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# Effect of behavioural biases on investment decision for structured products by retail investors at Nairobi Securities Exchange

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**Effect of Behavioural Biases on Investment Decision for Structured Products  
by Retail Investors at Nairobi Securities Exchange**

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**MBA/76890**

Submitted in partial fulfillment of the requirements for the award of a Master's in  
Business Administration (MBA) Degree



**Strathmore Business School**

**MAY 2019**

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Grace Wambui Weru

May 2019

### Approval

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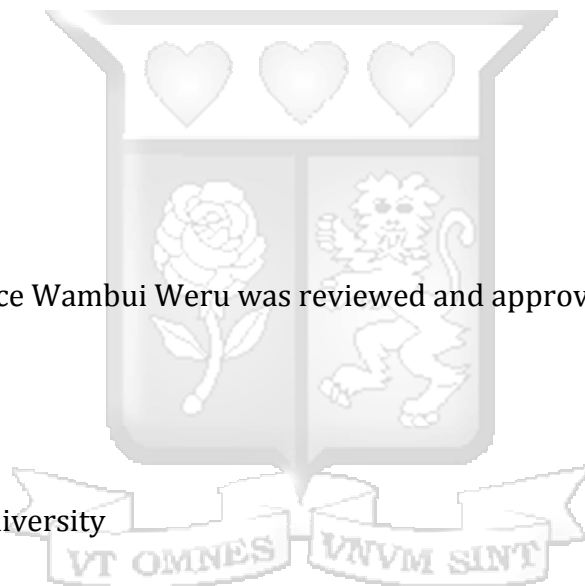
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## ABSTRACT

The introduction of structured products to the Nairobi Securities Exchange, whose access previously was only limited to corporate investors, has been followed by mixed uptake of the investment option by retail investors in the local market. While the Fahari i-REIT Initial Public Offering at the Nairobi Securities Exchange wasn't as successfully subscribed and only managed to raise one-third of the targeted KES 12.5 Billion subscription, the issuance of KES 4.2bn 5-year Equity Linked Notes by Centum Investment Company was on the other hand successful. The novelty of the investment option in Kenya and focus by the Capital Markets Authority to spur uptake of corporate bonds among investors therefore merits attention of analysis of effects of behavioural biases influence on investment decision by investors. The study investigated the effects of behavioural biases on investment decision for structured products by retail investors at Nairobi Securities Exchange. The specific objectives for the study were to determine the effect of herding bias, overconfidence bias, anchoring bias and representativeness bias on investment decision for structured products by retail investors at Nairobi Securities Exchange. The researcher used a structured questionnaire and collected primary data from 109 individual investors currently or previously investing in structured products. The research design that was adopted was descriptive cross sectional design as it aimed to investigate the relationship between the independent variable, behavioural biases, and the dependent variable, investment decisions. The two inferential analysis tools that were used included spearman's correlation and linear regression. From this study, the findings indicated that anchoring bias presented a significant relationship with investment decision, while herding, overconfidence and representativeness variables presented insignificant correlation coefficient. There was a marginal effect of behavioural biases on investment decision making for structured products by retail investors at the NSE and therefore, the study recommends a review of the effects of the behavioural biases on each of the investment decision constructs to contribute to the current theoretical knowledge on the effects of behavioural biases on investment decisions. To policy makers, this study provides clarity on the need to educate potential investors on structured products and also on policy requirements for structured products to mitigate against the effects of behavioural biases by retail investors and encouragement investment in the sector. For practitioners in financial markets, the study provided clarity on how they can approach potential investors with the aim of convincing them to invest.

## TABLE OF CONTENTS

<b>DECLARATION.....</b>	<b>i</b>
<b>ABSTRACT.....</b>	<b>ii</b>
<b>TABLE OF CONTENTS .....</b>	<b>iii</b>
<b>LIST OF ABBREVIATIONS .....</b>	<b>v</b>
<b>LIST OF TABLES .....</b>	<b>vi</b>
<b>LIST OF FIGURES .....</b>	<b>vii</b>
<b>ACKNOWLEDGEMENT.....</b>	<b>viii</b>
<b>DEDICATION.....</b>	<b>ix</b>
<b>CHAPTER ONE: INTRODUCTION .....</b>	<b>1</b>
1.1 BACKGROUND TO THE STUDY.....	1
1.2 RETAIL INVESTORS AT NAIROBI SECURITIES EXCHANGE.....	6
1.3 RESEARCH PROBLEM.....	7
1.4 RESEARCH OBJECTIVES.....	9
1.5 SCOPE OF THE STUDY.....	9
1.6 SIGNIFICANCE OF THE STUDY.....	10
<b>CHAPTER TWO: LITERATURE REVIEW.....</b>	<b>11</b>
2.1 INTRODUCTION .....	11
2.2 THEORETICAL REVIEW .....	11
2.3 EMPIRICAL LITERATURE REVIEW.....	13
2.4 SUMMARY OF KNOWLEDGE GAPS .....	19
2.5 CONCEPTUAL FRAMEWORK.....	19
2.6 CHAPTER SUMMARY.....	22
<b>CHAPTER THREE: RESEARCH METHODOLOGY .....</b>	<b>23</b>
3.1 INTRODUCTION .....	23
3.2 RESEARCH PHILOSOPHY.....	23

3.3 RESEARCH DESIGN .....	23
3.4 POPULATION AND SAMPLE SIZE.....	23
3.5 SAMPLING DESIGN .....	24
3.6 DATA COLLECTION METHOD .....	25
3.7 RELIABILITY .....	25
3.8 VALIDITY .....	26
3.9 DATA ANALYSIS.....	27
3.10 ETHICAL CONSIDERATIONS.....	28
<b>CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSIONS.....</b>	<b>29</b>
4.1 INTRODUCTION .....	29
4.2 RESPONSE RATE .....	29
4.3 RESPONDENTS DEMOGRAPHIC PROFILE.....	30
4.4 BEHAVIOURAL BIASES .....	37
4.5 INVESTMENT DECISION .....	41
4.6 CORRELATION ANALYSIS.....	42
4.7 OVERALL EFFECT OF BEHAVIOURAL BIASES ON INVESTMENT DECISION... 44	
<b>CHAPTER FIVE: DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS.....</b>	<b>48</b>
5.1 INTRODUCTION .....	48
5.2 DISCUSSIONS.....	48
5.3 CONCLUSION.....	51
5.4 LIMITATIONS OF THE STUDY.....	53
5.5 RECOMMENDATIONS AND AREAS FOR FURTHER RESEARCH .....	53
<b>REFERENCES.....</b>	<b>55</b>
<b>APPENDICES .....</b>	<b>61</b>
APPENDIX I: National Commission for Science, Technology and Innovation (NACOSTI) Permit and Letter.....	61
APPENDIX II: Strathmore Business School Introductory Letter .....	63
APPENDIX III: Questionnaire .....	64
APPENDIX IV: Investment Banks.....	70

## LIST OF ABBREVIATIONS

<b>CBK</b>	Central Bank of Kenya
<b>CMA</b>	Capital Markets Authority
<b>ESMA</b>	European Securities and Markets Authority
<b>NSE</b>	Nairobi Securities Exchange
<b>REIT</b>	Real Estate Investment Trust
<b>SEC</b>	Securities and Exchange Commission
<b>SEC</b>	Securities and Exchange Commission
<b>US</b>	United States



## LIST OF TABLES

Table 2.1 Operationalization of variables .....	21
Table 3.1 Reliability test .....	26
Table 4.1 Response rate .....	29
Table 4.2 Age of respondents .....	30
Table 4.3 Gender of respondents .....	31
Table 4.4 Level of education of respondents.....	32
Table 4.5 Marital status of respondents.....	32
Table 4.6 Time as an investor in the NSE .....	33
Table 4.7 Employment status of respondents .....	34
Table 4.8 Expectation in investing in the NSE .....	35
Table 4.9 Investment in structured products .....	36
Table 4.10 Herding biases responses.....	37
Table 4.11 Overconfidence biased responses.....	38
Table 4.12 Anchoring responses.....	39
Table 4.13 Representativeness responses.....	40
Table 4.14 Investment decision responses.....	41
Table 4.15 Correlation Matrix (Spearman).....	43
Table 4.16 Overall Model Summary .....	45
Table 4.17 Overall ANOVA.....	45
Table 4.18 Regression coefficients for behavioural biases and investment decisions.....	46



