

**EFFECT OF BEHAVIORAL INFLUENCES ON INVESTOR
PORTFOLIO PERFORMANCE AT THE NAIROBI SECURITIES
EXCHANGE**

BY

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DECLARATION

This Research Project is my original work and to the best of my knowledge has not been presented for examination in any other institution or university.

Signed..... Date

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DEDICATION

I dedicate this Research Project to my son Teddy Liam for his understanding when I spent time away from him as I studied for this course.

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ABBREVIATIONS

CMA - Capital Markets Authority

MBA - Master of Business Administration

NSE - Nairobi Securities Exchange

ABSTRACT

This research study was undertaken with the objective to establish how behavioral influences impact on portfolio performance of retail investors at the Nairobi Securities Exchange. Portfolio performance was measured using Sharpe ratio, while behavioral influences were anchoring, loss aversion, herding and overconfidence. A descriptive research design was used in carrying out this research study. The population of this study was all the retail investors at the Nairobi Securities exchange estimated to be 1.77 million in 2016 according to the Capital Market Authority. A sample of one hundred investors drawn using snowballing technique. Primary data was sourced through structured questionnaires administered to one hundred respondents through the drop and pick later method. Secondary data was also obtained on the shares past prices and the Treasury bill rate from the Nairobi Securities exchange and the Kenya National bureau of statistics respectively. A final response rate of fifty three percent was achieved. Data collected was then edited and coded ready for analysis. Data analysis was undertaken using descriptive statistics and correlation and regression analyses. The study finds that portfolio performance (measured by Sharpe ratio) and investor overconfidence are negatively correlated but correlated positively with anchoring, herding, and loss aversion. Overall, behavioral influences therefore have a weak positive effect on portfolio performance among retail investors at the Nairobi Securities Exchange. From this study even the financially literate investors suffer from behavioral effects, from the study eighty seven per cent of the respondents have financial training. The study recommends that the Nairobi securities Exchange, Capital Markets Authority and other capital market players clearly appreciate the role played by the retail investor behavior in influencing share price movements and use the information as a basis of investor education for purposes of minimizing the amount of noise trading and price distortion in the Kenyan capital market. It also serves as a reference point for investors to understand how their behavior affects their portfolio performance.

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

Investors are anticipated under traditional finance to be rational wealth maximizers who base their investment approaches strictly on the risk-return trade-off (Maditinos et al., 2007). Investors who are risk averse construct portfolios in order to maximize expected returns for a given level of market risk (Markowitz, 1952). The efficient market hypothesis (Fama, 1970) posits that investors are rational and that markets are perfect with investors pricing stocks to reflect all the available information in the market. However there are instances where investors deviate from this explanation due to market limitations (Murithi, 2014).

Individual investors make own investments following unique individual decision making processes and see the results of their choices. Not all investments, however, will be gainful as the investors will not always make the right investment decisions over the period of years (Muthama, 2011). However in practice individual investment decisions and returns often depend a lot on the investors' perceptions, routines and cognitive or emotional biases unique to individuals (Abdulahi, 2014). Individuals are inconsistently risk-averse as they are risk-averse in gains but risk-takers in losses (Kahneman & Tversky, 1979).

The influence of psychological bias and emotion on investment decision(s) by the retail investors can be disastrous to the returns on investment and generally their wealth. Individual investors who are vulnerable to these biases might take risks that they do not

understand, receive unforeseen results they do not expect, will be liable to unjustified excessive trading and may end up blaming themselves or others when results are bad (Kahneman & Riepe, 1998).

1.1.1 Behavioral Influences

Behavioral influences comprise behavioral aspects such as loss aversion, overconfidence, cognitive dissonance, disposition effect, representativeness, home bias, anchoring, behavioral biases and herd formation portrayed covertly or overtly by individual investors while undertaking investment and trading decisions. These behaviors influence trends in the stock market (Murithi, 2014). Investor market behavior are acquire from psychological principles of decision making by individuals, an understanding of which can help understand why investors buy or sell stocks and how investors interpret and act on information to make investment decisions (Muswenje, 2009).

Overconfidence is a behavior where investors overestimate the accuracy of their forecasts due to an illusion of knowledge and of control over future outcomes. Disposition effect refers to the behavior where investors are averse to risk. Herding behavior is the tendency of investors to follow actions of others (Nyamute et al., 2015). Herding behavior in stock securities originates from lack of adequate information; either investors do not have information or cannot process available information and transform into knowledge (Fernandez et al, 2011).

Anchoring is common in when investors are faced with concepts that are new and novel (Murithi, 2014). Home bias refers to the situation in which individuals choose to hold

domestic assets rather than foreign assets in their portfolio (Kumar and Goyal, 2015). Loss aversion is reflected on the conclusion that the pain of losing is greater than the pleasure derived from similar gains; with every investor having peculiar ways to deal methodically with uncertainties and loss because the resulting loss hurts (Godoi et al., 2005).

1.1.2 Portfolio Performance

A portfolio refers to an aggregate group of assets held by investors. Portfolio performance indicates the returns to the investors from the group of assets over a given time period and at certain risk levels (Ross et al., 2013). Portfolio composition and performance is reflected by an investor's selection and preference on what to invest in, when to invest, how much to invest, and why to invest as well as when to divest and or exit investments and how much. According to Nyamute et al. (2015), the choice of investment and the number of trades to make rests upon the investor. There are also different investment styles by individuals: passive, growth-oriented, value, and active investment styles. These styles impact portfolio performance, differently.

Investors, while acting rationally, seek to maximize portfolio returns while mitigating risks. Portfolio performance is thus of paramount importance to investing populace (Markowitz, 1952). Investment decisions by investors should therefore be guided by a well-defined investment allocation criterion that incorporate acceptable level of uncertain outcomes for the overall portfolio formation and are in line with the objectives and investment period of the investor(s) (Shikuku, 2014).

1.1.3 Relationship between Behavioral Influences and Portfolio Performance

The nature of the individual investors' conduct in the investment decision making process at securities markets is varied the world over (Ndungu, 2012). Behavioral influences such as emotions, herd instincts and social influences play a critical role in influencing investment decisions; which could result to differences between prevailing selling price and fundamental value. Individual investor behavior imparts investment decisions (choices) and in effect impact overall portfolio performance (Nyamute et al., 2015).

The portfolio theory (Markowitz, 1952) supposes that individual investments are made on the basis of rationality and risk-return trade off, and free of any behavioral influences. However individual investor's behavior deviates from making rational or logical decisions and leans towards being influenced by various behavioral influences; these behavioral influences then influence the investor's rationality in investment undertakings (Kumar and Goyal, 2015). Thus affecting portfolio risk and returns.

Investor sentiment plays a role in influencing individual investment decisions and overall returns to investors. A number of investors use past performance as an indicator of future performance when investing while other investors use news, events and views from acquaintances when investing (Choka, 2014). This supports the prospect theory (Kahneman and Tversky, 1979) assumption that individual investors are not completely and entirely risk-averse but rather they are risk-averse in gains and risk-takers in losses. Individual investors discount results that are only probable in contrast with those that are certain leading to risk aversion in investments involving definite profits and to risk

seeking in those involving certain losses. This leads to inconsistent portfolio performance(s).

1.1.4 The Nairobi Securities Exchange

According to the CMA (2016), individual stock investors at the Nairobi Securities Exchange (NSE) are estimated to be over 1.77 million retail investors; these investors account for a 13.30% trading market share, as at end of June 2016. 132,393 new individual investor accounts were also opened over the period 2008 to June 2016. The total individual investor holding at the NSE has also increased from 23% in 2008 up to slightly above 50% as at 2016.

