anomalies (undervaluation or overvaluation) that could not be explained by financial models. However, there is lack of unanimous agreement in that behavioral finance as a concept is still open for discussion. While research has been conducted in the secondary markets, there is little evidence of studies on individual investor behavior with reference to the NSE. This led to the question; which particular behavioral biases influence individual investor decisions?

Descriptive research design was adopted. The population was estimated at 1.3 million as at 30.6.2014. The sample comprised of 63 individuals who had invested. Data was collected using a structured questionnaire. Pearson product-moment correlation coefficient and linear regression techniques were used for analysis. The data was analyzed using SPSS. The findings were presented in figures and tables.
5.3 Conclusion
The following conclusions were made from the findings of this study:

Individual investment decisions were influenced by several biases. They showed that herding, loss aversion, regret aversion, price changes, market information, past trends of stocks, overconfidence and anchoring were highly affected by their decisions with mean of 4.51, 4.51, 4.18, 4.41, 4.18, 4.63, 4.01 and 4.13 respectively. However mental accounting is less affected with a mean of 3.54 and 3.63.

5.4 Recommendations for Policy
The following are suggestions from the findings of the study in terms of conducting the study and in analyzing the data.

Educating investors is important in order to overcome uncomfortable investment outcomes caused by behavioral biases. In order to manage and balance the effect of behavioral influences with respect to investors decision making, training programs that create investor awareness through firms’ websites in terms of the capacity to point out and protect against cognitive errors and emotional biases that lead to bad investment choices should be offered to prospective individual investors at the same level in that information should not be hidden, misleading or given at different times for investors. This should be done by all firms going public together with stockbrokers and investment banks who should also direct on Annual General Meetings in a way that they are participate and suggest ideas that will help investors grow and minimize losses as a result of behavioral influences. They should also come up with a way of determining minimum profits or dividends as most investors do not understand their payments.
Emphasis should be made on probable cognitive errors such as representativeness, hindsight, illusion of control and availability biases and emotional biases such as regret aversion and over optimism. Investors should carefully consider and carry out research before making investment decisions and should not be carried away by their earlier loss for their future investment decisions. This can restrain the good chances of investment and negatively on the psychology of the investors and lead to unfavorable investment performance. Investors should not put their investment portfolio into separate accounts because each element of the portfolio is different in relation to the others and is treated as independent which can result to unfavorable investment performance.

Apart from the individual investors who directly benefit from the findings of this study, the securities and investment firms should use these findings as reference for their analysis and prediction of the trends of the security market.

5.5 Limitations of the Study
This study had its limitations like any study sought to have which include:

This research was restricted by time in that a lot of time was taken in explaining that the study was for research purposes only and also for gathering data in order to achieve certain outcomes.

Most individual investors were not comfortable with being interviewed and argued that their privacy was being interfered with and for those who were unwilling led me to adopt the drop and pick technique in order to secure a high response rate which was 93.65% that constituted the 59 questionnaires that were returned and therefore made it quantitative enough and possible to do the analysis and make the conclusions.
Reliance on primary data only means that the advantages of secondary data were not enjoyed which would show more information that would make it easier to analyze so as to achieve desired results. Some of the firms could not allow more than one or two questionnaires to be filled or dropped as that was the management policy.

5.6 Suggestions for Further Research
Future researchers can make contributions to this research:

An in depth study in the future that is not limited by time can be carried out to improve the quality of the report whereby a certain identified scenario of investors behavior can be investigated in a particular stock brokerage or investment bank and may provide new information that may form basis of more studies.

A future study could account for more variables that potentially influence individual investor decisions. Further researches are suggested to apply behavioral finance to explore the behaviors influencing the decisions of institutional investors at the NSE. These researches can help to test the suitability of applying behavioral finance for all kinds of securities markets with all components of investors.

Further researchers should base their research on a bigger sample to increase the qualitative data obtained for purposes of desired findings and achieving their objectives fully.
Researchers could also adopt both quantitative and qualitative data to deepen the findings of the study. Secondary data saves time that would otherwise be spent collecting data and in the case of quantitative data, provides more and in depth data analysis that is less biased and cannot be compared to what any individual researcher does on their own.
REFERENCES


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Obamuyi, T. M (2013) Organizations and markets in emerging economies, 4, (1)7


Waweru, N.M. and Ndungu, P. (Forthcoming). Relationship between increase in dividend payments and future earnings of companies quoted in the Nairobi Stock Exchange.


