

**THE RELATIONSHIP BETWEEN BEHAVIORAL BIASES AND
PORTFOLIO PERFORMANCE AMONG INDIVIDUAL INVESTORS AT
THE NAIROBI SECURITIES EXCHANGE**

By

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DECLARATION

This research project work is my own and has never been offered to any other educational institution for examination purpose.

Signature 

Date 10/11/2022

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This research project is offered for review through my authorization as the university supervisor.

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DEDICATION

I dedicate this work to my dear parents Dr. Mabel Mudulia and the late Eng. Mudulia for instilling the love of education in me and laying the foundation for me to progress to postgraduate studies.

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ABBREVIATIONS

CAPM	Capital Asset Pricing Model
CMA	Capital Markets Authority
EMH	Efficient Markets Hypothesis
IPO	Initial Public Offer
ISE	Istanbul Stock Exchange
MPT	Modern Portfolio Theory
NSE	Nairobi Securities Exchange
PP	Portfolio Performance
SPSS	Statistical Package for Social Sciences
USA	United States of America

ABSTRACT

Behavioral finance, unlike conventional finance, holds the view that those who invest do not always do things as would normally be expected in their investing choices in the securities markets as they are at times swayed by behavioral predispositions, raising the question of how the performance of their portfolios are affected by their behavioral predispositions. This study's broad objective was to assess how individual investors' behavioural biases related to their portfolio performance at the NSE. Specifically, the study evaluated how herding, loss aversion, overconfidence and anchoring biases related to the individual investors' portfolio performance at the NSE. A descriptive cross-sectional study design was adopted. Total study participants were 384 individuals who traded at NSE who responded to a researcher-prescribed questionnaire. Study data analyzing utilized descriptive statistics that included frequencies, mean scores and percentages while multiple regression analysis was utilized to analyze how the regressors related with the outcome variable at 5% significance level. The analytical software was SPSS Version 24. Findings were depicted in figures and tables. Leading study results showed that a positive and statistically notable connection was established between the individual investors' portfolio performance and several behavioral biases including herding ($\beta = 0.439$, $p < 0.05$), overconfidence ($\beta = 0.367$, $p < 0.05$) and anchoring ($\beta = 0.512$, $p < 0.05$). However, connection with loss aversion bias was negative and notable ($\beta = -0.248$, $p < 0.05$). It were concluded that behavioral biases had a notable influence on portfolio performance among individual investors at the NSE. It is recommended that NSE in collaboration with CMA should initiate investor education programs or workshops with a view of enriching potential and existing individual investors' understanding of how the stock market operates hence aiding them in making judicious investments. Individual investors should consider seeking guidance and necessary information from existing stock brokers and fund managers to ensure their decisions of investing at the NSE were informed.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Traditional models of finance operate on the basis of investors behaving rationally in their investing decisions on the basis of expected gains vis-à-vis risks (Madininos, Sevic & Theriou, 2007). The models assume investors always hold well-diversified portfolios, are operating in efficient markets, trade rationally and fear losing in their trades (Sayim & Rahman, 2015). Practically, however, investors regularly rely on own intuition, attitudes, emotions and knowhow to make investing decisions, an aspect called behavioural finance (Muriithi, 2016). Behavioral finance, thus, seeks to explain investors' behaviours especially when they clearly depart from the expected rational behaviour espoused under the traditional models of finance (Pompian, 2011).

Several finance theories informed this study including the modern portfolio theory (MPT), which argues that, for every asset return level, investors acting rationally will choose investing opportunities with low risks rather than those with elevated risks. Similarly, the Efficient Market Hypothesis (EMH) and Capital Asset Pricing Model (CAPM) assume that individual investors act in a rational manner and participate in markets that are efficient as reflected in stock prices (Ross et al., 2013). However, the current empirical investigation is informed by the prospect theory, reason being, the theory acknowledged that investors do not always behave rationally, hence tries to elaborate role of various investors' biases in their stocks performance (Marchand, 2012).

The Nairobi Securities Exchange (NSE) is Kenya's principal securities market under regulation of the Capital Markets Authority (CMA). It provides an avenue for persons, either as individuals or institutions to trade in quoted securities, hence improve their portfolios' returns (Kung'u, 2016). Though, investors have traditionally applied the concepts of rationality and efficient markets while trading in capital markets, these concepts are increasingly becoming untenable as markets become more dynamic and volatile (Kimani, 2018). Hence, there's growing focus on behavioral finance and its efforts to explain irrationality observed in individual investors' behaviors at NSE,

particularly on how behavioral biases affected individual investors decisions and their portfolios, sentiments also shared by Ratemo (2016) and Kigen (2020).

1.1.1 Behavioural Biases

Behavioural biases depict the inclination of making illogical or ill-considered choices/decisions occasioned by defective mental and/or emotional propositions (Pompian, 2011). Shefrin and Statman (1985) defined behavioral biases as acts of investors making unsound decisions regarding their portfolios due to erroneous inherent mental or emotional beliefs. Similarly, Sattar et al. (2020) averred that behavioral biases, in finance, denote unreasonable/illogical leanings in financial or investment decision making instead of applying concrete facts. Behavioral biases are either emotional - those stemming from intuition or one's feelings or cognitive - those stemming from mental information processing errors (Marchand, 2012).

Behavioral finance strives to enrich traditional models of finance by offering due consideration to the notable and regular variance from rationality by investors attributable to their misguided beliefs (Sattar et al., 2020). It thus seeks to offer insights as to the different biases, their influence on decisions of investors and consequently on investors' portfolio performance (Madaan & Singh, 2019). Investors, like any other persons, when confronted by difficult/uncertain scenarios that require significant effort and time, may not act/decide rationally. Often, instead, they tend to make decisions by following a more instinctive, imperfect reasoning guided by personal preferences and biases (Chhapra et al., 2018).

Herding, loss aversion, overconfidence and anchoring constituted this study's independent variables. Herding - basing one's investment decisions by emulating other investors' decisions (Pompian, 2011), and loss aversion - investors' tendency to avoid losses over achieving equivalent gains (Marchand, 2012) were assessed using a likert scale model, unlike the yes or no response questions approach used in studies by Ojwang (2015), Verma (2016), Kung'u (2016) and Kigen (2020). Both overconfidence - investors' propensity to overrate/overestimate the accuracy of their stock choices and forecasts (Sattar et al., 2020), and anchoring - investors' inclination of ignoring present information by making stocks prices approximations based on their original values or

past prices (Madaan& Singh, 2019) were assessed using a likert scale approach, as was in studies by Chaudhary (2013), Ratemo (2016), Muriithi (2016) and Kimani (2018).

1.1.2 Portfolio Performance

A portfolio is a collective/aggregate group of assets from different sectors held by investors (Chaudhary, 2013). According to Bacon (2008) portfolio performance therefore is the gain or loss an individual gets after investing in several stocks over a certain time period. It is the capacity of held assets to produce premeditated outcomes with regards to set objectives (Blasco, Corredor & Ferreruella, 2012). 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). It is reflected in investor's preferences on what, when, why and how much to invest as well as when and how much to sell/divest with the sole goal of maximizing returns (Kumar & Goyal, 2015).

Often, different assets in a portfolio will have different expected returns and performance of the portfolio will be influenced by volatility of the individual assets, though other variables like market inefficiency, political instability, human biases and global dynamics such as the prevailing Covid-19 pandemic may also affect (Yoshino et al., 2021). Acquiring, funding and managing assets constitute the essence of portfolio performance with value maximization as overriding goal. Investors' desire is choosing a mix of assets that yields optimal gain as per their risk (Bacon, 2008). As a consequence, assessment of portfolio performance is critical to point out whether this goal is being realized (Eklund, 2013).

Portfolio performance measures applied in various studies included the Treynor's index which calculates portfolio performance using excess returns on entire funds held weighted by the funds' beta, and is used when the only important risk is beta and all diversifiable risk is eliminated (Chen & Knez, 1996). The Jensen's Alpha method of 1968 assumes that diversifiable risk is dealt with by diversification and therefore only market risk or systemic risk is important. The Sharpe ratio is established by taking average portfolio returns less risk free rate and divides the outcome with the standard deviations of returns (Baddeley, 2017). The Miller and Modigliani risk adjusted measure of returns is a product of Sharpe ratio with chosen benchmark's annualized

standard deviation plus the risk free rate (Bacon, 2008). For this study, portfolio performance was measured using the Sharpe ratio. This ratio was suitable given it didn't presuppose that the collection of one's stocks were properly assorted, since investors were presumed to experience behavioral predispositions and hence it utilized the standard deviation as a measure of risk.