At the Nairobi securities exchange, security prices move in excess of the fundamental market expectations. Herding is often observed at the exchange; for instance, during Safaricom initial public offer where investors bought the shares because everyone else did. Herding is also observed during the corporate earnings announcement(s). When the performance of the company is good its share price goes up for a short period, then a decline in prices; due to disposition effect where investors rush to sell the stock when the prices are up in the fear that it may fall (Shikuku, 2014).

1.2 Research Problem

According to traditional finance theory, investors are assumed to be rational wealth maximizers who follow basic financial rules and base their investment approaches only on the risk-return trade off. Rational investors are driven by market fundamentals. However, fundamentals-based models do not explain the past sufficiently, or forecast the future reliably (Maditinos et al., 2007). Besides, investors must make returns on their

trades and make the choice of where to invest and how many times to trade (Nyamute et al., 2015). Behavior, unlike rational choice, is society and culture specific (Sayim and Rahman, 2015). Individual investors often have limited skills and know-how to gauge and understand financial products; they thus have to rely on their beliefs and preferences to guide their financial investments composition (Sahi & Arora, 2012).

The individual investors' number as well as their percent holding at the NSE has been increasing from 2008 to date (CMA, 2016). These individuals influence security prices in many ways. Herding is often observed at the exchange; in reaction to corporate actions, decisions and announcements. Prices also vary randomly but within the ten percent daily trading change limit (Shikuku, 2014).

A number of empirical studies have been undertaken in the past on the research study area. One study results indicate that in Greece individual investors depend largely on media and noise trading when making their investment decisions, while professional investors depend less on portfolio analysis and more on fundamental and technical analysis (Madinis et al., 2007). Unpredictable changes in rational and irrational investor sentiment have a big positive impact on Istanbul stock exchange returns; a positive investor sentiment leads to positive returns (Sayim and Rahman, 2015). Investors are prone to a mixture of biases that impact their financial behavior. Segmenting the individual investors based on their investment biases yields novice learners, knowledgeable confirmers, watchful anticipators and resourceful planners. There is also a segment of investors who have biases and also have high financial satisfaction levels (Sahi & Arora, 2012).

Choka (2014) in a study found that investor sentiment plays a role in influencing investment decisions and returns of the real estate investor. Individual investment decisions towards initial public offerings are influenced by cognitive biases than do emotional biases (Jagullice, 2013). Individual investment decisions are affected by anchoring behavior and by experience of their past performance suggesting the effect of anchoring (Murithi, 2014). Investor behavior does influence collection of assets performance with disposition effect and herding affecting portfolio performance positively while overconfidence has a negative effect on performance (Nyamute et al., 2015). Obara (2015) found unit trusts returns are affected by representativeness, overconfidence, and anchoring; representativeness and overconfidence have strong positive correlation with investment, while anchoring is not common among the unit trust manager.

From the empirical studies reviewed, behavioral influences are multifaceted and their impact on portfolio performance varied. Various studies have analyzed different dimensions of behavioral influences, also. Majority of the studies indicate that behavioral influences do affect investor decisions and portfolio performance(s). However continuous changes in the demographic profile and social structure in the country, increase in income levels, technology advancements, bring about major shifts in the attitudes and preferences of investors (Sahi and Arora, 2012); thus the need for further research on the research study area. The research study sought to answer the research question: what is the effect of behavioral influences on individual investor portfolio performance at the Nairobi Securities Exchange?

1.3 Research Objective

This study sought to achieve the below objectives.

1.3.1 General Objective

The objective of the research study was to investigate the effect of behavioral influences on investor portfolio performance at the Nairobi Securities Exchange.

1.3.2 Specific Objectives

The study also sought to achieve the below specific objectives.

- i. To investigate the effect of loss aversion on investor portfolio performance at the Nairobi securities exchange.
- ii. To investigate the effect of overconfidence on investor portfolio performance at the Nairobi securities exchange.
- iii. To investigate the effect of herding on investor portfolio performance at the Nairobi securities exchange.
- iv. To investigate the effect of anchoring on investor portfolio performance at the Nairobi securities exchange.

1.4 Value of the Study

The researcher is certain that the research study is of benefit to a number of stakeholders in the Kenyan economy. Potential and existing investors in the securities exchange in Kenya shall find the research study useful and informative; they might then become better investment decision makers. The study would also be useful to financial service providers, fund managers and advisors; they would be in a better position to meet the needs of their clients and tailor their product offerings accordingly.

The study shall also be of great value to other researchers; who might find the research study an invaluable reference point. Policy makers and regulators in the financial markets could also obtain input to their policy drafts from the research study. Policy makers and market regulators such as the securities exchange and the capital markets authority could draft their policies and promotion strategies better with input from the findings from this research study.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter begins with the theoretical review, the determining factors of investor portfolio performance are then discussed, and then the empirical review is made, and ends with a chapter summary.

2.2 Theoretical Review

There are theories relevant to the research study area: prospect theory, portfolio theory, and efficient markets hypothesis. The theories are presented and discussed below.

2.2.1 Portfolio Theory

The portfolio theory (Markowitz, 1952) postulates that investors are risk hostile and they hold well diversified portfolios as opposed to investing their entire wealth in one or a few assets. The portfolios are assumed to be constructed on a risk-return tradeoff basis and the portfolio returns are normally distributed and are expected to accrue maximum returns to investors with minimum risk assumed. Thus, if investors hold a well-diversified portfolio of assets, their attention should be on portfolio performance rather than individual asset performance (Pandey, 2009); as a result, investors can reap the benefits of diversification, particularly a reduction in the riskiness of their portfolios (Obara, 2015).

There are instances however where individual investors and markets go contrary to portfolio theory expectations due to market imperfections and behavioral influences depicted covertly or overtly by investors (Murithi, 2014). In practice, heuristic biases

often influence investor decisions which in effect affect their investment returns (Obara, 2015). The research study sought to understand how behavioral biases are manifested and their effect on portfolio performance.

2.2.2 Prospect Theory

The prospect theory as advanced by Kahneman and Tversky (1979) provides scrutiny of decision making by investors under uncertainty while viewing decision making under risk like a choice between prospects. The theory shows that selection among risky prospects exhibit several manifest effects that contradict the expectations as advanced by the portfolio theory; investors often underweight results that are merely likely in comparison with results that are obtained with certainty leading to risk aversion in choices involving sure gains and to risk seeking in choices involving sure losses.

Prospect theory defines various states of mind that are probable to influence individual investment decision-making process (Kimani, 2011). These states of mind are often observable in behavioral characteristics depicted by investors while considering making investments as well as while realigning their portfolio holdings. An implication of prospect theory is that individual investors frame outcomes or transactions subjectively in their minds thereby affecting the expected or accruing returns (Kahneman and Tversky, 1979).

2.2.3 Efficient Markets Hypothesis

Efficient markets hypothesis was advanced by Fama (1970). This theory is all about whether securities prices reflect fully all the available information at any given time. The

theory acknowledges the role of capital markets in resource allocation and relies on the assumption that markets are perfect with many participants and prices always fully reflect all available information. Investors are also assumed to have ready access to the available information (this information randomly trickles to the markets, also) and to be rational and prefer more returns to less returns.

Fama (1970) notes the existence of market participants such as corporate insiders and experts who might have monopolistic access to information. As such, these market participants have more access to information than other investors; their actions might thus influence capital market operations by influencing investor actions or decisions. The efficient markets theory presupposes that investors treat the available information the same way always; this might not always be the case in practice. Heuristic biases often influence investor decisions thus a deviation from the theory's assumption (Obara, 2015); some investors use past performance as an indicator of future performance while other investors use news, events and opinions from peers when investing (Choka, 2014).