**LIST OF FIGURES**

Figure 2. 1 Conceptual Model..... 20

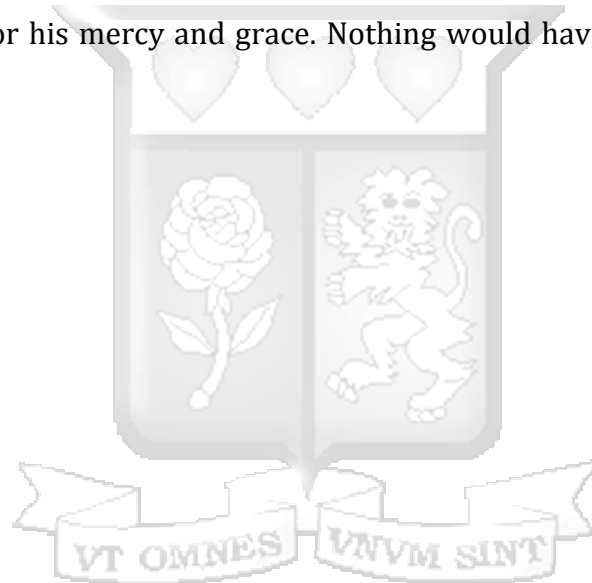


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To My Almighty God, for his mercy and grace. Nothing would have been possible without His favour to me.



## DEDICATION

I dedicate this paper to my family and to God, always there in every step of my life.



## **CHAPTER ONE: INTRODUCTION**

### **1.1 BACKGROUND TO THE STUDY**

Investment has been defined by Reilly and Brown (2003) as a allocation of funds to derive a return over a duration of time so as to compensate the investor for the time when the funds are committed, for the expected loss of purchasing power during the investment horizon and for the uncertainty involved. Thangamani (2014) has also defined investment to mean the process of putting funds into something with the expectation of getting a profits or growth in the worth of the money employed. Investment in financial markets instruments in recent decades has become popular amongst individual investors as noted by Zwick and Mahon (2017) and is considered central to the promotion of the economic wellbeing as a significant economic activity by businesses, consumers and governments (Baddeley, 2017).

Investments can be classified into traditional investments and alternative investments. Traditional investments are the readily accessible products in the market that include stocks and bonds. Swedroe and Kizer (2008) defined alternative investments as consisting of investments outside of the traditional investments categories such as stocks or bonds. Structured products are alternative investment products that derive their value from various assets such as, such as combining traditional investments of stocks with derivatives (Swedroe & Kizer, 2008).

The current trend in examination of financial markets involves the investigation of the influence of behavioural factors on financial markets; an approach that contrasts with the traditional analysis method which considered agents involved in financial markets as purely rational decision makers (Yuniningsih, Widodo & Wajdi, 2017; Wong Chuah, Kui, Soo & Ang, 2016; Kauffman, 2015). This study aimed to shed light on the implications of this trend as pertains to decision making in the Nairobi Securities Exchange (NSE), Kenya's official securities exchange. The specific behavioural theories that were considered in this study were Kahneman and Tversky's (1979) prospect theory, and Shiller's (2002) herding theory. The theories provided complimentary implications of the behavioural finance approach with the first highlighting the role of personal bias in establishment of utility of decisions and the latter bringing to light the innate human tendency to emulate the actions of others.

Hens and Rieger (2009) defined structured products as a combination of traditional assets such as stocks, and bonds with at least one alternative asset, into a bundle that shall have specific interesting features for investors, such as increased participation or capital protection. Anson, Chambers, Black and Kazemi (2012) defined structured products as instruments that generate unique cashflows as a result of partitioning the cashflows from a traditional investment or linking the returns of the structured product to one or more market values.

Initially when structured products were developed, they were tied to the stock market indices, but are now also linked to other underlying assets including interest rates, commodities and currencies (Loven & Garås, 2008), thus providing broader access to investors to a range of markets or commodities, which previously might have seemed too risky. The returns from structured products are therefore through the performance of the underlying assets, thus providing higher returns than comparable traditional investments, reduced volatility due to the alternative underlying assets and enable investors to diversify their portfolio beyond the traditional investments. Primary customers for structured products are retail investors (Bethel & Ferrel, 2007).

The retail market for structured products emerged in 1996 in Europe and by 2011, assets under management of retail structured products was about 700 billion euros in Europe as per Euromoney Structured Retail Products and the US market had USD160bn of retail structured product issuance by 2010. European Securities and Markets Authority (ESMA) regulates structured products within Europe. The Securities and Exchange Commission (SEC) regulates structured products in the United States (US). In Kenya Capital Markets Authority is one of the regulators for structured products, in addition to Central Bank of Kenya.

Issuers for structured products include financial institutions such as investment banks, commercial banks and insurance companies including organizations active in wealth management and private banking. In Kenya, bonds were first introduced into the market in mid-‘90s. A decade later, in the 2004/2005 budget speech, the introduction of structured corporate bonds issues through a special purpose vehicle (SPV) was unveiled (Ngugi & Afande, 2015). For

companies to recommend suitable financial securities to investors, it is a requirement by regulators such as the Capital Markets Authority for companies to learn more about the securities-related knowledge, the strategy of investment to be deployed by the company, and financial background of intended investors. Structured products in Kenya include corporate bonds both public listed at the NSE as well as the private placements in addition to Real Estate Investment Trust (REIT) such as Kenya's first REIT IPO, Fahari i-REIT, (CMA).

### **1.1.1 Behavioural Biases**

The concept of behavioural biases traces its roots to as early as 1979 with the publication by Kahneman and Tversky (1979), where the authors take on a psychological angle in explaining human decision-making approaches. The theory has since been used in studying of financial markets with Barberis and Thaler (2003) defining behavioural finance with the understanding that some agents in financial markets are not entirely dependent on rationality for their decision-making process. According to Pompian (2012) in finance and economics, behavioural biases denote the faulty reasoning influenced by cognitive and emotional factors that result in irrational investment. The working definition for behavioural biases adopted for this study is by Pompian (2012).

Various scholars (Shiller, 2002; Economou, Kostakis, & Philippas, 2011; Agrawal, 2012, Merkel, 2017; Khan, Naz, Qureshi, & Ghafoor, 2017; De Bondt, Muradoglu, Shefrin & Staikouras, 2015) have measured in a variety of ways the behavioural bias constructs. Shiller (2002) measures the construct herding through analysis of trading patterns in different periods within the US market, and thus measures the construct as a binary variable, where clustering indicates presence of herding behaviour whereas a lack of clustering indicates an absence of the behaviour. Similarly Economou, Kostakis, and Philippas (2011) investigated how people across the Greek, Italian, Portuguese and Spanish securities exchanges make decisions during different market conditions by studying the daily data, and found herding bias present in times of rising markets.

Agrawal (2012) on the other hand measured overconfidence as a variable with a binary outcome, where evidence of excessive trading by the individual indicated overconfidence whereas absence of the same indicates the inverse. Merkel (2017) by applying a panel data analysis approach to measure the construct overconfidence in a study on UK online brokerage clients found overconfidence resulting in increased trading activity. Khan, Naz, Qureshi, and Ghafoor, (2017) in investigating anchoring as a

behavioural bias measured the construct through a self-reported approach whereas respondents are required to establish their susceptibility to the bias through answering a set of questions pertaining to the same. Finally, in examining representativeness bias, De Bondt, Muradoglu, Shefrin and Staikouras (2015) measured the construct by tracking the tendency of individuals to gravitate to specific metrics when making financial inferences; reliance on common metrics indicted a tendency towards susceptibility to the bias. For this study therefore, the construct behavioural finance was operationalized through the dimensions herding bias, overconfidence, anchoring, and representativeness (Tan Chiang, Mason & Nelling, 2008; Pompian, 2012; Siddiqi, 2018; De Bondt Muradoglu, Shefrin & Staikouras, 2015) and were measured through answering a set of questions for each of the biases under the study.