1.1.3 Behavioral Biases and Portfolio Performance

Evidence from studies by Kahneman and Tversky showed that individual investors often made decisions reliant on various biases instead of assessing risk-return ratios of the underlying securities leading to poor portfolio performance (Kigen, 2020). In making decisions, personal sentiments come into play particularly in instances where those who invest are provided with lots of information with minimal time to substantiate it, leading to unsound conduct. Often, during such times, investors' own mental and emotional leanings inform their decision making. Unfortunately, this often leads to a foreseeable trend which ultimately wrecks their portfolio performance (Chhapra et al., 2018).

To achieve satisfactory/superior portfolio yields, investors require making the right discernment and exercise discipline in their personal sentiments, as emotional and mental biases can have dire consequences on individual investors' portfolio performance (Kung'u, 2016). This is especially so when they lead investors to assume risks they do not fully comprehend or engage in illogical uncontrolled trading (Kumar & Goyal, 2015). Gaining insights on the influence of behavioral biases on investors' investing/financial decisions is instrumental in efforts to better financial models and to illuminate debate on portfolio performance's optimization under context of behavioral biases (Muriithi, 2016).

1.1.4 Investors at the Nairobi Securities Exchange

Founded in 1954, NSE is Kenya's primary bourse. It is the platform via which local and foreign institutional and individual investors trade in quoted securities. A total of 24 entities which are largely financial services and securities brokerage firms trade in the bourse. By the end of 2019, 65 firms were listed in the bourse and were organized into sectors of Kenya's economy. It's under CMA's regulation. Individual investors

account for nearly 70% of the bourse's aggregate dealings (NSE, 2018). Its roles include helping firms' raise capital, mobilizing savings for investment, facilitating firms' acquisitions and mergers, offering investors' an investing avenue, providing an avenue for capital projects' funding, being a source for livelihood and serving as a gauge of how well the Kenyan economy is doing (Ratemo, 2016).

At the NSE, security prices have been observed to move in variance of fundamental market expectations. Several behavioral biases such as herding were often observed at the exchange; for instance, during the Safaricom's IPO where some investors bought the shares because everyone else did (Kigen, 2020). Herding, overconfidence, loss aversion and anchoring forms of behavioral bias were also observed during corporate earnings announcement(s), with some investors rushing to offload stocks when their value appreciates fearing that they may soon fall (Nyamute et al., 2015; Kimani, 2018).

1.2 Research Problem

Behavioral finance argues that individual investors are irrational as evidenced by their ill-considered decisions and actions at the bourse including giving lots of emphasis on past occurrences, following mass judgement, being overconfident in their projections and averse to risk in respect to a gain and seeking risk when it's a loss. This in turn leads investors to hold undiversified portfolios with poor returns (Madaan & Singh, 2019). Individual investors, it's noted, often than not rely on own cognitive and emotional biases while deciding on investments instead of assessing their risk-return ratios occasioning poor returns, though this needed validation in the local context.

Evidence from the NSE clearly illustrated that a significant proportion of individual investors held stock portfolios whose performance was underwhelming. It was also observed, from time to time, that the actions and decisions of individual investors went against basic market expectations such as evidenced during IPOs and corporate earnings announcements (Kung'u, 2016; Kimani, 2018). At NSE, individual investors were observed as counting on their own intuition and leanings as guides in their decisions regarding their portfolio mix. This often led them to make erroneous investment decisions leading them to acquire and hold low performing portfolios (NSE, 2018).

Empirical studies exist relating to the research subject. Globally, studies by Maditinos et al. (2007), Sayim and Rahman (2015) and Madaan and Singh (2019) in Greece, Turkey and India respectively focused on how behavioral partiality influenced individual investors' investing decisions. They revealed that behavioral biases often led to sub-optimal investment choices. Similarly, local studies by Aduda et al. (2012), Muriithi (2016), Ratemo (2016) and Kimani (2018) reported that individual investors' choices and actions at NSE were influenced by various behavioural biases. The studies noted gaps in local understanding of how behavioral biases affected investors' portfolio performance - an area they suggested required further investigation.

The current study looked at the connection existing between behavioral biases and performance of aggregate stocks holdings among individual investors in the country's bourse, in light of existing at variance empirical outcomes, varied study methods utilized, few variables interrogated and divergent contexts reviewed in respect of this study subject.

1.3 Research Objective

This research explored how individual investors' behavioural biases related to their portfolio performance at the NSE. Specifically, the study evaluated how herding, loss aversion, overconfidence and anchoring affected the individual investors' portfolio performance.

1.4 Value of the Study

On policy, this investigation outlines invaluable pointers to those who make policies like CMA's and NSE's management regarding how individual investors' behavioral biases related to their portfolios' performance at the NSE. This may in turn inform review of existing NSE's policy and operation guidelines.

On applicability, this investigation's outcomes could be of use to individual investors by helping them understand how their own behavioral biases while deciding about investments impacted performance of their portfolios, in turn helping them to strive to reach credible investment choices using facts rather than emotions.

Similarly, the study's outcome may also add value among investment managers and financial advisors in helping them gain understanding as to the contribution of behavioral biases on investors' portfolio performance and therefore enabling them to be able to advise their clients accordingly.

Theoretically, this study enriches local knowledge on the research subject and it may illuminate the thoughts of other academicians/scholars with an interest on furthering investigation regarding subject under study.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The chapter examined theories used to inform the work. It also covers exploration of literature on determinants of portfolio performance, studies done on the research subject, scheme of how the variables relate and summary of explored empirical investigations.

2.2 Theoretical Review

Herein is an in depth examination of financial theoretical bases the paper was based on explaining different aspects of behavioral dispositions in investment decisions.

2.2.1 Modern Portfolio Theory

This proposition was advanced by Markowitz in 1952. It holds that, for every risk level, a portfolio's expected return can be optimized via diversification. Markowitz hypothesized that efficient portfolios are those assets or securities that give highest returns with the lowest possible risk or acceptable risk. The theory presumes that a productive asset class is one with greatest yields at the lowest possible risk. This theory assumes that investors consider anticipated return a good thing and risk a bad thing (Elton & Gruber, 1997).

The theory is premised on two major propositions that risk and return are directly connected denoting that higher risks relate to higher expected returns and vice-versa; and that diversification allows investors to hold portfolios that optimize returns while lowering risks. The theory is however critiqued as based on unrealistic assumptions such as markets always being efficient and investors always being rational (Elton & Gruber, 1997). The theory provides a basis for analyzing what happens when risk-return rules in investing decisions are disregarded as is with behavioural biases.

2.2.2 Capital Asset Pricing Model

Treynor, Mossin, Lintner and Sharpe independently came up with the Capital Asset Pricing Model (CAPM) between 1961 and 1964. It provides an outline of the connection that links yields/gains and probable losses for risky assets. It illustrates gains

made on high-risk securities proportionately vary in line with their risk levels. Its assumptions include investors are risk averse and rational, existence of a risk free asset, homogenous expectations and frictionless markets, information is available freely and no market inadequacies like taxes (Ross et al., 2013).

The oversimplified assumptions are critiqued by scholars such as Black, Jensen and Scholes who hold that CAPM does not require a pure riskless asset instead beta can be used as a measure of risk (Yen & Lee, 2008). Despite the criticisms, it is still a good measure for analyzing risky assets. It was important in this study as it guided investment and consequently portfolio performance based on current correct pricing.

2.2.3 Efficient Market Hypothesis

EMH was espoused by Fama in 1970. It holds that financial markets can be regarded as efficacious in situations where security values constantly represent entire prevailing information while recognizing varied market inefficiencies. It holds that securities trade at their fair market values at exchanges, and hence investors cannot outperform the market, as the market adjusts quickly to any new information/facts (Malkiel, 2005).

Assumptions held by the theory are that all buyers are knowledgeable, act rationally and are out to optimize gains (Yen & Lee, 2008). The theory has however faced criticism due to the unrealistic assumptions. It was however key to this study as it espouses that an investor should take into account all available information while evaluating securities' returns, hence eliminating influence of behavioral biases..