2.3 Determinants of Portfolio Performance

Behavioral influences such as loss aversion, overconfidence, anchoring, and herd formation by individual investors while undertaking investment and trading decisions influence trends and investor returns in the stock market (Murithi, 2014). However, there are other factors that are theoretically expected to influence individual investor portfolio performance. These are discussed below.

2.3.1 Investor Investment Style

First, investor investment style affects portfolio returns. An investment style may be active investment style or passive investment style; both affect portfolio returns. A passive style involves making investments and only making occasional reviews and portfolio alignments after some period time. Active investment style involves daily portfolio management; actively searching out for short selling opportunities to take advantage of in the market. An inactive investment style leads to a positive effect on portfolio performance while active investing should be cautiously deployed to avoid the negative effects (Nyamute et al., 2015).

2.3.2 Diversification

Diversification also impacts on portfolio performance. Investors can diversify portfolio holdings thus reduce their overall risk exposure by carefully acquiring and holding an appropriate assortment of investments. Diversification therefore assist to reduce reliance on a single asset's returns thus stabilizing and ensuring income inflows in form of dividends and or capital gains (Bender and Ward, 2009). Risk and return balance afforded by diversification thus influences portfolio returns.

Diversification involves an investor undertaking investment in more than one investment vehicle or asset. Changes in the environment affect returns and risk profiles of these investments differently. A decline in one asset returns might mean an increase in returns from another asset class or vehicle and vice versa. As such overall portfolio returns are mitigated against returns and risk fluctuations through diversification (Bender & Ward, 2009).

2.3.3 Portfolio Size

Portfolio size also affects returns from the portfolio. A bigger portfolio in terms of value of financial resources deployed provides higher returns relative to smaller portfolios. Portfolio size stems from financial capability and budgets of individual investors; such capability is unique to each individual. Financial capability is thus a factor of disposable income available: that is, how much money there is for consumption and saving. (Muthama, 2011).

Considerations for various financial needs to be met, length of time before funds invested will be required for other uses, funds accessibility, expected loss in other local investments, diversification requirements, and so on, contribute to financial capability (Mutswenje, 2009). Portfolio size can be increased or raised by making more investments or adding new units on existing investments.

2.3.4 Portfolio Composition

Composition of a portfolio also affects the overall portfolio performance. Individual assets selection to acquire and form a portfolio contributes to this composition and thus having effect on portfolio performance. The onus is therefore on investors to carefully pick assets that are in line with their investing goals and objectives. However it is very hard to regularly pick the best or always avoid worst securities in a portfolio (Wafula, 2014). The time horizon affects portfolio composition; over the long run a fairly appropriate portfolio shall be formed.

Investment portfolio composition is the many individual investments within a portfolio. It could be classified in terms of asset classes, industry invested in, maturity period, either

short term or long term (Wafula, 2014). The individual investor's situation and characteristics influences the portfolio composition choice and nature. Behavioural influences also play a role in portfolio composition.

2.4 Empirical Review

There are past studies that have been undertaken on the research study area. A number of foreign and local such studies are reviewed and presented in this section.

Sayim and Rahman (2015) undertook a study to look at the effect of Turkish individual speculator conclusion on the Istanbul stock Exchange and to explore whether financial specialist assumption, stock return and instability in Turkey are connected. The study used secondary data for period 2004-2010 on the stock returns and volatility. Population comprised all individual investors in Turkey. Descriptive statistics and vector auto regression (VAR) were used in data analysis. The study found that startling changes in balanced and nonsensical financial specialist assessment have a critical positive effect on stock trade returns. This study however does not indicate the sample size used.

Blasco et al. (2012) in a study aimed to investigate grouping conduct among speculators, to decide its objective and passionate part calculates and distinguish connections among them, used secondary data obtained from Spanish Stock Exchange Association on all Ibex-35 index securities for period 1997–2003. Granger causality tests to assess the effect of profit and market conclusion for grouping power were undertaken; the nearness of grouping was affirmed. The outcomes uncover that the crowding force relies on upon

past returns and estimation or subjective evaluations and affirm the nearness of both a balanced and a passionate element

Chen et al. (2011) also undertook a study to recognize attributes of Taiwanese speculators that digress from the run of the mill method of reasoning overseeing budgetary choices, through the examination of their benefit inclinations and venture criteria. Population of the study consisted all individual investors in Taiwan stock market. Primary data was collected via questionnaires administered to a convenience sample of 60 people with 83% response rate. The analytical hierarchy process (AHP) method was used to analyze the data. Concentrate on discoveries show chance resilience is the most imperative element for Taiwanese speculators when they plan their advantage portfolios. However, they prefer stocks to other assets. At the point when advertise environment and hazard resilience are viewed as, shared assets are picked well beyond stocks and bonds end up being the minimum favored resource.

Maditinos et al. (2007) in a research study to investigate the various methods and techniques used by Greek investors when evaluating potential additions to their investment portfolios, used interviews and questionnaires to collect data from 1,014 respondents in Greece selected randomly in the period between December 2003 and June 2004 with a 43 per cent average response rate. Data analysis was by content analysis and the study results indicate that individual financial specialists depend more on daily papers/media and commotion in the market when settling on their speculation choices, while proficient speculators rely more on fundamental and technical analysis and less on portfolio analysis.

Tourani-Rad and Kirkby (2005) in a study, using a random sample of 122 New Zealand investors and survey research design, investigated investor overconfidence, socialization and the expertise impact. Primary data was collected covering a 10-month period up to September 2002; a response rate of 58% was achieved. Data were analyzed using descriptive statistics and correlation analysis. The study found support for the investor overconfidence theory, familiarity effect was confirmed (investors hold a high proportion of local stocks) and concerning the socialization theory, investors actively sought information regarding the stock market.

Nyamute et al. (2015) in a research study sought to determine the contribution of investor behavior in influencing investor portfolio performance at the Nairobi Securities Exchange using a sample of 385 individual stock investors. The population constituted all individual retail stock investors at the securities exchange. Primary data on investor behavior (collected using a questionnaire) and secondary data (on portfolio performance) was used. Data analysis was done using multiple regression and found that investor behavior influences portfolio performance with herding and disposition effect having a positive effect on portfolio performance while overconfidence has a negative effect on performance.

Murithi (2014) undertook a research study to establish whether anchoring affect investment decisions of individuals in Kenya using a descriptive research design targeting a population of individual investors (and a random sample of 120) in the 22 licensed brokerage firms operating in Kenya. Primary data collected using questionnaires was used in the study and data analysis done using correlation and regression analyses.

The study established that individual investment decisions are affected by anchoring behavior and that decisions are affected by experience of their past performance.

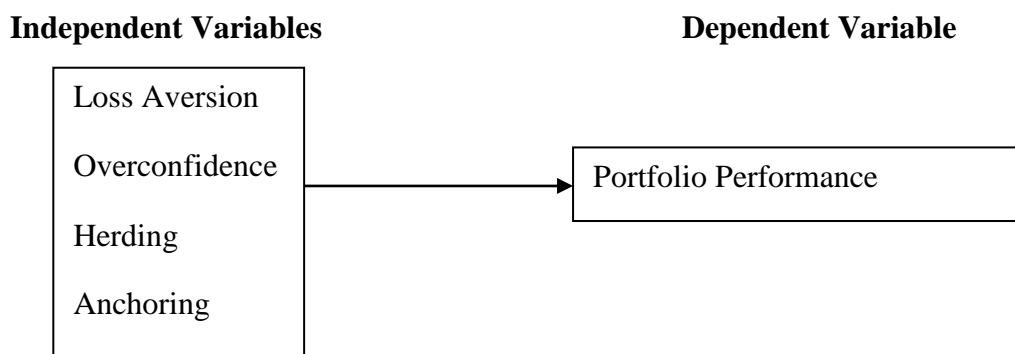
Shikuku (2014) undertook a study to determine the effects of behavioral factors on individual investor choices at the NSE using a descriptive design study and primary data collected by the use of interviews and questionnaires administered to 63 individual investors (chosen using random sampling technique) selected from 21 listed investment and stock brokerage firms. The study population was 1.3 million NSE investors then and data analysis done using descriptive statistics and correlation analysis. The study established factors that determine the individual investor behavior at the NSE: herding, loss aversion, regret aversion, price changes, market information, past trends of stocks, overconfidence and anchoring. Though a high response rate of 93.65% was achieved the sample size is relatively small.