Tan et al, (2008) defines herding bias as the behavioural tendency of an investor to follow the actions of others mainly due to reliance of collectively, over privately held information. Pompian (2012) focusing on overconfidence, defines the phenomenon as involving the unjustified faith on intuitive reasoning as a result of one's cognitive and judgment skills, while Siddiqi (2018) depicts anchoring bias as involving erroneous decision making as a result of focusing on specific metrics of value, which serve to direct the decision-making process though not objectively. De Bondt, et al (2015) defines representativeness bias as entailing overreliance of stereotypes hence in financial markets, this would involve reliance on common metrics or trends and looking to these as representations of the entire population. Representativeness means confusing similarity with probability, and therefore making judgement based on similarity of an object.

### **1.1.2 Investment Decisions**

An investment decision refers to the determination made by the investor on the amount of funds to invest in a particular product (Rutkauskas, Miečinskiene, & Stasytyte, 2008). The authors noted that in making of the investment decision, an investor assigns value to the product then proceeds to make an investment that matches the value assigned. Therefore, in essence, investment decisions involve the assigning of value to products and the acquiring of this value through the purchasing of the product (Rutkauskas, Miečinskiene, & Stasytyte, 2008).

Several authors (Yuniningsih, Widodo, & Waidi, 2017; Mbaluka, Muthama, & Kalunda, 2012; Harrison, Mason, & Smith, 2015; Harper, 2012; Wong et al, 2016; Kauffman, Liu & Ma, 2015) have advanced various approaches to measuring investment decision to products of high value, in general, providing desirability across multiple value assigning criteria. Yuniningsih, Widodo,

and Waidi (2017) measures the construct investment decision on account of the respondents' inclination to make decisions primarily as a result of their attitude towards loss, therefore inferring investors are therefore defined as being in either a loss domain or a loss averse domain. As measured by Mbaluka, Muthama, and Kalunda, (2012) in their study on effects of loss aversion, they concluded that investment decision by individuals was influenced by framing effect and was affected by loss aversion.

Harrison, Mason, and Smith (2015) on the other hand measure the investment decision as a function of the reported tendency of individuals to make decisions solely based on their intuition as opposed to fact and trend checking, while Kauffman, Liu and Ma (2015) suggest the use of computer-based analysis approaches to measure investment decision and therefore the logical assignment of value will determine the investment decision. The operational definition of investment decision making that was adopted for this study is by Harper's (2012) observation that investment decisions are made with various objectives in mind, and these include ensuring safety of the principal amount, high liquidity, earning higher returns and tax minimization; factors that speak to the value allocation of the individual.

Wong et al (2016), opine that decisions by agents in financial markets are notably determined by personality traits and biodemographic characteristics with the exception of gender and experience; such factors therefore, particularly among long-standing high-value investors, result in an intuition-based allocation of value to stocks (Harrison Mason & Smith, 2015). Intuition value, according to Wong et al (2016) is therefore the inherent reliance on one's experience in assigning value to investment options. Loss aversion value based on Yuniningsih's (2017) definition is therefore the tendency to invest based more on the motivation to avoid loss than to gain returns. A valuable stock, by this definition, is thus one that provides minimal changes of losing invested resources by virtue of its low risk, but also one that offers substantial returns, while analysis value, stemming from observations by Kauffman et al (2015), therefore, is the assigning of value to stocks based on the output of computer simulations build in accordance with value-assessing logical criteria.

Structured products deemed highly priced across all these three investment decision domains would therefore be considered highly priced assets across the board. However, the effect of



biases on investment decision is dependent on the manner by which individuals go about their investment decision. The constructs that were under consideration in measurement of the dependent variable, investment decisions for this study are therefore intuition value, loss aversion value, and analysis value as they speak to the decision-making approach of individuals as subsequently discussed. (Yuniningsih et al, 2017; Harrison Mason & Smith, 2015; Kauffman, Liu & Ma, 2015). In summation, investment decision making is determined by an investment option, valued highly across all three domains and considered as having the most general value as it offers returns with little risk (risk aversion), considers multiple variables through logical steps (computer analysis) and leverages the experience of the buyer (intuition).

## **1.2 RETAIL INVESTORS AT NAIROBI SECURITIES EXCHANGE**

Established in 1954, the Nairobi Securities Exchange (NSE) remains as the main securities exchange market of Kenya and also the leading securities market in East Africa (Kioko, 2015) and was established under the Companies Act (CAP 486) of the Kenyan law. The government sold 20% of its stake making the market private in (1988). The NSE is regulated by the Capital Market Authority of Kenya (CMA) where the regulator ensures compliance of the listed companies. The NSE focuses on helping trade clearance arrangements of equities, debt derivatives and other related financial tools (Olang, 2017). The Nairobi Securities Exchange (NSE) comprise of 65 listed companies which has been classified to identify them with various sectors in the economy (NSE, 2017).

Retail investors, also variously referred to as individual investors, are investors who buy stocks individually or as a group (Chen, 2011). The NSE had 1.2 Million individual investors as at December 2018 (CMA Bulletin, 2018). At the NSE, security prices move in excess of the fundamental market expectations. The most recent being the IPO where the Safaricom Limited shares were oversubscribed by almost twice and some investors took loans to purchase the shares which resulted to losses as the share price did not increase as expected. This was a case of herding where the investors bought the shares because everybody did.

According to the Central Bank data commercial banks interest rates data as of August 2018, the average fixed deposit rate was 7.8% per annum versus a lending rate of 12.8% per annum (CBK, 2018). Centum Investment Company successfully issued a KES 4.2bn 5-year Equity Linked Notes on the Nairobi Securities Exchange in 2012, whose returns averaged between 12.75% to

15% and was successfully fully subscribed by investors at the NSE (Centum, 2017). The trend was not the same for Fahari i-REIT, a structured product and being Kenya's first i-REIT IPO at the NSE of Kshs 2.6 bn only managed to raise one-third of the targeted Ksh12.5 Billion subscription in 2015 (CMA, 2015). Other available structured products in the market are not listed at the NSE but are privately placed, such as Athi River Mining Equity Linked Note issued to sophisticated investors that included banks, fund managers and insurance companies for Kshs 1.2 bn and resulted in a 59% over subscribed over the issue amount (NIC Capital, 2014).

### **1.3 RESEARCH PROBLEM**

Behavioural finance has garnered a lot of consideration from various scholars in the recent past. Behavioural finance focuses on the social and psychological determinants of investment decision-making processes by both individuals and institutions (Kimeu Anyango & Rotich, 2016). While the economic theory examines agents as rational and objective in decision-making process (Kahneman & Tversky, 1979), other scholars have studied investor behaviour have determined that emotions and heuristic driven biases do have an influence on the investors' judgment, and therefore lead to breaking the rules of rational decision making.

Globally, Ofir and Wiener (2012) studied the effects of rational and behavioural biases by investors on structured products using an experiment. The authors found that the structured products available in the Jerusalem market were positioned to exploit retail investors behavioural biases such as loss aversion and herd behaviour, therefore leading investors to participate in the market because of their risk-loving attitude. Filip (2015) researched on how behavioural biases influenced the investment decisions in Bucharest Stock Exchange in Romania and found that age influence investment decisions negatively. The independent variables used were the account value, age of investors and frequency of trading. According to Kengatharan (2014) in a study of Sri Lanka's Colombo stock market, regret aversion, loss aversion, herding and the speed of acquiring and disposing of securities have no influence on the performance of investments. Herding is however postulated, by multiple authors, to have an effect on decision making and particularly so in emerging markets (Tan et al, 2008; Economou Kostakis & Philippas (2011).