2.2.4 Expected Utility Theory

Expected utility proposition, also referred to as theory of decisions under uncertainty, was introduced by Neuman and Oskar Mongestern (1944). It explains situations where people have to take decisions without knowledge of possible outcomes. With it, decisions are considered logical when investors go for choices with the highest expected value/return. Hence, investors will have to take an action which will result in the highest return depending on their risk appetite (Ross et al., 2013).

With the aid of this theory, it is possible to explain how people make decisions when confronted with risky options. It describes how people frame and evaluate a choice

when there is uncertainty; as a result, they consider the potential losses or benefits relative to a particular point of referral, frequently the list value (Baddeley, 2017). It was relevant as it guides investment under uncertain conditions.

2.2.5 Prospect Theory

Kahneman and Tversky came up with this theory in 1979. This proposition, referred to also as theory on avoidance of losses, posits that investors place unequal utility on negative and positive yields, and places greater emphasis on possible gain over potential loss as losses occasion greater emotional impact (Kahneman & Tversky, 1979). Its key propositions being that investors desire guaranteed results against possible ones, investors apply differential information in arriving at decisions ignoring one that is similar and they would rather avoid losses than similar gains (Levy, 1992).

Put simply, it predicts that investors are averse to risk when faced with possible gain and seek risks when faced with possible losses. The theory is crucial in evaluating behavioral biases like loss aversion. It explains why people hold on to losers longer and sell portfolios doing good faster. It also explains deviations from rationality (Barberis, 2013) which was the focus of the current study.

2.3 Determinants of Portfolio Performance

Apart from behavioural biases, there were other factors that influenced individual investors' portfolio performance. These were as discussed below.

2.3.1 Investor Investment Style

An investor's style of investment may be active or passive. With passive style, investors only make occasional reviews and re-alignments of their portfolio after some period of time while active investment style involves daily/regular portfolio management and interaction with the market. Often, passivity is associated with better portfolio performance compared to the active investment style (Nyamute et al., 2015).

2.3.2 Diversification

Diversification involves an investor undertaking investment in more than one investment vehicle or asset. Often, overall portfolio performance is mitigated against returns and risk fluctuations through diversification as a decline in one asset's returns may be compensated by an increase in returns from another asset and vice versa (Kumar & Goyal, 2015). The risk and return balance afforded by diversification thus influences portfolio performance (Muriithi, 2016).

2.3.3 Portfolio Size

Portfolio size also affects returns from the portfolio. A bigger portfolio in terms of the nature, size and value of assets held is likely to provide higher returns relative to smaller portfolios (Aragon & Ferson, 2007). Portfolio size largely depends on individual investor's of making new investments or adding new units on existing investments (Chen et al., 2011).

2.3.4 Portfolio Composition

Portfolio composition is the different individual investments within a portfolio, classified in terms of asset classes, industry invested in or maturity period, either short term or long term (Madaan & Singh, 2019). Portfolio composition effectively aligned with one's investing goals and objectives is likely to enhance portfolio performance.

2.4 Empirical Studies

Sayim and Rahman (2015) investigated how individual investor sentiments related to stocks yields in Turkey. The study setting was the Istanbul Stock Exchange (ISE) and the duration covered was 2004 - 2010. Study participants were individual investors who traded in the ISE. Descriptive measures and vector auto-regressions were used in analyzing data. Direct association was established between positive investor sentiments and stock returns at ISE. The study however did not indicate the sample size used.

Blasco et al. (2012) performed an empirical investigation that aimed to ascertain whether herding bias was present among investors in Spain. The study context was the Spanish Stock Exchange and its duration was 1997-2003. Secondary data on 35 indexed

stocks was utilized. Granger causality test was applied in analysis. The findings revealed presence of herding among the investors. The study did not however explore the link of the behavioral bias with portfolio performance, which was current study's focus.

Chen et al. (2011) evaluated traits of irrationality/bias among 66 Taiwanese investors through reviewing their asset and investment preferences. Taiwan's stock market was the study's context. Study period was 2007 to 2008. Data were analyzed using the analytical hierarchy process method. Risk tolerance was cited as the most important factor in creation of asset portfolios. Irrationality and risk-seeking behavior were evident among the investors. The study did not however explore the link between behavioral biases and portfolio performance, a gap the current study has addressed.

Maditinos et al. (2007) explored mechanisms applied by professional and individual investors in Greece in assessing possible securities for addition to their asset portfolios. The study's context was Greek Stock Exchange. Data were obtained from 1,014 investors between December 2003 and June 2004. Thematic content analysis was applied in analyzing responses derived. The results showed that behavioral biases were more prevalent among individual investors than in professional investors. How these behavioral biases among individual investors impacted their portfolio performance was however not explored - an aspect herein investigated.

Tourani-Rad and Kirkby (2005) investigated behavioral biases among 122 individual investors in New Zealand using survey research design. Data were collected using questionnaires between December 2001 and September 2002, and were analyzed using descriptive statistics and correlational analysis. The behavioral traits detected among the investors included overconfidence, socialization and familiarity evident in their excessive holding of local stocks, excessive confidence in their investment abilities and knowledge and over-reliance on past success. The study did not however look at how the biases related with held assets' returns - focus of the current study.

Kigen (2020) studied how behavioral biases affected investing decision making of 200 local unit trusts investors selected using convenient sampling method. They were interviewed using questionnaires. Descriptive measures as well as multiple-regression

via SPSS v. 20 were applied in analyses. Outcome revealed that surveyed persons who invested in unit trusts were influenced by desire to evade losses and regrets, being overly confident, mentally computing and stacker's misapprehensions in their investing decision making. The study limited itself to unit trust investors while the current study involved all kinds of investors.

Ratemo (2016) explored how individual investors' investing decisions were influenced by their behavioral biases. Kisumu County NSE trading investors were the study units. Correlational research design was adopted. Data was gathered from 60 participants via questionnaires and evaluated descriptively as well using linear regression analysis. Findings revealed that the investors' choices were modified by behavioral biases with representativeness, mental accounting and loss aversion being the most influential. The study however never explored how the investors' behavioral biases impacted their assets' returns, a gap the current study sought to address.

Kung'u (2016) assessed cognitive biases' effects on investing choices among individuals investing at NSE. Design for the study was descriptive. A total of sixty nine participants took part. Data were gathered utilizing questionnaires and descriptively evaluated and via multiple regression analysis using SPSS v.22. It was established that individual investors' investment decisions were significantly correlated with anchoring, overconfidence, mental accounting and random walk. Current study extended the scope of this study by exploring the link between these biases and performance of portfolios held by the investors.

Nyamute et al. (2015) investigated how investor behavior related to portfolio performance at the NSE. Study was done among NSE's 385 investors. Data were collected via questionnaires with the association between study variables tested using multiple regression. From the findings, disposition and herding positively related with portfolio performance with overconfidence negatively relating with portfolio performance. In general, behavioral biases were found to influence portfolio performance. The current study sought to validate these findings using a different set of behavioral biases.

Aduda et al. (2012) explored how investing persons who traded in listed securities at NSE behaved. In total, 50 persons who invested in the bourse got interviewed using questionnaires. Secondary data from the NSE and CMA were also used. From the findings, while some investors exhibited rational behaviour in their investing decision making; others realized negative trading outcomes due to irrationality evidenced by overconfidence and herding behaviour. Current study included other behavioural biases not covered by Aduda et al.

2.5 Conceptual Framework

It highlights in a diagrammatic form how variables under study relate. This study's predictor variable was behavioural biases; the dependent/outcome variable was portfolio performance, while the various determinants of portfolio performance constituted the control variables, as demonstrated in Figure 2.1.