Jagullice (2013) undertook a study to determine the effect of behavioural biases on individual investor decisions with respect to IPOs in Kenya using a descriptive research design, a population of 1.3 million investors and a sample of 96 individuals obtained using stratified sampling on gender basis. Primary data was collected using structured questionnaires and regression analysis undertaken. The study findings indicate cognitive and emotional biases accounted for 57.5% of the variance in individual investor decisions towards IPOs at the NSE, with regret aversion bias having the highest impact on the individual investor decisions. The study findings imply that individual investment decisions towards IPO are influenced more by cognitive biases than by emotional biases.

Kimani (2011) in a study sought to examine the effect levels of behavioral impacts on the individual investor choices of securities at NSE. The study also used a descriptive survey design and primary data collected using self-administered drop and pick questionnaires, a sample of 100 individual investors from the twenty registered stock brokerage and investment banks was selected using stratified random sampling. Data analysis was done using descriptive statistics and content analysis. The study found that among the heuristic variables (ability bias, overconfidence, anchoring, and gambler’s fallacy), overconfidence and gambler’s fallacy have the highest impact on the decision making of individual investors while anchoring had a moderate impact. Among the prospect factors (loss aversion, regret aversion, mental accounting), loss aversion has the highest impact on the decision making of the investors while mental accounting and regret aversion has a high effect.

2.5 Conceptual Framework

Figure 2.1: Conceptual Framework



Source: Author (2016)

2.6 Summary of Literature Review

Under this section, the theoretical audit has been made with the key theories relevant to the research study area (portfolio theory, prospect theory and efficient markets theory) have been discussed. The other determinants of investor portfolio performance have also been presented and discussed. The relevant past studies, both foreign and local, have also been reviewed.

From the empirical studies reviewed, behavioral influences are multifaceted and impact on portfolio performance varied. Various studies have analyzed different dimensions of behavioral influences, also. Majority of the studies indicate that behavioral influences do affect investor decisions and returns (Tourani-Rad and Kirkby, 2005; Nyamute et al., 2015; Jagullice, 2013; Murithi, 2014; Shikuku, 2014). However continuous changes in the demographic profile and social structure in the country, increase in income levels, technology advancements, bring about major shifts in the attitudes and preferences of investors (Sahi and Arora, 2012); thus the need for further research on this research study area.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This section explains the research study research approach. It details the research design used, population and sampling, data collection method used as well as how data was analyzed.

3.2 Research Design

A research design is an outline that specifies the methods and procedures for gathering and analyzing the required information. A research design outlines a framework or plan of activity for the research. There is no single best research design. The major purpose of descriptive research is to describe characteristics of objects, people, groups, organizations, or environments (Zikmund, et al., 2010). The research study utilized a descriptive research design. According to Kothari (2004), descriptive research studies are those studies which are worried with depicting the attributes of a specific individual, or of a gathering Shikuku (2014) also used a similar research design while undertaking a similar research study.

3.3 Population

All items in a field of study comprise the population (Kothari, 2004). According to the CMA (2016), individual stock investors at the Nairobi Securities Exchange (NSE) are estimated to be 1.8 million retail investors as at end of June 2016. These investors formed the population of the research study.

3.4 Sample Design

A sample is a subset from a bigger populace and examining includes any technique that makes determinations in view of estimations of a segment of the populace (Zikmund et al, 2010). The sampling design deals with the technique of selecting things to be watched for a given study (Kothari, 2004). A sample of 100 individual investors was used in the study. Similar past studies have used a similar sample size (Jagullice (2013); Kimani, 2011). Snowballing was used to select the sample elements.

Snowball sampling is a multistage sampling procedure by which a small initial sample increases into a sample large enough to meet the requirements of research design and data analysis. The snowballing results from members of an initial sample from the target population enlisting other members of the population to participate in the study (Hoyle, Harris, and Judd, 2002). With snowballing the analyst reaches a little gathering of individuals who are significant to the examination point and afterward utilizes these to set up contacts with others (Bryman, 2008). The first 10 investors were identified by the researcher; these then led the researcher to others. The ten investors were identified with the assistance of stock brokers within Nairobi city.

3.5 Data Collection

The research study utilized primary data. These data was collected via directing controlled questionnaires (see appendix) through the drop and pick later method. The questionnaires were administered by the researcher thereby according the flexibility to offer clarification to respondents wherever necessary. Secondary data was also obtained

from the securities exchange on the share prices as well as other returns to investors (such as dividends, where applicable) covering June 2013 to June 2016.

3.6 Validity and Reliability

This section explains the measures to ensure validity and reliability of the data collection instrument. Sound measurement must meet the trial of legitimacy, dependability and practicality. Validity alludes to the degree to which a test measures what we really wish to quantify; it shows the degree to which an instrument measures what it is supposed to measure (Kothari, 2004). The researcher ensured the measuring instrument provided adequate coverage of the topic under study thereby ensuring content validity. Also, the questionnaire was pretested and any measurement defects amended beforehand.

Reliability has to do with the accuracy and exactness of a measurement procedure; a measuring instrument is reliable if it provides consistent results (Kothari, 2014). Reliability was ensured by standardizing administration of the questionnaires; the researcher solely engaged the respondents thus assuring uniform interpretation of questions asked and responses among the targeted respondents.

3.7 Data Analysis

This section discusses the data analysis approach and methodology used by the study. It has two subsections: data analysis model and statistical tests of significance. Information investigation is the utilization of thinking to comprehend the information that has been assembled. In its least difficult shape, information examination may include deciding predictable examples and abridging the pertinent subtle elements uncovered in the examination (Zikmund et al, 2010). Data collected was summarized and presented using

descriptive statistics and regression analysis undertaken to establish underlying relationship between the study variables.

3.7.1 Data Analytical Model

The specific regression analysis model was as below:

$$PP = \beta_0 + \beta_1 LA + \beta_2 OC + \beta_3 H + \beta_4 A + \varepsilon$$

Where; **PP** = portfolio performance; **LA** = Loss Aversion; **OC** = overconfidence; **H** = herding; **A** = anchoring; ε = error term; β_0 = intercept; β_i = beta coefficients for respective independent variables. The operationalization of the model variables is presented below:

| Variable | Operationalization |
|-----------------------------------|---|
| PP – Portfolio Performance | Measured by the Sharpe ratio (S); S= $\frac{\text{average portfolio return} - \text{risk free rate}}{\text{standard deviation of returns}}$ |
| LA – Loss aversion | Measured by whether an investor feels the pain of losing much more than the pleasure in similar gains; a yes is scored “1”, a no, “0”. |
| OC – Overconfidence | Measured by whether an investor overestimates the accuracy of his/her forecasts due to skills and knowledge gained over time and feels in control over future outcomes; a yes is scored “1”, a no, “0”. |
| H – Herding | Measured by whether an investor has a tendency to follow actions of others; a yes is scored “1”, a no, |

| | |
|----------------------|---|
| | “0”. |
| A - Anchoring | Measured by whether investors rely on past experience, past prices, ignore new information and or fix prices before buying or selling shares; a yes is scored “1”, a no, “0”. |

Table 3.1: Model Variables Definition.