Regionally, Rekik and Boujelbene (2013) in his study on investors in the Tunisian Stock Market stated that investors act in an irrational manner while making investment decisions and noted

several biases such as anchoring, herding, loss aversion, representativeness, and mental accounting having an influence to this process, but however pointed out an absence of overconfidence bias. Locally, Aduda, Oduor and Onwonga (2017), in a study to determine the financial performance and behaviour of retail investors when trading in the NSE listed shares observe that some investors were found to be irrational in decision making, and they often made losses in their investment as a result of herding and irrationality.

These conflicting findings, on the role of behavioural biases in decision-making and the lack of studies pertaining to Kenya on structured products, therefore offered justification for the proposed study. The present study additionally looked at more biases and their influence on investment decisions in Kenya, specifically the biases herding bias, overconfidence, anchoring, and representativeness (Tan et al, 2008; Pompian, 2012; Siddiqi, 2018; De Bondt et al, 2015). The study further focused on individual investors in the NSE and therefore collected data pertaining to multiple issuances of structured products that presented differing results such as, the success of Centum's equity linked notes versus the poor performance of Fahari i-REIT and Athi River Mining Equity Linked Notes. Studies on these products as pertains to investor decision and behavioural bias have not prior been conducted.

Even though many researchers have tested and observed the effect of behavioural biases on investment decision, there still lies a research gap. The lack of consensus among the various scholars on the effect of behavioural biases on investment decision was reason enough to conduct further examination on the area of study. In addition, most studies that have been carried out in the past in Kenya were found to focus on effects of behaviour biases on retail investor's decision making with regard to equity investments. These studies found relevant characteristics within this product group but there is insufficient literature on empirical studies that have identified relevant characteristics that investors rely on when choosing between different product groups such as structured products with regard to the value they offer.

The value of structured products forming the basis of decision-making in this study was viewed as overall worth with regard to intuitive value, loss aversion value and simulation value.

Therefore, this study aimed to answer the question, what is the effect of behavioural biases on investment decision for structured products by retail investors at Nairobi Securities Exchange?

#### **1.4 RESEARCH OBJECTIVES**

The study objective sought to establish the effect of behavioural biases on investment decision for structured products by retail investors at Nairobi Securities Exchange.

##### **1.7.1 Specific objectives**

- i. To determine the effect of herding biases on investment decision for structured products by retail investors at Nairobi Securities Exchange.
- ii. To establish the effect of overconfidence on investment decision for structured products by retail investors at Nairobi Securities Exchange.
- iii. To determine the effect of anchoring on investment decision for structured products by retail investors at Nairobi Securities Exchange.
- iv. To determine the effect of representativeness on investment decision for structured products by retail investors at Nairobi Securities Exchange.

##### **1.7.2 Research questions**

- i. What is the effect of herding biases on investment decision for structured products by retail investors at Nairobi Securities Exchange?
- ii. How does overconfidence affect investment decision for structured products by retail investors at Nairobi Securities Exchange?
- iii. What is the effect of anchoring on investment decision for structured products by retail investors at Nairobi Securities Exchange?
- iv. What is the effect of representativeness on investment decision for structured products by retail investors at Nairobi Securities Exchange?

#### **1.5 SCOPE OF THE STUDY**

The study was conducted among individual retail investors that invest in structured products through investment banks between March to April 2019. Retail investors were chosen as the respondents of the study as the approach allowed for a broader response base given that there are relatively few institutional investors in the NSE. Further, retail investors, prior to the mid-1990's were barred from investing in bonds hence this study provided novelty as it investigated the

effects of a budding investment group, particularly focusing on structured products which were introduced even later into the market. Additionally, retail investors would be easier to access in comparison to institutional investors that are typically guarded with regard to issuance of information regarding investment decisions. A purposeful convenience sampling approach was applied to select the sample from a general population. The study was limited to respondent's interest in investing in any of the known structured products in Kenya including corporate commercial papers, i-REITs, equity-backed notes and other asset-backed securities. The researcher provided a disclaimer to the respondents that the data to be collected would only be used for academic research purposes.

### **1.6 SIGNIFICANCE OF THE STUDY**

Scholars and academicians in the finance discipline will find this study useful as it provides further empirical evidence in building the body of knowledge on behavioural finance. Furthermore, recommendations for researchers to conduct future studies to broaden the knowledge on behavioural biases in relation to structured products investment choice has been availed through subsequent findings. Moreover, scholars can consider the methods and results of this research and possibly extend it in various directions. The study will add to the present information on behavioural biases and investment decision in the Kenyan context.

In policy formulation processes, policy makers such as the Capital Markets Authority and Nairobi Securities Exchange will be able to formulate policies that mitigate against the effects of the behavioural biases to encourage more uptake of the products in the market. The significance of this study was that is if investors are aware of the behavioural biases, they can avoid them as noted by Agrawal (2012) and Byrne & Utkus (2013). As such, the policies drafted would be geared towards investors education to be aware of the biases traps and avoid them while making investment decisions for structured products.

This study will be useful to practitioners such as fund managers, financial institutions and investment banks firms as the findings show the effects of behavioural biases on investment decision by retail investors in the NSE with respect to structured products and therefore useful to widen their clientele base by coming up with strategies that will lead to an increase of individual participation in the sector and mitigate against the negative effects of the biases in investment decisions.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 INTRODUCTION**

This chapter provides a review of literature on behavioural biases and investment decision. It contains the theoretical review, determinants of investment decision, empirical review, conceptual framework and summary of literature review.

### **2.2 THEORETICAL REVIEW**

This section presents review of the relevant theories that explains the associations between behavioural finance and investment decision-making. The study was anchored on two theories namely, prospect theory and herding theory.

#### **2.2.1 Prospect Theory**

Kahneman and Tversky (1979) developed the prospect theory. According to prospect theory, investor preference goes against the traditional utility function, where investments are viewed in the light of the expected utility. Investors view choices by evaluating the potential gains and losses from them, in relation to a particular reference point, mostly the purchase price of the investment, or the related history and expectations of the decision maker. The way people frame an issue or outcome influences the expected utility.

According to Kahneman and Tversky (1979) there are two steps involved in decision-making where first preliminary analysis is done and then evaluation of choices follows. Therefore, individuals put more effort in avoiding losses as compared to making gains, and as such will hold on to losing stocks hoping they will increase in value. As such, an individual's investment decision will be anchored on how much losses or gains they have made from these investments. The tendency of assigning different weights on losses and gains results in a bias known as reflection effect. This can be elaborate as a scenario where one tries to avoid losses in possibility of gains.

According to the theory, unlike the ubiquitous value-setting investment decision approach applied to commodities and services, the price of a structured product is subjective with the basis of subjectivity emanating from the individual's prior interaction with the structured product, of either gains or loss, and the need specifically to avoid the losses. This outcome of prior interaction will thus bear the effects of the biases that the individual in question is susceptible to.

Given that markets are not efficient and are uncertain, the prospect theory provide is a descriptive theory under these uncertain condition (Ritter, 2003). Further, this theory informed this study as noted by Mithiku (2011) that structure products were noted to be preferable over traditional asset combinations because they were more profitable and have increased prospect utility.

### **2.2.2 Herding Behavioural Theory**

Herding behavioural theory as advanced by Shiller (2002), states that human beings have an inherent desire to belong to a group, which means that people will always want to be seen together with others. The author further added that moving with the herd, however, magnifies the psychological biases. Investors often spend very little time to analyze individual stocks in the market but focus on buying the stocks that are currently at the center of attention by other market players. Herding can be irrational when investors in stock markets sell their stocks to avoid losses when there is a large stock market decline because other investors are doing so hence, they ignore all rational analysis and react in panic leading to market distortions.

According to Odean et al. (2007) herding behaviour is affects people who believe that the knowledge of other people can be useful to them to make investment decisions much faster and easily. Investors imitate the actions of others believing that other people have better information than they do. Raines (2011) also argue that herding can lead to disposition effect where retail investors sell stocks, which have appreciated in value much faster while they tend to hold on to stocks that have lost value due to loss aversion.