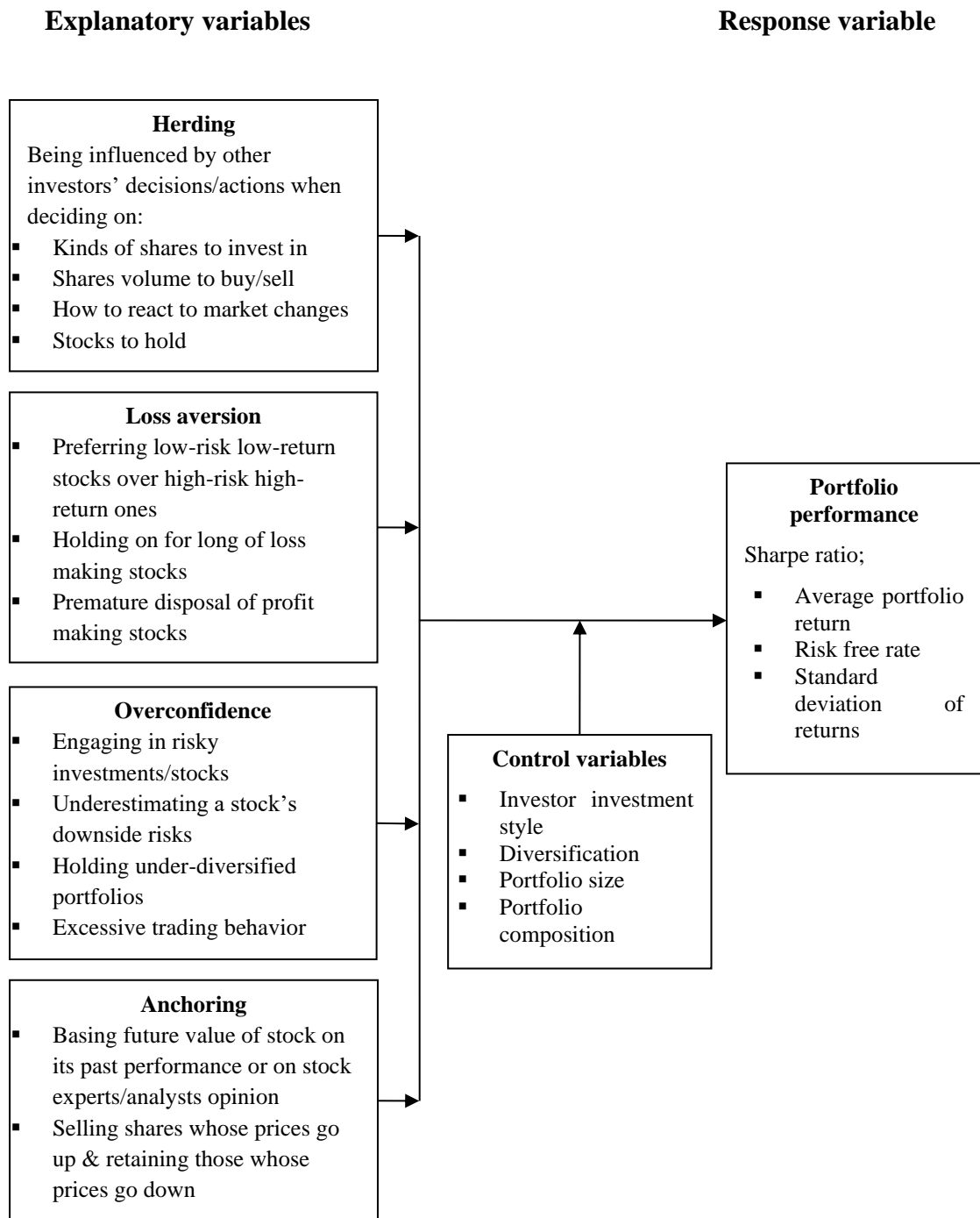


Figure 2.1 Conceptual model

2.6 Summary of Literature Review

The evaluated empirical material provided evidence that various behavioral biases that included herding, loss aversion, overconfidence and loss avoidance among others did affect investor decisions and actions which contradicted the assumptions of traditional finance theories on individual investors' behaviour in investment decisions. However,

various conceptual, methodological and contextual gaps were identified in the reviewed studies.

For instance, a study by Sayim and Rahman (2015) explored individual investors' behavioral biases effects on the overall performance of the Istanbul Stock Exchange while the current study explored connection existing in behavioral prejudices of persons trading in stocks and performance of their held portfolios. Similarly, investigations by Chen et al. (2011), Blasco et al. (2012) and Kigen (2020) explored the concept of behavior prejudices and its influence on investors' investing decisions noting that indeed individual investors decision making on stock exchanges' investment were subject to varied kinds of behavioral predispositions. Cited studies however did not explore the association between the behavioral biases and portfolio performance among individual investors - the current study's focus.

In addition, while studies by Kung'u (2016) and Kigen (2020) adopted correlational and causal research designs as their study designs, the current empirical investigation utilized descriptive cross-sectional design. Further, while review by Maditinos et al. (2007) was based on non-quantitative data subjected to analysing in themes, the current investigation utilized quantitative data which was analyzed using quantitative data analysis methods. Further, Tourani-Rad and Kirkby (2005), Maditinos et al. (2007), Chen et al. (2011), Blasco et al. (2012) and Sayim and Rahman (2015) were carried out in foreign countries while the current study was Kenyan based.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

The chapter offers details relating to the study's research design, its targeted participants including how they were sampled, tools and processes applied for collecting study data, how the study tool was validated and checked whether it was reliable, study variables' measurement as well as analyzing of obtained data.

3.2 Research Design

This describes a frame work specifying methods and procedures for obtaining and assessment of study data. It offers the basis or activity plan for answering the research question(s) (Kothari, 2004; Cooper & Schindler, 2011). A descriptive cross-sectional study design was utilized. Mugenda and Mugenda (2009) averred that this research design entails assessing the aspect being investigated in the way it exists commonly at a particular point in time. Kothari (2004) opined that the design accorded an investigator a framework to detail important features of the event/subject under study and can help identify relationships between variables. This research design was considered appropriate in the current empirical work given it made it possible for principal investigator to evaluate how the study's explanatory variables related with the explained variable.

3.3 Study Population

A population is the complete aggregation of subjects, elements or persons being investigated (Kothari, 2004). Those focused on were persons who invested at NSE, Nairobi. According to CMA's quarterly statistical bulletin (Q2 - 2021) there were about 1,207,169 individual investors trading in NSE as at June 2021 (CMA, 2021). These individual investors constituted the study population

3.4 Sample Design

Using the formula developed by Fisher and others (1998) and recommended by Mugenda and Mugenda (2003), the appropriate number of sampled participants was determined as here below;

$$n = [z^2pq/d^2]$$

Where;

n = Appropriate size of sample (for population $\geq 10,000$).

Z = Normal standard deviation for the set significance level of 0.05 which was 1.96

p = Estimated population part with required features, set at 50%.

$$q = (1-p) = 1 - 0.5 = 0.5$$

d = Significance level = 0.05.

$$\text{Hence, } n = (1.96^2 \times 0.5 \times 0.5) / 0.05^2$$

$$n = 384$$

Hence, number of participants that constituted the study sample was 384 individual investors at NSE.

Selection of the sampled participants was via simple random sampling procedure. Using letter of approval from the University of Nairobi, the researcher requested for list of individual investors and their contacts from NSE. This sampling technique was preferred as it accorded all the members within the larger targeted study group similar opportunity of getting selected into final sample.

3.5 Data Collection

A questionnaire administered by the principal investigator constituted the data gathering tool. It had queries structured to provide specific feedback required to answer the research question. The research instrument consisted of 3 parts. Section A designed for obtaining basic data relating to the investor's demographic profile; section B consisted of questions regarding the various behavioural biases that influenced investors' investment decision making; while section C had queries relating to the performance of the investors' portfolios. The questionnaire was administered randomly over a period of one month.

To access the participants that constituted the study sample, the researcher first sought permission to undertake data collection from the target respondents from relevant authorities at NSE. Using the approval letter granted by NSE and an introduction letter issued by the affiliated university, the investigator, using list of individual investors given by NSE, contacted the investors individually, informing them about the study and requesting for their consent to be part of the study. The researcher then scheduled for the interviews as per each respondent's availability and convenience. This was repeated until the desired sample was reached.

3.6 Study Tool's Validity and Reliability

Being valid denotes a study tool's ability to correctly assess the study subject (Denscombe, 2014). This was achieved through expert review of the tool's content by the supervising lecturer.

Reliability denotes a study tool's ability to provide consistent outcome following repeated application (Nsubuga, 2006). Whether this study's data collection tool was reliable was evaluated based on pretesting data using the Cronbach's Alpha Coefficient with a coefficient of at least 0.70 considered acceptable. Where necessary, changes were made to enhance the study tool's reliability.