3.7.2 Tests of Significance

The level of statistical significance is the level of risk that you are prepared to take inferring that there is a relationship between two variables in the population from which the sample was taken when in fact no such relationship exists (Bryman, 2008). Test of significance for the overall analysis model were undertaken using F-test and t-test of significance of the model coefficients made at 95% level of significance.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents and discusses the data analysis, results and discussion. The response rate, data validity, descriptive statistics, correlation and regression analyses are covered and the chapter ends with a discussion of research findings.

4.2 Response Rate

The study sample one hundred respondents. Questionnaires were distributed to these respondents by the researcher and picked later. Out of the targeted respondents, only sixty one provided responses but only 53 of these had properly filled their questionnaires and provided all the relevant data. The response rate was good for data analysis. According to Kothari (2004), a response rate above fifty percent is good for data analysis purposes.

4.3 Data Validity

This section explains the measures used to ensure validity and reliability of the data collection instrument as had been detailed under section 3.6. The researcher ensured the measuring instrument provided adequate coverage of the topic under study thereby ensuring content validity. Also, the questionnaire was pretested on five investors prior to actual data collection; no measurement defects were found at this point. Reliability was ensured by standardizing administration of the questionnaires; the researcher solely engaged the respondents thus assuring uniform interpretation of questions asked and responses among the targeted respondents.

4.4 Descriptive Statistics

This section presents and discusses the research study descriptive statistics. The mean, standard deviation, coefficient of variation, kurtosis and skewness are covered and discussed.

Table 4.1: Descriptive Statistics

| | N | Min | Max | Mean | Std. Deviation | Skewness | Skewness | Kurtosis | |
|--------------------------------|-----------|-----------|-----------|-----------|----------------|-----------|------------|-----------|------------|
| | Statistic | Statistic | Statistic | Statistic | Statistic | Statistic | Std. Error | Statistic | Std. Error |
| Gender(male, female) | 53 | 0 | 1 | 0.62 | 0.489 | -0.521 | 0.327 | -1.798 | 0.644 |
| Age (years) | 53 | 1 | 4 | 1.98 | 0.82 | 0.905 | 0.327 | 0.864 | 0.644 |
| Finance trained (yes or no) | 53 | 0 | 1 | 0.87 | 0.342 | -2.237 | 0.327 | 3.122 | 0.644 |
| Amount invested (Ksh) | 53 | 1 | 4 | 1.91 | 1.244 | 0.932 | 0.327 | -0.89 | 0.644 |
| Overconfidence (Section B, V) | 53 | 0 | 1 | 0.42 | 0.497 | 0.355 | 0.327 | -1.949 | 0.644 |
| Anchoring (Section C,vi) | 53 | 0 | 1 | 0.49 | 0.505 | 0.039 | 0.327 | -2.078 | 0.644 |
| Herding (section D, vi) | 53 | 0 | 1 | 0.34 | 0.478 | 0.697 | 0.327 | -1.575 | 0.644 |
| Loss aversion (Section E, iii) | 53 | 0 | 1 | 0.89 | 0.32 | -2.513 | 0.327 | 4.484 | 0.644 |
| Sharpe_ratio percentage | 53 | -3.9 | 0.18 | -0.833 | 0.79664 | -1.285 | 0.327 | 3.34 | 0.644 |
| Valid N (listwise) | 53 | | | | | | | | |

Source: research findings

From the table above, the mean gender statistic is 0.62; thus more men formed the final respondents. The minimum and maximum age bracket of investors is 20-30 years and above 50 years respectively; and a mean of 31-40 years. The investors also have finance training background; 87% of the investors have finance training background, 13% do not. The minimum investment amount is below Kenya shillings 200,000 and a maximum of above 601,000; the average investment is in the range 201,000 to 400,000.

Overconfidence has a minimum of 0 and a maximum of 1; a mean of 0.42 (thus this variables does not influence investor decisions) and standard deviation of 0.5. Skewness and kurtosis are 0.36 and -1.95 respectively; the variable is slightly skewed to the right, few outliers lying below the mean also exist since the kurtosis figure is -1.95. Anchoring has a minimum of 0 and a maximum of 1; a mean of 0.49 (thus investors are split on whether this variables does influence investor decisions) and standard deviation of 0.51. Skewness and kurtosis are 0.04 and -2.1 respectively; the variable is near normally distributed, few outliers lying below the mean also exist since the kurtosis figure is -2.1. Herding has a minimum of 0 and a maximum of 1; a mean of 0.34 (thus this variables does not influence investor decisions) and standard deviation of 0.48. Skewness and kurtosis are 0.7 and -1.6 respectively; the variable is slightly skewed to the right, few outliers lying below the mean also exist since the kurtosis figure is -1.6.

Loss aversion has a minimum of 0 and a maximum of 1; a mean of 0.89 (thus this variables does influence investor decisions) and standard deviation of 0.32. Skewness and kurtosis are -2.513 and 4.48 respectively; the variable is skewed to the left, some outliers lying above the mean also exist since the kurtosis figure is 4.48. Sharpe ratio (a risk adjusted measure of investor portfolio performance) has a minimum of -3.99 and a

maximum of 0.18; a mean of -0.83 and standard deviation of 0.796. Skewness and kurtosis are -1.285 and 3.34 respectively; the variable is slightly skewed to the left, few outliers lying below the mean also exist since the kurtosis figure is -1.95. Over the study period (start of June 2013 to end of June 2016), the worst investor registered negative 399% portfolio performance, the best registered 18% performance, on average investors made 83% losses to the portfolios.

4.5 Correlation Analysis

This section explains the correlation analysis between the dependent (sharpe ratio) and each of the independent variables as well as among the independent variables.

| Table 4.2: Correlations | | overconfidence | anchoring | herding | loss_aversion | sharpe_ratio |
|--------------------------------|---------------------|----------------|-----------|---------|---------------|--------------|
| overconfidence | Pearson Correlation | 1 | | | | |
| | Sig. (2-tailed) | | | | | |
| anchoring | Pearson Correlation | 0.092 | 1 | | | |
| | Sig. (2-tailed) | 0.51 | | | | |
| herding | Pearson Correlation | .285* | 0.173 | 1 | | |
| | Sig. (2-tailed) | 0.038 | 0.216 | | | |
| loss_aversion | Pearson Correlation | 0.059 | -0.245 | 0.005 | 1 | |
| | Sig. (2-tailed) | 0.673 | 0.077 | 0.973 | | |
| sharpe_ratio | Pearson Correlation | -0.142 | 0.195 | 0.138 | 0.016 | 1 |
| | Sig. (2-tailed) | 0.312 | 0.162 | 0.325 | 0.912 | |

Source: research findings

From the above correlation analyses summary table, sharpe ratio has a negative 0.142 correlation coefficient against overconfidence; portfolio performance return thus is slightly negatively correlated with investor overconfidence. Against anchoring, sharpe ratio has a correlation coefficient of 0.195; investor portfolio returns is positively correlated with anchoring behavior. Sharpe ratio has a correlation coefficient of 0.138 against herding behavior; investor returns thus is positively correlated with herding behavioural influence. Sharpe ratio has a positive 0.016 correlation coefficient with loss aversion; investor returns thus is very slightly correlated with loss aversion by investors.