This theory was important to this study as far as establishing the reliance on others in decision-making by retail investors with regard to making financial decisions and conversely also the effect of one's own belief in their cognitive abilities to make decisions due to overconfidence bias. As advanced by Arthur (2014) that due to the volume of financial and other information available to investors to analyse, the investment decision has become complex. The theory therefore was of importance in informing how investors analyse past information and impact of such on representative bias in investment decision as well as the effect of investors focusing on specific metrics while analysing information so as to make an investment decision. Aside from the theory's direct relevance to behavioural bias, behavioural theory provides a lens for assessing the aggregated effect of biases in trading in structured products.

## **2.3 EMPIRICAL LITERATURE REVIEW**

This section discusses the previous studies that have investigated the four behavioural biases under this study and investment decisions making, the research studies arising from the study and knowledge gaps have also been identified.

### **2.3.1 Herding Bias and Investment Decision**

Various scholars have advanced several studies investigating herding behaviour and investment decisions. Study by Ofir and Wiener (2012) in the merging markets, Jerusalem with a subject population of 268 non-professional investors, were set up in a controlled experiment to test their hypothesis concerning the application of behavioural biases to investment decisions involving structured products. The study experiment included investment decisions that involved a binary choice of investment alternatives, which were based on the behavioural bias tested in the specific investment decision. The findings from the study concluded no effect of herding behaviour of a majority of subjects. Drehmann, Oechssler, and Roider (2005) in a study featuring 6400 participants who were requested to make decisions on whether or not they would invest in a company. The result indicated no proof of herding, which was a finding in keeping with that by Avery and Zemsky (1998) investigating herding in instant markets. Avery and Zemsky (1998) observed that since the group activity is immediately incorporated into the price, no herding effects were apparent. Also, contrarianism, in which one goes against the market and their own signal, is found to be an important factor in financial and capital market strategies as the approach serves to mitigate against herding effects. The mixed findings on the impact of herding therefore served to justify the need for the study.

On the other hand, study by Economou, Kostakis, and Philippas (2011) investigated how people make decisions during different market conditions. The researchers used daily data across Greek, Italian, Portuguese and Spanish securities exchanges and found out that herding effects were more in times of rising markets in these securities exchanges. The findings from these studies elicit conflicting outcomes, one whose outcome confirmed an effect of herding behaviour on structured products, while another negates no effect of herding bias. Further, the studies were conducted in developed markets and emerging markets, where structured products were first introduced and has been extensively studied, while this study was conducted in a developing market.



Tan et al (2008) conducted an evaluation of herding practices in China's stock market comparing A-share and B-share stocks (stocks available to international investors) in the Shanghai and Shenzhen stock exchanges. The researches employed a logistic linear regression model following after the observation of findings from studies by Christine and Huang (1995) and Cheng et al. (2000). Data for the research was sourced from 87 dual-listed companies (participating in both A-stock and B-stock). The results of the study, indicate evidence of herding in the A-stock shares. Contrastingly, there was no evidence of herding in B-stock shares, which are shares accessible to international investors. These findings, therefore, indicate a reliance on similar information sources among investors in local markets compared to the diverse sourcing and reliance of information among international investors. Findings from Chen (2000) further provide an explanation for herding in emerging markets given that developed countries show a lower tendency to revert to herding practices. This study focused on herding behaviour on local retail investors decision making on structured products in a developing country, while previous studies have focused on herding behaviour for international investors on investing in stocks.

### **2.3.2 Overconfidence Bias and Investment Decision**

There are two main implications of overconfidence with respect to investor point of view, one is failure to generalize the information and second is to do extra trading due to this failure (Shefrin & Statman, 2000). Costa, de Melo Carvalho, de Melo Moreir and do Prado (2017) provide a bibliometric analysis of publications establishing the role of behavioural finance on decision making. The publication employs the contextual analysis of scientific productions to excavate all publications pertinent to behavioural finance with a particular focus on the constructs – overconfidence, anchoring effect and confirmation bias. Findings from their study indicate that of the three constructs, overconfidence is the second most widely researched with a total of 388 publications of a total of 923. This, therefore, points to the importance of the construct overconfidence in the investigation of econometrics and their implications on financial trends in financial metrics.

In a study of overconfidence in decision-making, Moore and Healy (2008) notes that there is a lack of consensus on the definition of overconfidence among scholars, a finding evidenced by Hirshleifer (2015) publication on overconfidence. The authors examines three possible definitions, which are, overconfidence as a function of overestimation of one's ability, and over-

placement of one's performance relative to others; and as a result of excessive precision. The researchers collected test results from 82 students with each student required to take a test and to guess how they and other students perform. The overconfidence bias was thus measured through the constructs over precision in one's beliefs, overestimation of one's actual performance and over placement on one's performance relative to others. Findings from the study indicate a negative relationship between overestimation and over placement and that more accurate results were related to the individual's ability to curtail against overestimation and over-placement. This study, therefore, provided possible outcomes to be considered in examining the effect of overconfidence among retail investors.

On the other hand, Merkel (2017) through a study on UK online brokerage clients highlight that overconfidence results in increased trading activity. The researchers employ a panel data approach entailing the collection of estimation data from 671 clients with the intention of establishing their levels of overconfidence and how these impacted on their trading patterns. The authors provide an alternative approach to examination of overconfidence entailing ranking by misses and hits whereby a confidence interval is assigned and all estimates within the interval are considered accurate predictions; estimates over and under indicate overconfidence and lack of confidence, respectively. Findings from the study indicate that clients showing evidence of overconfidence were more likely to engage in increased trading activity, possibly due to positive returns despite erroneous prediction approaches. Such investors were likely to attribute positive performance to their own abilities to 'read' the market. Unlike the study by Moore and Healy (2008) which indicates a negative relationship between overestimation with investment decision, the outcome from Merkel (2017) study provided a positive outcome on the effect of overconfidence on investment decisions.

Berg and Rietz (2017) analyse the effect of overconfidence by initially simplifying the market such that it only has two outcomes: liquidation at 1 and liquidation at 0. This is analogous to betting or binary options. Then the current price of the stock is dictated by the market. An objective price estimate is also maintained, which is the probability of liquidating at 1 as per the multinomial logistic regression model. Any deviation of the prices from the probabilities shows a bias. It is found that the markets show little bias over short horizons but much bias over long

horizons. It is also found that the overconfidence occurs in the Iowa Electronic Market, but it reduces considerably towards the date of liquidation. Its opposite, the longshot bias (prices going very high on trades with very low probability of paying off) has negligible effect on financial markets. Overconfidence, although significant, is also mitigated by the ability to trade short in financial markets as opposed to betting, as well as market makers being paid by a bid/ask spread rather than a standard fee.

Empirical findings on overconfidence effects as exemplified by the forgoing discussions therefore indicate that there is a lack of substantial evidence on the exact effect of the phenomenon in the long and short-term. This study served to address this challenge by offering additional empirical evidence on the impact of the factor on financial decision making.

### **2.3.3 Anchoring and Investment Decision**

The effect of anchoring on investment decision for structured products by retail investors has also been investigated by various scholars and revealed different findings. Khan et al (2017) in the study, collected data on anchoring through a Likert scale. The respondents were asked to project a future quantity, for instance, the price of a house, after being provided with an anchor value. The Likert scale contained values that differed from the anchor value to various degrees. The finding was that there was a bias towards values that were close to the provided value, confirming the presence of anchoring. The median of the responses from each respondent with regard to anchoring reflected their anchoring score. The effect of anchoring is obtained by performing regression analysis with anchoring, availability, and representativeness as the dependent variables and stock buying decision as the independent variable. The coefficient found was significant, showing that anchoring has a significant bearing on stock-buying decision. This study was conducted in the developing countries Pakistan and Malaysia, demonstrating that anchoring has a significant effect in developing countries as well. The current study focused on the effect of anchoring on structured products in a developing country, and will present findings that will contribute to body of knowledge on the effect of the bias.