www.investinganswers.com
www.standardmedia.co.ke
www.nse.co.ke
APPENDICES

Appendix I: List of NSE Member Brokerage Firms as at August 2014

1. ABC Capital Ltd IPS Building, 5th floor
2. African Alliance Kenya Investment Bank Ltd 1st Floor, Trans-national Plaza
3. Afrika Investment Bank Ltd Finance House, 9th Floor
4. Apex Africa Capital Ltd Rehani House, 4th Floor
5. SBG Securities Ltd CfC Stanbic Centre, 58 Westlands Road
6. Discount Securities Ltd. (Under Statutory management) Nairobi
7. Francis Drummond & Company Limited Hughes Building, 2nd floor
8. Dyer & Blair Investment Bank Ltd Pension Towers, 10th floor
9. Faida Investment Bank Ltd Crawford Business park, Ground Floor, State House Road
10. Genghis Capital Ltd Prudential Building, 5th Floor
11. Kestrel Capital (EA) Limited ICEA Building, 5th floor
12. Kingdom Securities Ltd Co-operative Bank House, 5th Floor
14. NIC Securities Limited Ground Floor, NIC House, Masaba Road
15. CBA Capital Limited CBA Centre, Mara Ragati Road Junction, Upper Hill
16. Old Mutual Securities Ltd IPS Building, 6th Floor
17. Renaissance Capital (Kenya) Ltd Purshottam Place, 6th Floor, Westlands
18. Standard Investment Bank Ltd ICEA Building, 16th floor
19. Sterling Capital Ltd Barclays Plaza, 11th Floor, Loita Street
20. Suntra Investment Bank Ltd Nation Centre, 7th Floor
21. Equity Investment Bank Limited Equity Centre, Hospital Road, Upper Hill

Source: www.nse.com, 2014
Appendix II: Questionnaire

Questionnaire
I am a student at the University of Nairobi and am writing my MSC research project on behavioral factors that affect investor choices at the NSE. I kindly request you to take part of your time to complete this questionnaire. I assure you that all the information provided will be treated with strict confidentiality. In each question provide the response that best reflects your own experiences. Your cooperation will greatly contribute to the success of this study.

Section A: Background of the Respondent
1. Gender: Male [ ] Female [ ]

2. Age: Less than 30 Years [ ] 31-40 Years [ ]
   41-50 years [ ] More than 50 Years [ ]

3. Marital Status: Single [ ] Married [ ] Divorced [ ]

4. What level of education have you completed?
   Primary Certificate [ ] Secondary Certificate [ ]
   Other College Education [ ] Diploma [ ]
   Degree Certificate [ ] Postgraduate/PhD [ ]

5. What is your nature of employment?
   Self employment (Farming) [ ] Self employment (Business) [ ]
   Formal employment [ ] Both Formal and Self employment [ ]

6. Please estimate your average monthly income (KSHS)
   Less than 5,000 [ ] 5,000 – 20,000 [ ] 20,000-50,000 [ ]
   50,000-100,000 [ ] 100,000-200,000 [ ] More than 200,000 [ ]
# Section B: Behavioral Factors Influencing Investment Decisions

7. Please evaluate the degree of your agreement with the following statements:

<table>
<thead>
<tr>
<th>Behavioral Factors Influencing Investment Decisions</th>
<th>Highly Disagree</th>
<th>Somehow Disagree</th>
<th>Agree</th>
<th>Somehow Agree</th>
<th>Highly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herding Factors (buying and selling, choice and volume of trading stocks, speed of herding)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other investors' decisions of choosing stock types have impact on my investment decisions.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other investors' decisions of the stock volume have impact on my investment decisions.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other investors' decisions of buying and selling stocks have impact on my investment decisions.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I usually react quickly to the changes of other investors' decisions and follow their reactions to the stock market.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prospect Factors - Loss Aversion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>After a prior loss, I become more risk averse.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regret Avoidance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I avoid selling shares that have decreased in value and readily sell shares that have increased in value.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mental Accounting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I tend to treat each element of my investment portfolio separately.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I ignore the connection between different investment possibilities.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market Factors - Price changes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I consider carefully the price changes of stocks that I intend to invest in.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market Information</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market information is important</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
for my stock investment.

**Past Trends of stocks**

I put the past trends of stocks under my consideration for my investment.

**Overconfidence**

I believe that my skills and knowledge of stock market can help me to outperform the market.

I am normally able to anticipate the end of good or poor.

**Anchoring**

I forecast the changes in stock prices in the future based on the recent stock prices.

I prefer to buy local stocks than international stocks because the information of local stocks is more available.
Section C: Individual Investor Choices

8. Please estimate the last shares (KSHS) you bought.

Less than 5,000 [ ] 5,001 – 20,000 [ ] 20,001-50,000 [ ]
50,001-100,000 [ ] 100,001-200,000 [ ] More than 200,000 [ ]

9. For how long had you been trading in shares?

Less than 1 year [ ]
1 to 3 years [ ]
4 to 5 years [ ]
6 to 10 years [ ]
More than 10 years [ ]

10. Have you sold all or part of the shares?
Yes [ ] No [ ]

11. How long have you been participating in the stock market?

Less than 1 year [ ] 1 - 3 years [ ] 3 - 5 year [ ]
5 - 10 years [ ] Over 10 years [ ]

Please name the security company(s) that you are holding an account for stock investment.

……………………………………………………………………………………………
……………………………………………………………………………………………
……………………………………………………………………………………………

12. What encouraged you to purchase the company’s shares during the listing?
(Please tick one only)

My friends [ ]
My experience and financial knowledge [ ]
Others (please specify) ________________________________
13. Have you attended any course of Stock Exchange?

   Yes [ ] No [ ]

14. Which market sector do you usually participate in?
   Agricultural sector [ ] Commercial Services [ ]
   Finance & investment [ ] Alternative Market Segment [ ] Industrial & Allied Sector [ ]

15. What kind of an investor are you?
   Speculative (short-term) [ ] Capital Long (long term) [ ] both [ ]

   Thank you for Participating.