Overconfidence has a correlation coefficient of 0.092 with anchoring; these variables are thus positively but weakly correlated. Overconfidence and herding are positively correlated, with positive 0.285 correlation coefficient. Overconfidence and anchoring are also positively correlated, with a 0.285 correlation coefficient. Loss aversion and overconfidence are almost not correlated with a slight positive correlation coefficient of 0.059. Herding and anchoring are positively correlated, with a 0.173 correlation coefficient. Loss aversion and herding behavior are almost not correlated with a correlation coefficient of 0.005. Loss aversion and anchoring behavior are negatively correlated with a correlation coefficient of -0.245. The independent variables are thus not highly correlated with each other, this indicates the absence of multicollinearity problem.

4.6 Regression Analysis and Hypotheses Testing

This section discuss the model summary results, the analysis of variance (ANOVA) and the model coefficients.

4.6.1 Model Summary

The table below provides the research study model summary.

Table 4.3: Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------------------|----------|-------------------|----------------------------|
| 1 | .306 ^a | 0.094 | 0.018 | 0.78943 |

a. Predictors: (Constant), loss aversion, herding, overconfidence, anchoring

Source: research findings

From the table above, the R statistic is positive 0.306 but the adjusted R square is very low (0.018 or 1.8%). This indicates that Sharpe ratio (investor portfolio returns) are weak positively correlated with the investor influences (anchoring, herding, overconfidence, loss aversion). The R square statistic measures the significance of the study model; it is also referred as coefficient of determination (Kothari, 2004). Therefore the study model explains 9.4% of the variations of the investor returns resulting from investor behavioral influences.

4.6.2 Analysis of Variance

The table 4.4 below presents the analysis of variance (ANOVA) summary.

Table: 4.4 Analysis of Variance^a

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|-------|------------|----------------|----|-------------|-------|-------------------|
| 1 | Regression | 3.087 | 4 | 0.772 | 1.238 | .307 ^b |
| | Residual | 29.914 | 48 | 0.623 | | |
| | Total | 33.001 | 52 | | | |

- a. Dependent Variable: sharpe_ratio
- b. Predictors: (Constant), loss_aversion, herding, overconfidence, anchoring

Source: research findings

The f statistic indicates how and whether a research study model best fits the population of a research study (Kothari, 2004). The above indicates F statistic of 1.238 and significance value of 0.307. The analysis was undertaken at 95% significance level; thus the 0.307 is higher than the 0.05 significance level. Thus the study model is less significant in identifying the effect of behavioral influences on investor portfolio performance.

4.6.3 Model Coefficients

The table 4.4 below provides a summary of the model coefficients.

Table 4.5: Model Coefficients

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | 95.0% Confidence Interval for B | |
|----------------|-----------------------------|------------|---------------------------|--------|-------|---------------------------------|-------------|
| | B | Std. Error | Beta | | | Lower Bound | Upper Bound |
| 1 (Constant) | -1.12 | 0.377 | | -2.955 | 0.005 | -1.874 | -0.356 |
| overconfidence | -0.34 | 0.23 | -0.212 | -1.47 | 0.148 | -0.802 | 0.125 |
| anchoring | 0.324 | 0.228 | 0.205 | 1.423 | 0.161 | -0.134 | 0.782 |
| herding | 0.27 | 0.242 | 0.162 | 1.118 | 0.269 | -0.216 | 0.757 |
| loss_aversion | 0.194 | 0.354 | 0.078 | 0.546 | 0.588 | -0.519 | 0.906 |

Source: research findings

From the above table, the below analytical model was obtained:

$$PP = -1.12 + 0.194LA - 0.34OC + 0.27H + 0.324A$$

Therefore, portfolio performance (measured by sharpe ratio) shall be a negative of 1.12 in the absence of the independent variables. Changes in loss aversion results in similar changes in the portfolio performance by 0.194. A unit change in overconfidence leads to a negative 0.34 change in the portfolio performance. A unit change in herding influence leads to a 0.27 change in the portfolio performance while a unit changes in the anchoring variable leads to 0.324 change in the portfolio performance.

4.7 Discussion of Research Findings

Based on the above analyses, the researcher concludes that investor portfolio performance (as measured by Sharpe ratio) is positively correlated with the investor behavioural influences (anchoring, herding, overconfidence, loss aversion). Portfolio performance return is also slightly negatively correlated with investor overconfidence. Investor portfolio returns is positively correlated with anchoring behavior, herding behavioral influence, and slightly positively correlated with loss aversion by investors. Sayim and Rahman (2015) in a similar research study also found investor behavior influences to have positive effect on investor returns.

The research findings support the Prospect theory (Kahneman and Tversky, 1979) position that individuals' behavioural influences do influence investment decisions and choices and in effect the returns that accrue to the said investors. However the risk- return criterion as postulated by Portfolio theory (Markowitz, 1952) is contradicted by the findings; investor behavioral influences positively affect their portfolio returns. Over the

period of study investors also lost their wealth in the high of -399% and an average of -83%. Since the correlation analysis indicates that investor behavioral influences are positively correlated with their portfolio performance, these losses could be attributed to among other factors, the investors' behavioral characteristics.

From the descriptive statistics, the minimum age of investors at the Nairobi securities exchange is in the range 20 to 30 years and maximum age is over 51 years, but the average investor is aged between 31 and forty years. Sixty two percent of these investors are also male, while eighty seven percent have attended training on finance and or finance related training. The average investment amount by the said investors is in the range of Kenya shillings 101,000 and 200,000.

Correlation analysis indicates that overconfidence is positively correlated with all the other independent variables. Overconfidence has a positive 0.092 correlation coefficient with anchoring, a positive 0.285 correlation coefficient with herding and a positive 0.059 correlation coefficient with loss aversion. Anchoring and herding behavior are also correlated positively, with a 0.173 correlation coefficient. Loss aversion has a positive 0.005 correlation coefficient with herding behavior, thus these two are also positively correlated. However loss aversion and anchoring are negatively correlated with a negative 0.245 correlation coefficient. These two are therefore weakly negatively correlated. Thus increases in loss aversion diminish the anchoring behavior.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter discusses the research study findings, presents a conclusion and recommendations. The study limitations are also highlighted and suggestion for further research made.

5.2 Summary of Findings

The research study sought to investigate the effect of behavioral influences on investor portfolio performance at the Nairobi Securities Exchange. The influences studied were overconfidence, anchoring, herding, and loss aversion. Investor portfolio performance was measured using Sharpe ratio as the proxy. The research finds indicate that investor portfolio performance is positively correlated with the investor behavioral influences (anchoring, herding, overconfidence, loss aversion) but insignificantly. The study covered the period June 2013 to June 2016.

Sharpe ratio (proxy for portfolio performance) has a negative 0.142 correlation coefficient against overconfidence; Sharpe ratio has a correlation coefficient of 0.195 with anchoring and a correlation coefficient of 0.138 against herding behavior. Sharpe ratio has a positive 0.016 correlation coefficient with loss aversion. Thus the overall conclusion that portfolio performance correlates positively with the behavioral influences.

Overconfidence has a correlation coefficient of 0.092 with anchoring; these variables are thus positively but weakly correlated. Overconfidence and herding are positively correlated, with positive 0.285 correlation coefficient. Overconfidence and anchoring are also positively correlated, with a 0.285 correlation coefficient. Loss aversion and overconfidence have positive correlation coefficient of 0.059. Herding and anchoring are also positively correlated, with a 0.173 correlation coefficient. Loss aversion and herding behavior are almost not correlated with a correlation coefficient of 0.005. Loss aversion and anchoring behavior are negatively correlated with a correlation coefficient of -0.245.