The effects of anchoring are further supported by findings by Jetter and Walker (2017) involving 6064 gamer participants in the popular US game Jeopardy! The game involved selecting clues and coming to an answer based on these clues. Each round includes selecting a category and

attaching a monetary value to a clue in that category. The contestant will win or lose this amount based on whether they find the correct answer from the clue – a process called wagering. Each game has an initial dollar value, after whose statement contestants pick any clue. However, 26% of the contestants select a clue that is within 1 step of the initial dollar value, possibly indicating anchoring. Regression analysis of the initial value against the clue amount reveals a positive coefficient of 1.318, showing a correlation between the initial value a contestant sees and the value they wagered that is significant at 1% level. This study showed the effect of anchoring in decision making aside from the financial and capital markets.

The authors develop a model to evaluate the bias in determining ex-distribution stocks caused by anchoring on cum-day returns. The framework developed computes the ex-day closing price as the cum-day price (the anchor) divided by the sum of 1 and an adjustment factor. This adjustment factor accounts for anchoring, with 1 being extreme anchoring and 0 being no anchoring. Regression analysis is done between the ex-day return and the adjustment factor, showing a positive correlation. This indicates that anchoring to cum-day returns is a significant factor affect ex-day prices. There is however a moderator variable, anchoring propensity, between the adjustment factor and the ex-day return. It depends on events and explains why some days will have the same adjustment factors but different ex-day prices.

Anderson and Zastawniak (2017) in seek to establish the reason for the popularity of glamour shares over value shares, given that the latter has been known to be offer more consistent returns based on numerous postulations over a 50-year period. The Merton model is used to measure the variation of glamour and value shares over time. Data was collected from CRSP/Compustat for all US companies between 1983 and 2010. The companies were divided into deciles for analysis through the Markov model. It was then confirmed that ideal glamour companies' performance is thrice the performance of ideal value companies. However, glamour companies are seen to have much less chance of staying glamour companies than value companies do of staying value companies. The author infers that investors still buy more of glamour shares due to anchoring on initially high price to earnings ratio offered by glamour companies and overestimating their duration. This is confirmed when the data is modelled in a Cauchy distribution. This article

provides a case of the practical application of tools to identify and quantify the effect of anchoring: the Markov model and the Cauchy distribution.

Although the concept of anchoring is well established in literature, there yet remains little evidence of its impact in the East African region, and more so, in Kenya. The current study addressed the anchoring bias research gap by providing empirical evidence on the presence or absence of the effect on structured products in the Kenyan market at the NSE.

### **2.3.4 Representativeness Bias and Investment Decision**

Various scholars have advanced several publications on the effects of representativeness on investment decisions. In their study in the Pakistan Stock Market, Shah, Ahmad, & Mahmood, (2018) sought to determine the influence of overconfidence, representativeness, availability and anchoring on the investment decisions of retail investors, actively trading on the Pakistan Stock Exchange through questionnaires that were administered to 143 investors. For data collection, convenient purposeful sampling technique was used. To examine the relationship between the heuristic biases, investment decisions and perceived market efficiency, hypotheses were tested using correlation and regression analysis. The study findings showed a negative impact of the heuristic biases by individual investors on investment decisions trading and on perceived market efficiency. While the study looked at the effects of overconfidence, representativeness, availability and anchoring biases on investment decisions by active retail investors in the Asian Market, this study focused on retail investors at the NSE, and specifically those investing in structured products.

On the other hand, Habbe (2017) in an investigation of representativeness and anchoring-adjustment heuristics collect empirical data from 20 post-graduate master's students trading in 16 shares listed in the Indonesia stock market; the study period was 4 years. The researcher employs a regression model depicting market price estimation error and investor error as the dependent variables with previous and current price estimates as the independent variables. To collect researcher's information, Habbe (2017) uses a program designed to track the participants trading information in way of earning predictions, stock market price, trading volume, assets of each investor, their gains and loss and hence their estimation errors. Results indicate that although the participants had high-level backgrounds in accounting principles, they were susceptible to errors

resulting from both representativeness and anchoring-adjustment heuristics. Though this study indicates a blind spot with regard to representative bias and objective analysis of information even with high-level training, the current study did not focus on respondents with specific skills in evaluating the effect of representative bias on investment decision-making and will therefore contribute to theory on effects of the bias on non professional retail investors.

## **2.4 SUMMARY OF KNOWLEDGE GAPS**

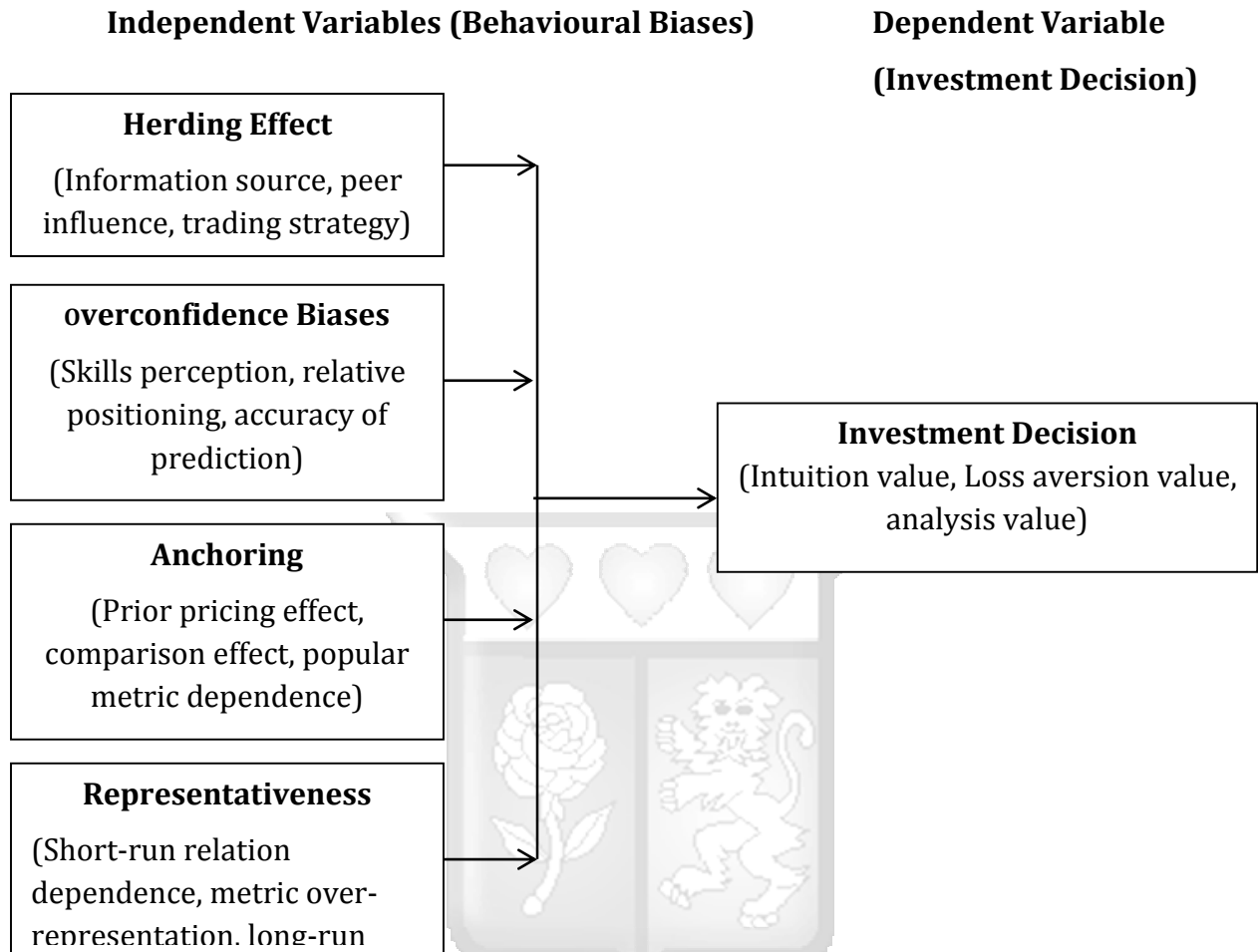
In the previous sections, empirical studies on behavioural biases and investment decisions have been analysed and several knowledge gaps arose. Multiple findings on the exact influence of behavioural biases have also been put forward and these mixed findings on the impact of the four behavioural bias contrasts, herding, overconfidence, anchoring, and representativeness on investment decision was a justification for the need for the study. In addition, it was observed that prior studies focused on overall effect of trading behaviour of investors on investment decisions without picking being sector specific, while the current study will focus on effect of behavioural factors on investment decisions of structured products. Other empirical studies examined the effect of behavioural factors on investment decisions in a developed country while the current study focused on Kenya, a developing country. This research sought to fill these knowledge gaps that have been identified. This study sought to add to the body of knowledge by providing empirical evidence on the effect or lack thereof of behavioural biases on decision-making with respect to structured products at the NSE.