3.7 Operationalizing the Research Variables

Variables under review were assessed as explained in Table 3.1;

Table 3.1 Operationalization of study variables

Proxy	Study variable	Measurement [Indicators]	Other studies that used the indicator
X ₁	Herding	Being influenced by other investors' decisions/actions when deciding on: <ul style="list-style-type: none"> ▪ Kinds of shares to invest in ▪ Shares volume to buy/sell ▪ How to react to market changes ▪ Stocks to hold 	Ojwang (2015) & Verma (2016)

X ₂	Loss aversion	<ul style="list-style-type: none"> ▪ Preferring low-risk low-return stocks over high-risk high-return ones ▪ Holding on for long of loss making stocks ▪ Premature disposal of profit making stocks 	Kung'u (2016) & Kigen (2020)
X ₃	Overconfidence	<ul style="list-style-type: none"> ▪ Engaging in risky investments/stocks ▪ Underestimating a stock's downside risks ▪ Holding under-diversified portfolios ▪ Excessive trading behavior 	Ratemo (2016), Chhapra et al. (2018) & Kimani (2018)
X ₄	Anchoring	<ul style="list-style-type: none"> ▪ Basing future value of stock on its past performance or on stock experts/analysts opinion ▪ Selling shares whose prices go up & retaining those whose prices go down 	Chaudhary (2013), Muriithi (2016) & Kimani (2018)
Y	Portfolio performance	Measured by the Sharpe ratio (S); S = (average portfolio return - risk free rate) / standard deviation of returns	Jain et al. (2015) & Muriithi (2016)

3.8 Data Analysis

Analysis of study data was performed descriptively utilizing percentages, averages, proportions and normal deviation utilizing the Statistical Package for Social Sciences (SPSS v. 24). Results were shown in figures and tables. Further, multiple regression analysis was utilized to analyze how the explanatory variables related with the study's outcome variable using the F and t statistics at 5% significance level. The regression model in use was specified here below;

$$Y = \beta_0 + \beta_1X + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon$$

Where; Y = Portfolio performance (which was the explained variable)

X₁ = Herding X₂ = Loss aversion X₃ = Overconfidence X₄ = Anchoring

β_0 = Constant $\beta - \beta_4$ = Beta coefficients of independent variables ε = Error term

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND INTERPRETATION

4.1 Introduction

The objective of the study was to evaluate how select behavioral biases related to portfolio performance of persons who invested at NSE. Results of the empirical investigation are presented herein. Statistics in form of descriptives together with regression analysis got applied in summarizing findings.

4.2 Response Rate

An aggregate of 384 questionnaires were issued to individual investors at NSE, out of whom, adequate responses were received from 316 of the respondents translating into a feedback result of 82.3%. This was in line with Mugenda and Mugenda (2003) averment that a feedback rate of 70 percent and above was fairly good. Hence, this study's level of feedback was regarded sufficient. Table 4.2 depicts the feedback received.

Table 4.2 Response rate

		Frequency	Percent
Response rate	Those who responded	316	82.3
	Those who did not respond	68	17.7
	Total	384	100.0

4.3 Reliability Test Results

Ascertaining whether the research tool was reliable was done using Cronbach Alpha co-efficient with a value of ≥ 0.7 being acceptable. Results were as depicted in Table 4.3.

Table 4.3 Reliability test results

Variable	Cronbach Alpha	N of Items
Herding	0.824	5
Loss aversion	0.787	3
Overconfidence	0.749	4
Anchoring	0.761	5
Portfolio performance	0.805	3
Aggregate	0.773	20

Source: Research Findings

Findings shown in Table 4.3 indicate that the study questionnaire was reliable as denoted by the aggregate Cronbach's Alpha co-efficient value of 0.773. The respective study variables namely herding (0.824), loss aversion (0.787), overconfidence (0.749), anchoring (0.761) and portfolio performance (0.805) all recorded Cronbach's Alpha co-efficient values higher than 0.7, denoting that the study tool had a high internal consistency.

4.4 Respondents' Background Information

An evaluation of the respondents' demographic profile was performed. Details regarding how old they were, their sex, education level, income level and duration of trading at the NSE. The results appear as described in ensuing parts.

4.4.1 Gender Distribution of the Respondents

Figure 4.2 shows the findings regarding the participants' gender.

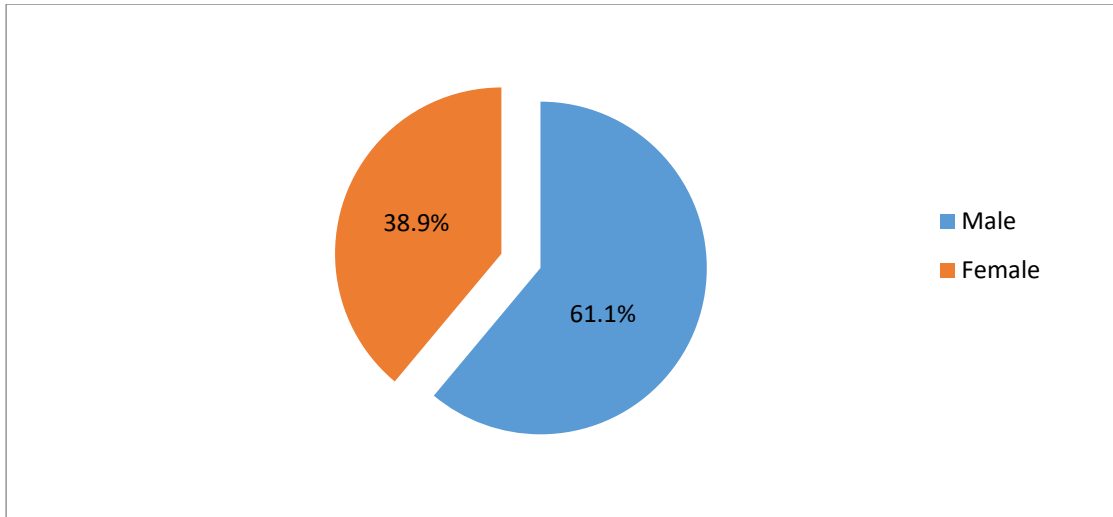


Figure 4.2 Gender distribution of the respondents

Source: Research Findings

Most (61.1%) of the individual investors who traded at the NSE were male while 38.9% were female. This implied that both genders participated in trading at the NSE though male investors were dominant.

4.4.2 Age Distribution of the Respondents

The respondents were asked how old they were. Figure 4.3 presents the findings.

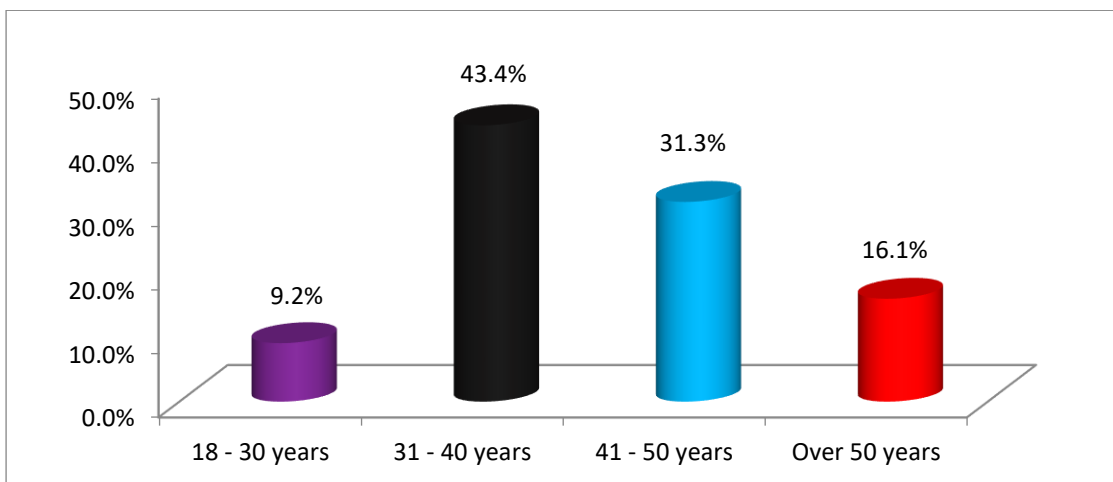


Figure 4.3 Age distribution of the respondents

Source: Research Findings

Results in Figure 4.3 stipulate that 43.4% of participants were aged 31 - 40 years, 31.3% were 41 - 50 years old, 16.1% were over 50 years old and 9.2% were aged 18 - 30 years. This denoted that all the study respondents were adults and hence appropriate for the study. It also showed that individual investors at NSE were of diverse ages and no single age bracket dominated, though most of the individual investors fell under the 31 - 50 years age bracket.