5.3 Conclusion

The researcher concludes that based on the above findings summary, behavioural influences by investors have a weak positive effect on their overall portfolio performances of the investors at the Nairobi Securities exchange. Portfolio performance in this case is measured by the Sharpe ratio (a risk adjusted return measure). Portfolio performance has a negative correlation with investor overconfidence, but is positively correlated with anchoring, loss aversion and herding. Thus the overall conclusion that portfolio performance correlates positively with the behavioral influences. Sayim and Rahman (2015) and Nyamute et al. (2015) also concluded that investor behavioral influences positively affect their returns.

Investors often use past performance when investing, as an indicator of future performance. Other investors use peers views and consider social sentiments on investments while making their investments (Choka, 2014). The researcher however found that thirty four percent of the respondents indicated that herding influenced their

investment decisions and returns, the respondents were split on the anchoring behavior variable. Herding and anchoring were found also to be positively correlated, with a weak positive 0.17 correlation coefficient. Eighty nine percent of the investors indicated that loss aversion influenced their investment decisions and returns. Investors therefore rate the pain of losing as exceeding the joy realized on similar gains. This partly stems from past experiences (Murithi, 2014).

From the regression analysis and correlation analysis, anchoring, loss aversion and herding all have positive coefficients but not significant. The researcher therefore finds these variables to positively affect investor portfolio performance. Over confidence however has negative correlation coefficient with Sharpe ratio and a negative regression model beta coefficient. Overconfidence therefore being the illusion of having knowledge and control over future outcomes by investors negatively affects portfolio performance over time. The researcher concludes that over a period of sustained decline in market prices, overconfidence diminishes and erodes shareholder wealth. Portfolio theory (Markowitz, 1952) anticipates investors to be devoid of such behavioural influences as overconfidence in undertaking their investments.

The research also concludes that a total absence of behavioural influences by investors is not good for positive portfolio performance. The regression model indicates a negative constant of 1.12; investors also shall realize losses in the absence of behavioral factors. A certain level of investor behavior influence is essential to realize positive portfolio returns therefore.

5.4 Recommendations

The study was set out to determine effect of behavioral influence on investor portfolio performance at the Nairobi securities exchange. Investors at the Nairobi securities exchange expect good returns in order to keep trading. This study has found that investor behaviour does influence portfolio performance for those investing in shares of the NSE.

Based on the above findings and conclusion the researcher recommends that investors at the Nairobi Securities exchange should pay close attention to behavioural influences and or take periodic self-appraisal on their behavioural influences, with a view to managing the impact on the portfolio returns accruing to them. Close attention should be paid by the said investors on overconfidence as this variable was found to negatively correlate with portfolio performance. Overconfidence behavior by investors should be aptly managed, therefore. Besides overconfidence, the other variables (herding, anchoring and loss aversion) should be managed accordingly and individually (from each investor's perspective) as they positively correlate with portfolio performance. Focus and any effort towards these variables are anticipated to be rewarded via enhanced portfolio performance.

Companies going public can use the findings of this study to understand how investor behaviour influence the price of securities and hence be able to set realistic prices that will attract the investors they target without distorting the market. These findings contribute to the volume of empirical evidence that helps to build literature and theories on investor behaviour and investment performance in the capital markets in Kenya

5.5 Limitations of the Study

The researcher encountered a few limitations while undertaking this research study. However these limitations did not in any way significantly affect the research process and findings. These limitations included time constraints. This research study was undertaken to fulfil academic requirements that were to be met within stipulated timelines. The short time span available for undertaking the study affected the sample size as well as the response rate. Ample and longer timelines would have led to higher response rate as some respondents would require the same.

The researcher also notes that financial resources available for the research study was limited as the researcher relied on shallow personal finances with competing uses. Ample and sufficient financial support would have allowed the scope of the study to be widened. The researcher also encountered a challenge of handling unwilling potential respondents; some potential respondents also opted not to participate in the study citing privacy reasons. This could have enhanced the response rate registered, also. Although the descriptive statistics under section 4.4 indicate 87% of the respondents had a training background in finance, the researcher encountered some literacy challenges. The researcher spent extra effort towards interpreting the simplified structured data collection instruments to a number of respondents. This meant more time was spent per respondent than was expected.

5.6 Suggestions for Further Research

The researcher recommends future research to further focus on the same variables of study to further understand behavioural influences and their effect on portfolio

performance. Towards this end, a study on non-listed investors (those who invest in the informal sector and or unorganized securities exchanges) would be interesting to undertake.

The researcher also would recommend replication of the study in other developing economy contexts. This could assist unravel whether developing economies register similar findings and there are deviations. The research study also focused on a three year study period. The researcher also recommends that another research study covering a wider time period of say five years, or ten years be undertaken.

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APPENDICES

APPENDIX I: QUESTIONNAIRE

Dear Respondent,

I am an MBA student at the University of Nairobi and currently undertaking a research titled: Effect of Behavioral Influences on Investor Portfolio Performance at the Nairobi Securities Exchange.

This questionnaire is made up of five short sections that will take a short time to fill. Kindly fill in your responses by ticking in the appropriate box or writing your answers on the spaces provided. I assure you that all the information you give will be kept confidential and it will be used for the intended academic purpose only.

Thank you,

Grace Gacheri.

SECTION A: DEMOGRAPHIC

1. Gender

Male ()

Female ()

2. What is your age bracket?

20-30 ()

31-40 ()

41-50 ()

Above 50 ()

3. Do you have any finance training background?

Yes ()

No ()

4. How much money have you invested at the NSE?

10,000 – 100,000 () 101,000 – 200,000 ()

201,000 – 300,000 () above 301,000 ()

5. How much shares have you bought at the NSE? Please indicate the quantity (units) held and date of purchase as well as the related company.

| <u>Company</u> | <u>Number of Shares</u> | <u>Date of Purchase</u> | <u>Date of Sale</u> |
|----------------|-------------------------|-------------------------|---------------------|
| 1. | | | |
| 2. | | | |
| 3. | | | |
| 4. | | | |
| 5. | | | |
| 6. | | | |
| 7. | | | |

SECTION B: OVERCONFIDENCE

In a scale of 1 to 5, where 1 is a great extent of disagreement and 5 is great extent of agreement indicate the extent to which you agree to the following information by ticking appropriately.

| DESCRIPTION | | RESPONSE | | | | |
|-------------|--|----------|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| i | Does your experience in trading at NSE influence your choices? | | | | | |

| | | | | | | |
|-----|--|--|--|--|--|--|
| | | | | | | |
| ii | Do you believe that your skills and knowledge of stock market can help you to outperform the market? | | | | | |
| iii | Does overconfidence make you undervalue risks? | | | | | |
| iv | Has being overconfidence made you make a wrong investment decision? | | | | | |

v. Do you overestimate the accuracy of your forecasts due to your skills and knowledge gained over time and feel in control over future outcomes?

Yes () No ()

SECTION C: ANCHORING

In a scale of 1 to 5, where 1 is a great extent of disagreement and 5 is great extent of agreement indicate the extent to which you agree to the following information by ticking appropriately

| DESCRIPTION | | RESPONSE | | | | |
|-------------|---|----------|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| i | Does past performance of shares influence your choice of shares to invest? | | | | | |
| ii | Do you fix a target price for buying or selling in advance? | | | | | |
| iii | Do you sell the investments immediately it goes back to the acquisition price? | | | | | |
| iv | Do you hold on to investments because by selling them you would incur loss? | | | | | |
| v | Does views from a famous analyst that conflict with your opinion about a stock change your opinion? | | | | | |

vi. Do you rely on past experience, past prices, ignore new information and or fix prices before buying or selling shares?