Studies undertaken in Kenya are quite few and do not give a conclusive result and none of the studies have focused on investment decision for structured products, and some cases have attempted to explain the influence of a single behavioural bias on institutional investors and stock markets. Motivated by these gaps, this study, therefore, sought to explore the effect of behavioural biases on investment decision for structured products by retail investors at Nairobi Securities Exchange.

## **2.5 CONCEPTUAL FRAMEWORK**

The conceptual model in Figure 2.1 outlines the relationship between behavioural biases (herding bias, overconfidence, anchoring and representativeness) and investment decisions by retail investors.

**Figure 2. 1 Conceptual Model**



**Source: Author, (2019)**

The independent variable, behavioural biases, was operationalized through the herding effect, overconfidence biases, anchoring and representativeness (Tan et al, 2008; Pompian, 2012; Siddiqi, 2018; De Bondt et al (2015) whereas the dependent variable, investment decisions was examined by inquiring on the attractiveness of structured products as measured through the constructs loss aversion value, intuition value, and analysis value (Yuniningsih et al, 2017; Harrison et al, 2015; Kauffman et al., 2015

**Table 2.1 Operationalization of variables**

<b>Variables</b>	<b>Operational Definitions</b>	<b>Measurements</b>	<b>Source</b>
<b>Dependent Variable</b>  Investment Decision	<b>(Intuition value, Loss aversion value, analysis value)</b>	<b>Five point Likert scale</b> 1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree	decision making (Yuniningsih et al, 2017; Harrison et al, 2015; Kauffman et al., 2015).
<b>Independent Variables (Behavioural Biases)</b>			
Herding Effect	<b>(Information source, peer influence, trading strategy.)</b>	<b>Five point Likert scale</b> 1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree	Tan et al, (2008); Economou (2011); Drehmann et al (2005) Boyd et al, (2016)
Overconfidence	<b>(Skills perception, relative positioning, accuracy of prediction)</b>	<b>Five-point Likert scale</b> 1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree	Moore and Healy (2008); Daniel and Hirshleifer (2015); Hershleifer (2015); Merkel (2017)



Anchoring	<b>Prior pricing effect, comparison effect, popular metric dependence</b>	<b>Five-point Likert scale</b> 1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree	De Bondt et al (2015); Berg and Rietz (2017) Siddiq (2018) Khan et al (2017)
Representativeness	<b>Short-run relation dependence, metric over-representation, long-run attribution</b>	<b>Five-point Likert scale</b> 1=Strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly agree	Habbe (2017); De Bondt et al (2015); Kahneman and Tversky (1982)

**Source: Author, (2019)**

## **2.6 CHAPTER SUMMARY**

The section has explained the grounding of the study in the two theories being prospect theory and herding theory. Some of the key behavioural biases determining investor's decisions are also explained in this section. Empirical review on global, regional and local perspective on behavioural biases and investment decisions has also been done. However, most literature reviewed on the relationship between behavioural biases and investment decision is on international markets with very few carried out in the local market. From the discussion, it is evident that there is a wide body of conflicting evidence on the influence of behavioural factors and how these influence the attractiveness of stocks as a function of specific decision making approaches. This study addressed this shortcoming by providing empirical evidence of the link between behavioural factors and decision making approaches ascribing value to structured product.

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 INTRODUCTION**

This chapter describes methods of research that were applied to objectively establish the effect of behavioural finance on investment decisions for structured products by retail investors in the NSE. It also illustrates the research design and philosophy used, population of study, data collection approach and analysis approach used in the study.

### **3.2 RESEARCH PHILOSOPHY**

Research philosophy details the tenets considered by the individual in investigating a phenomenon and how these tenets dictate the manner through which the researcher goes about addressing the objectives of a study (Hughes & Sharrock, 2016). The study adopted a positivism philosophy as the researcher noted that the relationship between the variables were observed objectively and inferences made on account of data collected from them through objective analysis techniques with curtailed subjectivism in reporting on the findings (Hughes & Sharrock, 2016).

### **3.3 RESEARCH DESIGN**

Kothari (2009) defines research design as the configuration of conditions for collecting and analysing data in a way that seeks to combine relevance of a research purpose to the economy in the procedure. Research design involved the determination of the framework that was applied in collecting data for the study and data analysis (Ghuri & Gronhaug 2005). The research design was a descriptive cross-sectional as the study sought to establish the relationship between the behavioural bias constructs and investor decision making (Novikov & Novikov, 2013).

### **3.4 POPULATION AND SAMPLE SIZE**

Etikan, Musa and Alkassim (2016) define populations as entailing the entire number of observations to which generalizations based on inferences are made. Sample size refers to the statistically justifiable number of observations that can be considered representative of the population at a specific confidence level (Etikan, Musa and Alkassim, 2016). The study involved surveying a sample of the retail investors who trade at the Nairobi Securities Exchange with a particular focus on those involved in

structured products and trading through investment banks. There are 16 investment banks listed by the CMA. The unit of study was the individual retail investors involved in the trading of structured products. The NSE had 1.2 Million individual investors as at December 2018 (CMA Bulletin, 2018). The researcher relied on direct visits to investment banks through the research assistant, with a wait and fill approach used as the first option. In instances where accessing investment banks was difficult, networking efforts were used to gain access to investment banks, and eventually possible respondents. Some investment banks were however responsive hence a mixture of the two approaches allowed for collection of a sufficient sample size.

### 3.5 SAMPLING DESIGN

According to Kothari (2009) sampling design refers to the method used to select respondents. The important test of a sample design is how well it represents the population characteristics it implies. Sampling is the process of selecting elements of the population that act as a representative for the study. The study adopted a non-probability sampling technique, in particular, convenience sampling to reach the target sample size. This approach was chosen owing to the large size of the population, given the resources available for the study, to conduct a probability-dependent sampling approach. Convenience sampling would however have introduced the risk of biased findings and was addressed through pre-testing of the data collection tool to ensure validity and reliability (Kothari, 2009). The study sample size was determined using the standard sample size calculation formula by Chow, Shao Wang & Lokhnygina, (2017):

$$1 + \frac{\frac{z^2 \times p(1-p)}{e^2}}{\left[ \frac{z^2 \times p(1-p)}{e^2 N} \right]}$$

N = size of population

p = population reliability (or frequency estimated for a sample size n), where p=0.5, which is for all population

e = margin of error considered as 10% for this study

$z$  = value for the selected alpha level (at 0.05 level of significance),  $z$  is 1.96 as justified by Hardy (2009) as suitable for social science studies in the event that the researcher accepts a higher margin of error.

Therefore:  $(1.64^2 * (0.5 * (1-0.5)) / 0.1^2) = 67.24$

$(1.64^2 * (0.5 * (1-0.5)) / 0.05^2 * 1200000) = 1.000056033$

Finally

$67.24 / 1.000056033 = 67.23623$

Sample size is therefore 68 respondents

The researcher added 10% to compensate for persons this research was unable to contact and a further 40 % for non-response (Jafri, Dudley & Buland, 2000). Baruch and Holtom (2008) further observe that the general response rate among organization was 35.7% with a standard deviation 36 of 18.8. The researcher therefore adjusted the response rate by 64.3% taking the sample size to 112 respondents.

### **3.6 DATA COLLECTION METHOD**

The research relied on a structured questionnaire for the collection of primary data with the aim of addressing the objectives of the study. Each question was evaluated on a 5-point likert scale with the exception of demographic data. The questionnaire was divided into five sections, the first addressing general basic information about the respondent and subsequent four sections addressing the independent variables of the study being, herding effect, overconfidence, anchoring, and representativeness as captured in the conceptual framework and operationalization of variables (section 2.5 and 2.6). The final section of the study examined the aspect of decision-making in assigning value to structured products.