4.4.3 Education Level of the Respondents

Figure 4.4 indicate findings on the participant’s education level.

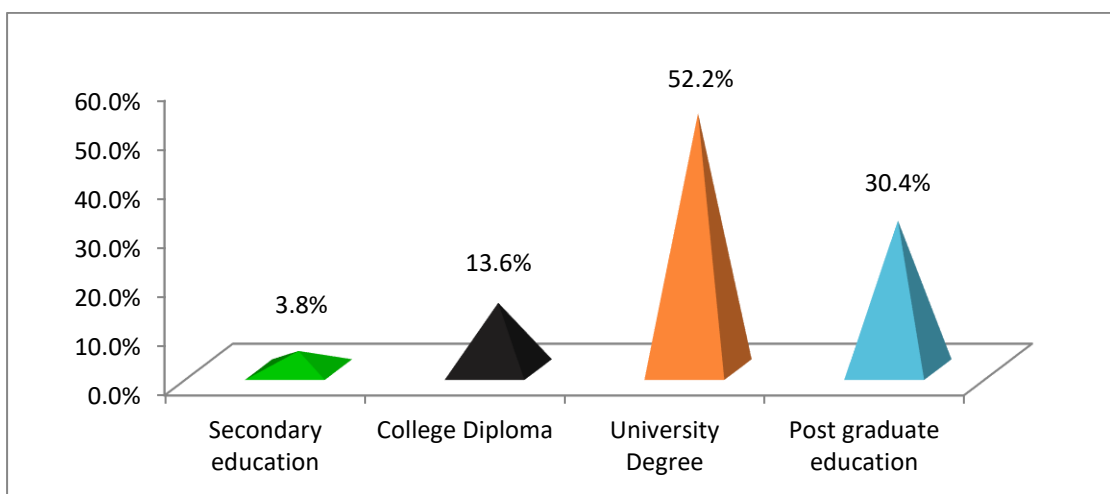


Figure 4.4 Education level of the respondents

Source: Research Findings

Figure 4.4 indicates a notable proportion (96.2%) of participants held tertiary education with slightly over half (52.2%) having a university degree, 30.4% had post graduate education while 13.6% had a College Diploma. Only 3.8% of the respondents had basic education level in the form of Secondary education. It outlined that study respondents were fairly well learned and hence were in a position to provide required information on the study subject.

4.4.4 Income Level of the Respondents

The respondents were also queried about their monthly income level. Figure 4.5 indicates the findings.

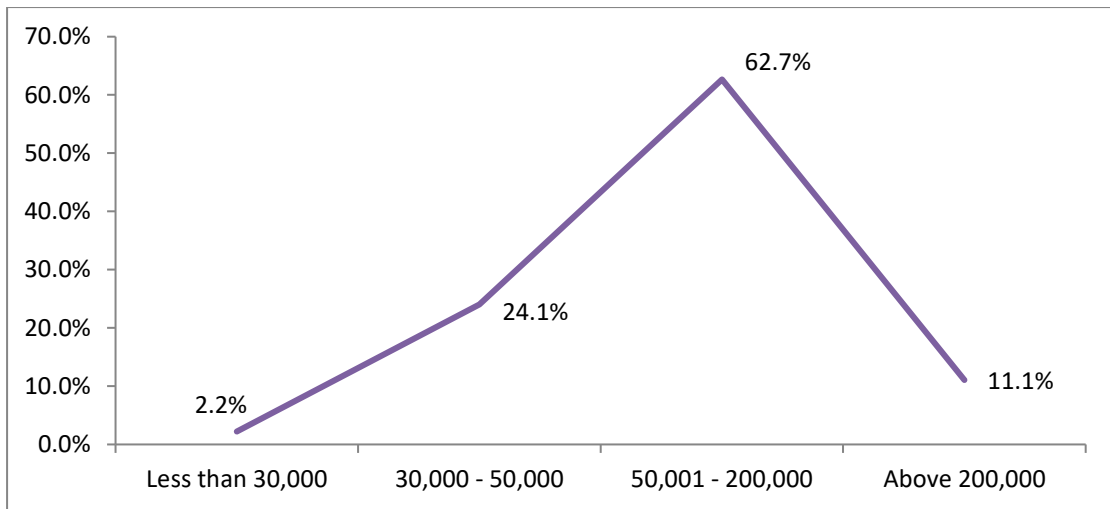


Figure 4.5 Respondents' monthly income level

Source: Research Findings

From Figure 4.5, most (62.7%) of the respondents had a monthly income level of Kshs. 50,001 - Kshs. 200,000, 24.1% had a monthly income level of Kshs. 30,000 - Kshs. 50,000 while 11.1% had a monthly income level of above Kshs. 200,000. Those with a monthly income level of less than Kshs. 30,000 were quite few (2.2%). This indicates that the study information was derived from individual investors at NSE with diverse income levels.

4.4.5 Duration of Trading at the NSE

Figure 4.6 contains findings on the respondents' duration of trading at the NSE.

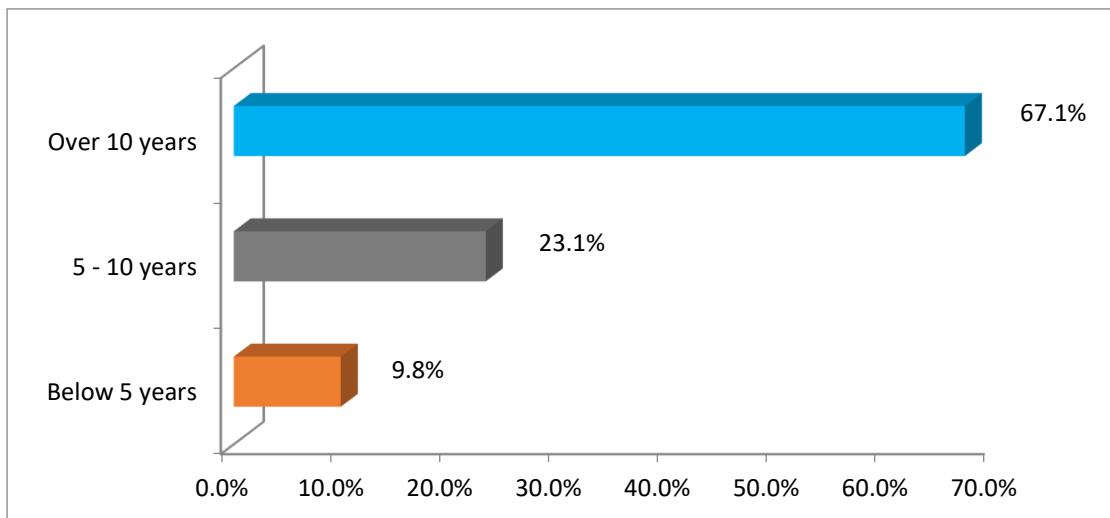


Figure 4.6 Respondents' duration of trading at the NSE

Source: Research Findings

Most (67.1%) of the respondents had participated in dealings at NSE for greater than ten years, 23.1% had traded at the NSE for five to ten years with 9.8% having engaged in trading at the NSE for lower than five years. This implied that majority of the study respondents had traded at the NSE for long enough and hence were in a position to understand how their own behavioral biases influenced their portfolio performance.

4.5 Behavioural Factors Influencing Investment Decisions

This empirical investigation explored behavioral inclinations that persons who invested at the Nairobi Securities Exchange had. Findings appear as elaborated in subsequent sub-categories.

4.5.1 Herding Bias

An evaluation concerning participants' extent of agreement relating to influence of herding bias on their investment decisions at the NSE was performed. They answered to a scale of ranging 1 to 5 with 1 = Disagreeing firmly, 2 = Disagreeing, 3 = Not agreeing and not disagreeing, 4 = Agreeing and 5 = Agreeing firmly. An average range score of 1 - 3 was interpreted as minuscule sway while 3 - 5 was interpreted as notable sway. Table 4.4 contains the findings.