Yes () No ()

SECTION D: HERDING

In a scale of 1 to 5, where 1 is a great extent of disagreement and 5 is great extent of agreement indicate the extent to which you agree to the following information by ticking appropriately.

| DESCRIPTION | | RESPONSE | | | | |
|-------------|---|----------|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| i | Do you consider sentiments from peers when choosing shares to invest in? | | | | | |
| ii | Does other investors' decisions on stock type choice have impact on your investment decisions? | | | | | |
| iii | Does other investors' decisions on the stock volume to buy/sell influence your volume of trade? | | | | | |
| iv | Do you react quickly to the changes of other investors' decisions and follow their reactions to the stock market? | | | | | |
| v | Does other investors' decisions of buying and selling stocks have impact on your investment decisions? | | | | | |

vi. Do you have a tendency of investors to follow actions of others?

Yes () No ()

SECTION E: LOSS AVERSION

In a scale of 1 to 5, where 1 is a great extent of disagreement and 5 is great extent of agreement indicate the extent to which you agree to the following information by ticking appropriately.

| DESCRIPTION | | RESPONSE | | | | |
|-------------|--|----------|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 |
| i. | After a prior loss, i become more risk averse. | | | | | |
| ii. | I am holding to my investment because selling them would be painful to me since I would incur loss | | | | | |

iii. Do you feel the pain of losing much more than the pleasure in similar gains? That is, given a loss of 50,000/= and a gain of 50,000/=, do you feel the pain of losing the 50,000/= more than that of 50,000/= gain?

Yes () No ()

=THANK YOU=



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P.O. Box 30197
Nairobi, Kenya

DATE 20th Sep., 2016.

TO WHOM IT MAY CONCERN

The bearer of this letter GRACE GACHERI MURIITHI

Registration No. DG1 174 298 12014

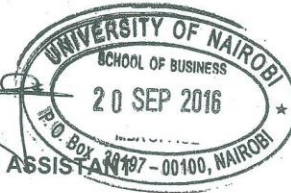
is a bona fide continuing student in the Master of Business Administration (MBA) degree program in this University.

He/she is required to submit as part of his/her coursework assessment a research project report on a management problem. We would like the students to do their projects on real problems affecting firms in Kenya. We would, therefore, appreciate your assistance to enable him/her collect data in your organization.

The results of the report will be used solely for academic purposes and a copy of the same will be availed to the interviewed organizations on request.

Thank you.


PATRICK NYABUTO
SENIOR ADMINISTRATIVE ASSISTANT
SCHOOL OF BUSINESS



APPENDIX II: RAW DATA

| Gender | Age | Finance trained | Amount invested | Over confidence | Anchoring | Herding | Loss aversion | Sharpe ratio |
|--------|-----|-----------------|-----------------|-----------------|-----------|---------|---------------|--------------|
| 0 | 2 | 1 | 1 | 1 | 0 | 1 | 1 | -3.99336738 |
| 1 | 2 | 1 | 4 | 1 | 0 | 0 | 0 | -1.57877674 |
| 0 | 2 | 1 | 3 | 0 | 0 | 1 | 1 | -0.74431073 |
| 1 | 2 | 1 | 2 | 1 | 0 | 1 | 1 | -0.66079434 |
| 0 | 2 | 1 | 1 | 0 | 0 | 1 | 1 | -0.35288549 |
| 1 | 2 | 1 | 2 | 1 | 1 | 1 | 1 | -0.65557798 |
| 1 | 2 | 1 | 3 | 1 | 1 | 1 | 1 | -0.54881382 |
| 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | -0.77680042 |
| 0 | 2 | 1 | 1 | 1 | 0 | 1 | 1 | 0.058559479 |
| 1 | 2 | 1 | 4 | 0 | 1 | 0 | 1 | -0.32652892 |
| 1 | 2 | 1 | 4 | 0 | 1 | 1 | 1 | -0.37616085 |
| 1 | 1 | 0 | 2 | 1 | 1 | 0 | 1 | -1.70651955 |
| 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | -1.13693387 |
| 1 | 2 | 1 | 1 | 1 | 1 | 0 | 1 | -1.16130083 |
| 1 | 2 | 1 | 1 | 0 | 0 | 0 | 1 | -1.13868301 |
| 1 | 2 | 1 | 4 | 0 | 0 | 0 | 1 | -0.35288549 |
| 0 | 2 | 1 | 2 | 0 | 0 | 1 | 1 | -0.27443716 |
| 1 | 2 | 1 | 4 | 1 | 1 | 1 | 0 | -1.36432724 |
| 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | -0.90532651 |
| 1 | 2 | 1 | 2 | 1 | 1 | 0 | 1 | -1.45604901 |
| 0 | 2 | 1 | 2 | 0 | 1 | 0 | 1 | -0.86856772 |
| 1 | 2 | 1 | 4 | 1 | 1 | 0 | 1 | -0.53260411 |
| 0 | 3 | 0 | 1 | 0 | 0 | 0 | 1 | -1.70392444 |
| 1 | 3 | 1 | 4 | 1 | 0 | 0 | 1 | -0.41165598 |
| 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0.092199661 |
| 1 | 4 | 1 | 4 | 0 | 0 | 0 | 1 | -0.80628385 |
| 1 | 2 | 1 | 2 | 1 | 0 | 0 | 1 | -1.14020421 |
| 1 | 3 | 1 | 4 | 1 | 1 | 0 | 1 | -1.51437057 |
| 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0.182726283 |
| 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | -0.89545655 |
| 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | -0.71379506 |
| 1 | 2 | 0 | 1 | 0 | 1 | 0 | 1 | 0.157133276 |
| 0 | 2 | 1 | 4 | 0 | 1 | 1 | 1 | -1.66927529 |
| 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.092199661 |

| Gender | Age | Finance trained | Amount invested | Over confidence | Anchoring | Herding | Loss aversion | Sharpe ratio |
|--------|-----|-----------------|-----------------|-----------------|-----------|---------|---------------|--------------|
| 0 | 4 | 0 | 1 | 0 | 0 | 0 | 1 | -0.92384148 |
| 1 | 2 | 1 | 1 | 0 | 1 | 1 | 1 | -1.63794703 |
| 1 | 2 | 1 | 1 | 1 | 1 | 1 | 1 | 0.092199661 |
| 1 | 2 | 1 | 1 | 1 | 0 | 1 | 1 | 0.092199661 |
| 1 | 2 | 1 | 1 | 0 | 0 | 0 | 1 | -1.40537066 |
| 1 | 3 | 1 | 1 | 0 | 1 | 0 | 1 | -0.20158471 |
| 0 | 2 | 1 | 1 | 0 | 0 | 0 | 1 | -1.54879276 |
| 0 | 2 | 1 | 1 | 0 | 0 | 0 | 1 | -0.15925741 |
| 1 | 2 | 1 | 1 | 0 | 1 | 1 | 0 | 0.092199661 |
| 0 | 4 | 1 | 1 | 1 | 0 | 0 | 1 | -1.31471384 |
| 1 | 2 | 1 | 4 | 0 | 1 | 0 | 0 | -1.55442023 |
| 1 | 4 | 1 | 1 | 0 | 1 | 0 | 0 | 0.094926252 |
| 0 | 3 | 1 | 1 | 1 | 1 | 1 | 1 | -0.50973277 |
| 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | -2.38132431 |
| 1 | 2 | 1 | 4 | 0 | 1 | 0 | 1 | -0.60789672 |
| 1 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | -2.22158125 |
| 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | -0.03710713 |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0.092199661 |
| 1 | 1 | 1 | 2 | 0 | 0 | 0 | 1 | -0.932538 |

.....END.....