Table 4.4 Respondents' opinion on influence of herding bias

Statements	Mean	Std. Dev
Do you take into account sentiments from peers when choosing shares to invest in?	4.09	0.8117
Do other investors' decisions on stock type choice sway your choices in respect to investing?	4.22	0.6521
Do choices by other investing persons on size of stocks to buy/sell influence your volume of trade?	3.93	0.9023
Do you respond rather rapidly to variations in choices by other investing persons and react in similar ways to theirs within the stock market?	4.13	0.7568
Do choices of other investing persons regarding stocks they buy and/or sell impact your investing resoluteness?	4.19	0.7316

Source: Research Findings

According to the findings in Table 4.4, individual investors at the NSE agreed that their investment decisions were impacted by other investors' decisions on stock type choices (mean = 4.22); their investment decisions were impacted by choices of others on stocks to buy and/or sell (mean = 4.19); they quickly reacted to shifts in choices by other investing persons and followed how they reacted to activities in the bourse (mean = 4.13); they considered sentiments from peers when choosing shares to invest in (mean = 4.09) and that their volume of trading were influenced by other investors' decisions on stock volumes to buy or sell (mean = 3.93). This implied that a notable proportion of those who took part in this study got moved by choices and inclinations of their peers (or other investors) in their investing decisions at the NSE which was an indication of the herding bias.

4.5.2 Loss Aversion Bias

An evaluation of participants' extent of agreement relating to how their prejudice of fear of incurring a loss influenced their investment decisions at the NSE was performed. They answered to a scale of ranging 1 to 5 with 1 = Disagreeing firmly, 2 = Disagreeing, 3 = Not agreeing and not disagreeing, 4 = Agreeing and 5 = Agreeing firmly. An

average range score of 1 - 3 was interpreted as minuscule sway while 3 - 5 was interpreted as notable sway. The findings were as shown in Table 4.5.

Table 4.5 Respondents’ opinion on influence of loss aversion bias

Statements	Mean	Std. Dev
Following an earlier failure, I’m increasingly fearful of taking risk	4.31	0.5746
I unlikely sell shares whose value has decreased and happily dispose off those whose value have gone up	4.25	0.7077
I am clinging to what I have as disposing the shares at the moment would pain me due to losses I would suffer	4.02	0.8852

Source: Research Findings

Findings in Table 4.5 indicate that the individual investors at the NSE did agree that they became more risk averse following a prior loss (mean = 4.31); they unlikely sold shares whose value had declined and happily disposed off ones whose value rose (mean = 4.25) and that they were clinging to stocks owned as disposing them off would occasion them pain due to losses they would suffer (mean = 4.02). This showed that majority of the respondents were eager to sell gaining stocks and held on loss making stocks for fear of incurring investment losses which was an indication of the loss aversion bias.

4.5.3 Overconfidence Bias

An assessment of participants’ measure of concurring relating to influence of overconfidence bias on their investment decisions at the NSE was undertaken. They answered to a scale of ranging 1 to 5 with 1 = Disagreeing firmly, 2 = Disagreeing, 3 = Not agreeing and not disagreeing, 4 = Agreeing and 5 = Agreeing firmly. An average range score of 1 - 3 was interpreted as minuscule sway while 3 - 5 was interpreted as notable sway. Table 4.6 presents the results.

Table 4.6 Respondents' opinion on influence of overconfidence bias

Statements	Mean	Std. Dev
Does your experience in trading at NSE influence your choices?	4.17	0.8296
Are you optimistic that your awareness and dexterity of shares markets can enable you beat the market?	4.28	0.6222
Does overconfidence make you undervalue risks?	4.06	0.8726
Have you made erroneous investing choices due to being overly optimistic?	4.00	0.7259

Source: Research Findings

Results in Table 4.6 indicate that the individual investors at the NSE were in agreement that they were optimistic that their awareness and dexterity of shares markets' operations could enable them beat the market (mean = 4.28); their experience in trading at NSE did influence their choices (mean = 4.17); their overconfidence made them undervalue risks (mean = 4.06) and that being overconfident had made them make wrong investment decisions (mean = 4.00). This outlined that a notable proportion of participant got influenced by their own knowledge, skills and experience of the stock market in their investing decisions at the NSE and believed in their predictive abilities to outperform the market which was a clear indication of the overconfidence bias.

4.5.4 Anchoring Bias

The study also sought to establish respondents' level of agreement relating to influence of anchoring bias on their investment decisions at the NSE. They answered to a scale of ranging 1 to 5 with 1 = Disagreeing firmly, 2 = Disagreeing, 3 = Not agreeing and not disagreeing, 4 = Agreeing and 5 = Agreeing firmly. An average range score of 1 - 3 was interpreted as minuscule sway while 3 - 5 was interpreted as notable sway. Table 4.7 illustrates the findings.

Table 4.7 Respondents' opinion on influence of anchoring bias

Statements	Mean	Std. Dev
Does past performance of shares influence your choice of shares to invest in?	4.23	0.6670
Do you utilize price fixed in advance when selling or buying?	4.14	0.7805
Do you offload your shares as soon as they get back to the price you acquired them?	3.91	0.9554
Is your opinion regarding a given share changed in light of opinions expressed by leading analysts?	2.21	1.1640
Is it likely that you acquire local shares instead of foreign ones due to information on the domestic shares being more forthcoming	4.10	0.7232

Source: Research Findings

According to the findings in Table 4.7, persons who invested in the bourse concurred that their choice of shares to invest in was influenced by past performance of shares (mean = 4.23); they did utilize prices that were fixed beforehand when selling or purchasing (mean = 4.14); they preferred purchasing domestic shares over foreign ones due to information on domestic ones being much more forthcoming (mean = 4.10) and that, at times, they did sell the investments immediately they went back to the acquisition price (mean = 3.91). However, they disagreed with the assertion that perspectives from notable analysts which conflicted with their beliefs regarding a security altered their outlook (mean = 2.21). This implied that majority of the respondents were influenced by shares' past performance or prices and relied on known information in their investing decisions at the NSE which was an indication of the anchoring bias.

4.6 Portfolio Performance

The study also evaluated the respondents' portfolio performance for the period 2019 to 2021 using Sharpe ratio. The summarized outcomes are contained in Table 4.8.

Table 4.8 Respondents' portfolio performance for the period 2019 - 2021

Sharpe ratio				
N	Min	Max	Mean	Std. Dev.
316	-2.04	1.69	0.26	0.8517

Source: Research Findings

Results in Table 4.8 stipulate that Sharpe ratio (a risk adjusted measure of investor portfolio performance) was a least value of -2.04 and a maximal of 1.69; an average of 0.26 with a normal variance of 0.8517.

This indicated that, over the period being considered (2019 - 2021), the worst investor registered negative 204% portfolio performance while the best registered a portfolio performance of 169%, though on average the investors made 26% gains to their portfolios. This implied that, on average, the individual investors' portfolio performance was positive over the study period.

4.7 Regression Analysis

To determine the connection existing among variables being studied, principal investigator performed a regression analysis with its outcomes as enumerated here;

4.7.1 Model Summary

Table 4.9 contains the model summary findings.

Table 4.9 Model summary

Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate
1	.744 ^a	0.554	0.548		.41122

Predictors: (Constant), herding, loss aversion, overconfidence and anchoring

Source: Research Findings

Measure of determination (R^2) elaborates the proportion of variance in the explained variable attributed to variance in the explanatory variables. From the findings shown in Table 4.9, the four independent variables evaluated (that is, herding, loss aversion, overconfidence and anchoring), explained 55.4% of variance in the individual

investors' portfolio performance as outlined by R^2 . Consequently, aspects not covered in this empirical investigation accounted for the remainder 44.6% of change in explained variable.

4.7.2 Analysis of Variance

Table 4.10 presents the analysis of variance findings.

Table 4.10 ANOVA (Analysis of Variance)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	65.923	4	16.48075	96.53	.0000 ^a
	Residual	53.098	311	0.17073		
	Total	119.021	315			

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

b. Dependent Variable: Portfolio performance

Source: Research Findings

Analysis of Variance (ANOVA) computations forms the basis for testing the fitness of adopted regression model with the null hypothesis being $\beta = 0$ and $\beta \neq 0$ being the alternate hypothesis (Weisberg, 2005). Results shown in Table 4.10 showed that the significance value is .0000 which is $<$ the set p value of 0.05 indicating that the overall regression model was significant statistically with regard to showing how herding, loss aversion, overconfidence and anchoring influenced portfolio performance among individual investors at the NSE. Further, the F calculated value of 96.53 was greater than the F critical value at 5% level of significance of 2.40. This affirmed that the overall regression model had a good fit.

4.7.3 Model Coefficients

Table 4.11 below provides a summary of the model coefficients.

Table 4.11: Regression model coefficients

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.014	.324		6.216	.000
Herding	0.439	.101	.581	4.347	.000
Loss aversion	-0.248	-.116	.686	2.138	.036
Overconfidence	0.367	.119	.624	3.084	.003
Anchoring	0.512	.113	.512	4.531	.000

Source: Research Findings

Taking results depicted in Table 4.11, the regression equation model was;

$$Y = 2.014 + 0.439 X_1 + -0.248 X_2 + 0.367 X_3 + 0.512 X_4 + \varepsilon$$

The above analytical equation shows that portfolio performance among individual investors at the NSE would be 2.014 in the absence of behavioural biases.

It was established that a notable favourable association existed between herding predisposition and the surveyed investors' portfolio performance ($\beta=0.439$ and p value < 0.05); which meant that increment in herding prejudice occasioned an increase in surveyed investors' portfolio performance by 0.439.

It was established that a notable negative connection existed between loss aversion predisposition and the surveyed investors' portfolio performance ($\beta=-0.248$ and p value < 0.05); which meant that a unit increment in loss aversion predisposition occasioned a decrease in surveyed investors' portfolio performance by 0.248.

Additionally, it was established a notable favourable association existed between overconfidence prejudice and the surveyed investors' portfolio performance ($\beta=0.367$

and p value < 0.05); which meant that an increment in overconfidence predisposition occasioned an increase in surveyed investors' portfolio performance by 0.367.

It was also established a favourable and notable connection existed between anchoring predisposition and the surveyed investors' portfolio performance ($\beta=0.512$ and p value < 0.05); which meant that an increment in anchoring predisposition occasioned to an increase in surveyed investors' portfolio performance by 0.512.

CHAPTER FIVE: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents findings summary, conclusion and offered recommendations. Other areas that could be researched further and constraints faced are highlighted as well.

5.2 Summary of Findings

Herding bias was evident among the surveyed individuals who invested in Kenya's bourse given respondents' agreement with the views that their investment decisions were impacted by other investors' decisions on stock type choices and stock volumes to buy or sell. They also agreed that they considered sentiments from peers when choosing shares to invest in and reacted quickly to other investors' actions in the stock market. Herding bias had a favourable and notable connection with how individual investors' portfolios performed.

Loss aversion bias was also evident among the surveyed individuals who invested in the country's bourse given respondents' agreement with the views that they became more risk averse following a prior loss, they were hesitant to dispose off stocks whose value declined while they happily disposed off those whose value increased and that they were holding to their loss making stocks for fear of incurring investment losses. A notable negative association was noted as existing between loss aversion bias and the individual investors' portfolio performance.

The study also identified overconfidence bias in surveyed persons that invested in stocks traded at NSE. This is given that the study respondents had the belief that their awareness and dexterity about the securities market would enable them beat the market and that their trading choices at the NSE were informed by their acquired experience in trading at the bourse. Overconfidence bias was found to have a favourable and notable connection with how the individual investors' portfolio performed.

The surveyed individual investors at the Nairobi Securities Exchange also exhibited anchoring bias as they agreed that they were influenced by shares' past performance or

prices and relied on known information, such as a share's acquisition price, in their investing decisions at the NSE. In addition, a statistically notable favourable association was established between inclinations towards anchoring and surveyed investors' portfolio performance.

5.3 Conclusion

The study concludes that behavioral biases were evident among individuals who invested in NSE. These biases manifested in different forms. These included herding bias where the individual investors were influenced in their investment decisions/actions by sentiments held by their peers or other investors at the NSE; loss aversion bias in which the individual investors held on loss making stocks for fear of incurring investment losses and became more risk averse following a loss; overconfidence bias in which the individual investors relied on their won knowledge, expertise as well as experience in efforts to beat the market; and anchoring bias in which the individual investors relied on shares' past performance information to guide their investing choices at the bourse. This empirical investigation also concludes that assessed behavioral biases influenced in a notable manner how portfolios held by persons who invested in the bourse performed.

5.4 Recommendations for Policy and Practice

It's recommended that;

NSE in collaboration with CMA should initiate investor education programs or workshops with a view of enriching potential and existing individual investors' understanding of how the stock market operates hence aiding them in making judicious investments

Individual investors should consider seeking guidance and necessary information from existing stock brokers and fund managers to ensure their investing choices at the NSE are well informed.

Individual investors should also consider creating long-term financial plans to act as a guide in their investment decisions. This would help lessen the effects of behavioral

biases on their investing decisions. It would also help to create a system of accountability in their investment activities.

Individual investors should also actively seek out dissenting views and strategies regarding stocks or presenting investment opportunities rather than blindly following prevailing investing trends.

5.5 Study Limitations

Data for this empirical investigation were gathered via a self-reported questionnaire and therefore the researcher may not guarantee the veracity of the data as it largely relied on/upon participants' frankness.

The current review only focused on four selected behavioral biases (herding, loss aversion, overconfidence and anchoring) and therefore its outcomes may not be taken as reflecting the effects of all behavioral biases on individual investors' portfolio performance. This is given that there are many other behavioral biases that may influence investing decisions among the investors.

5.6 Suggestions for Further Research

Related empirical investigations performed at the NSE though utilizing more participants are needed to allow comparisons and generalization of the study findings. Other studies may evaluate the effect of other behavioral biases, not covered in the current study, on portfolio performance among individual investors at the NSE. Other studies on the research subject could utilize data from documented sources or varied methods/techniques for collecting data to enrich the reported findings.

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APPENDICES

Appendix 1: Questionnaire

Kindly offer your honest responses via ticking (✓) relating to how behavioral biases affect returns of your portfolio at NSE

Section A: Demographic Characteristics of Respondents

1. Correspondent's identity (Optional).....

2. Participant's gender is?

Male () Female ()

3. Participant's age range is? (Tick as applicable)

- a) Under 30 years ()
- b) 30 to 40 years ()
- c) 40 to 50 years ()
- d) Beyond fifty years ()

4. Your attained education level currently is?

- a) Post graduate level ()
- b) University ()
- c) Tertiary College ()
- d) Secondary ()

5. What's your level of monthly income?

- a) Less than 50,000 ()
- b) 50,000- 100,000 ()
- c) 100,000-250,000 ()
- d) Above 250,000 ()

6. Length of trading on the NSE?

- a) Under 5 years ()
- b) 5 to 10 years ()
- c) > 10 years ()

Section B: Behavioural Factors Influencing Investment Decisions

7. Kindly stipulate your level of agreement on each of the following aspects denoting effects of behavioral biases on your investing decisions at the bourse. Apply a rating of

1 to 5 with 1 - disagreeing firmly, 2 - disagreeing, 3 - neither disagreeing nor agreeing, 4 - agreeing, 5 - agreeing firmly.

Behavioral biases	1	2	3	4	5
Herding					
Do you consider sentiments from peers when choosing shares to invest in?					
Do choices on securities type choice by other investing persons impact your decisions while investing?					
Do choices by others investing persons on the stock volume to buy/sell influence your volume of trade?					
Do you respond rather rapidly to variations in choices by other investing persons and react in similar ways to theirs within the stock market?					
Do choices of other investing persons regarding stocks they buy and/or sell impact your investing resoluteness?					
Loss Aversion					
Following an earlier failure, I'm increasingly fearful of taking risk					
I unlikely sell shares whose value has decreased and happily dispose off those whose value have gone up					
I am holding to what I have as disposing the shares at the moment would pain me due to losses I would suffer					
Overconfidence					
Does your experience in trading at NSE influence your choices?					
Are you optimistic that your awareness and dexterity of shares markets can enable you beat the market?					
Does being overly confident make you undervalue risks?					
Have you made erroneous investing choices due to being overly optimistic?					
Anchoring					
Does past performance of shares influence your choice of shares to invest?					

Do you utilize price fixed in advance when selling or buying?					
Do you offload your shares as soon as they get back to the price you acquired them?					
Is your opinion regarding a given share changed in light of opinions expressed by leading analysts?					
Is it likely that you acquire local shares instead of foreign ones due to information on the domestic shares being more forthcoming					

Section C: Portfolio performance

	Sharpe ratio components		
Period	Average portfolio return	Riskless/zero risk rate	Returns' normal variance
Year 2021			
Year 2020			
Year 2019			

End.

Thank you.