The questionnaires were administered by research assistants directly to the respondents using a wait and fill approach.

### **3.7 RELIABILITY**

Reliability is where the research undertaken is inherently repeatable by other researchers and that the results obtained are obtainable in different experiments under the same conditions while general validity establishes whether the results acquired adhere to all conditions for the scientific research method (Shuttleworth, 2008). In order to measure the

reliability of the scales used in the questionnaire, a pilot test was undertaken. To determine internal consistency, data from the pilot test was analysed using Cronbach's alpha, a metric used to establish the internal consistency of questions in a scale with the general understanding that a threshold alpha figure of 0.6 demonstrates that the scale in question is reliable. The results are presented in Table 3.1 below

**Table 3.1 Reliability test**

Variables	Cronbach's Alpha	Number of Items
Herding Bias	0.7	6
Overconfidence Bias	0.7	6
Anchoring Bias	0.8	6
Representativeness Bias	0.8	6
Investment Decision Making	0.6	6

**Source: Primary Data (2019)**

As indicated, all the scales were deemed reliable. A rating of 0.6 is considered to be of reasonable reliability. Streiner, (2003) consider values under 0.70 but close to 0.60 to constitute reliable scales.

### **3.8 VALIDITY**

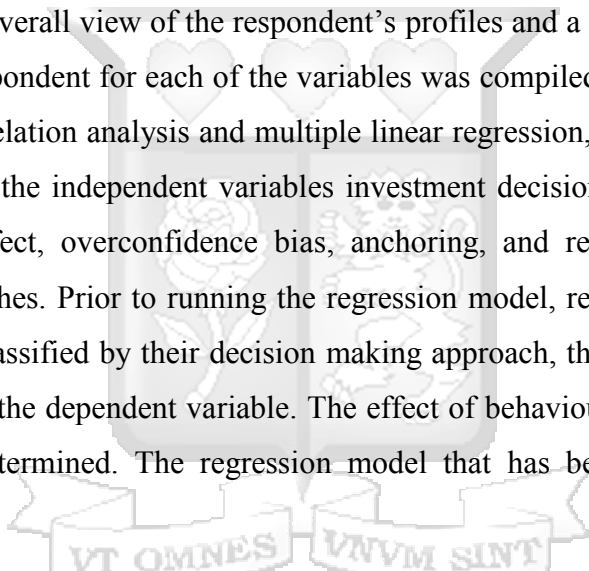
Construct validity is an examination of whether a dimension measures what it is intended to (Kothari, 2009). Having established the reliability of the scales used to examine the various constructs, subsequent inferential analyses on the data were deemed to possess construct validity in that the respective scales measured that which they were intended to measure (Taber, 2018). The construct validity was confirmed through a pilot test of the questionnaire to determine whether the collection tool needed to adjusted accordingly if need be. In addition, all statistical tests were done at a 95% confidence level and subsequent interpretations of findings done on the basis of their statistical significance at the mentioned level of confidence; this therefore ensured statistical conclusion validity (Taber, 2018). The veracity of responses was ensured as the researcher employed the use of a research assistant in administer the questionnaires to qualified respondents. A pre-assessment question was used before proceeding to fill the questionnaire where applicable.

### 3.9 DATA ANALYSIS

The study applied descriptive statistics and inferential statistics data analysis method to analyze data gathered. Data collected was analysed through use of Statistical Software for Social Scientists (SPSS) Version 21. SPSS.

The data was collected through the use of physical questionnaires. These questionnaires were edited to standardize entries so as to ready them for coding. All responses pertaining to the various variables were then coded to numerical figures with 1 representing strongly disagree and 5 strongly agree. The data was then transferred to SPSS for further analysis.

Descriptive statistics in the form of frequency distribution tables, charts and graphs was generated to provide an overall view of the respondent's profiles and a summary of the data. The average response per respondent for each of the variables was compiled. The inferential analysis method, spearman's correlation analysis and multiple linear regression, were then run to analyse the relationship between the independent variables investment decision as depicted by the four constructs – herding effect, overconfidence bias, anchoring, and representativeness and the decision-making approaches. Prior to running the regression model, respondents, bases on their various responses was classified by their decision making approach, this classification is for the basis of measurement of the dependent variable. The effect of behavioural biases on each of the approaches was then determined. The regression model that has been used in the study is follows:


$$ID = Const + aHB + bOC + cA + dRP + e$$

Where

ID = Investment decision (intuition/ loss aversion/simulation/overall)

Cost = constant

a=coefficient for herding bias

HB=herding bias

b=coefficient for overconfidence

OC= Overconfidence

c=coefficient for anchoring

A=Anchoring

d=representativeness coefficient

RP=representativeness

e=error term

### **3.10 ETHICAL CONSIDERATIONS**

Ethical considerations are put in place to protect the rights and privileges of respondents involved in studies (Kothari, 2004). No coercion technique was exercised in administering questionnaires to the target population. Furthermore, all respondents were informed of their voluntary participation in the study. Additionally, all measures pertaining to ethical conduct put in place by Strathmore University Business School were observed; this included seeking approval for the study from the Ethics Review Committee board. A research approval letter from the National Commission for Science, Technology and Innovation was also obtained. All responses have been kept confidential through-out the period of study.



## CHAPTER FOUR: DATA ANALYSIS, FINDINGS AND DISCUSSIONS

### 4.1 INTRODUCTION

This chapter presents the analysis of data based on the specific objectives for the study, which was to determine the effect of behavioural biases as measured through the four constructs of herding, overconfidence, anchoring, and representativeness on investment decision for structured products by retail investors at Nairobi Securities Exchange.

### 4.2 RESPONSE RATE

The research achieved a high response rate from the sample of retail investors by accessing the respondents as shown in Table 4.1.

**Table 4.1 Response rate**

<b>Response</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Returned	109	97.0
Non Returned	03	3.0
Target	112	100.0

**Source: Primary data, (2019)**

The study achieved a 97% response rate, and therefore the sample was deemed sufficient for analysis. The veracity of responses was ensured as the researcher employed the use of a research assistant in administer the questionnaires to qualified respondents through the through the 16 investment banks registered with the Capital Markets Authority. This approach was augmented through networking approaches. All the investment banks were represented, even though not equally. This disparity in representation was attributed to the hesitance by some investment banks to provide access to their clientele, which contributed to being one of the limitations from the study.



### 4.3 RESPONDENTS DEMOGRAPHIC PROFILE

This section presents the bio-demographic characteristics including age group, gender and marital status, education level, employment status, duration of the investor at the NSE and expectation of the investors. The various aspects are subsequently discussed. Responses to these questions are captured below.

#### 4.3.1 Age Group

The study sought to obtain the age of the respondents, as this would provide a profile of the respondent's age groups. The findings are presented in Table 4.2

**Table 4.2 Age of respondents**

Age Bracket (Years)	Frequency per category	Rel. frequency per category (%)
18 - 27	26	24.3
28 - 37	52	48.6
38 - 47	26	24.3
48 - 57	2	1.9
Above 58	1	0.9
<b>Total</b>	<b>107</b>	<b>100.0</b>

**Source: Primary data, (2019)**

Most respondents (48.6%) were between the age group of 28 and 37, with the least responses (0.9%), being above age 58. This shows that perhaps the young people are much more involved at the Nairobi Securities Exchange and in the investment of structured products in the market than the older population. Therefore, the findings in this study are more reflective of a younger investor population. It was also observed that only three of the respondents were above 48 years of age. This agrees with the findings of Kabra, Mishra and Dash, (2010) on factors influencing investment decision of generations in India that age is an important factor affecting the amount of risk that investors are willing to take when making investment decisions. Older investors are less likely to take risks than their younger counterparts.

### 4.3.2 Gender of Respondents

Further, the study sought to establish the gender representations in investment in structured products at the NSE. The results are presented in Table 4.3.

**Table 4.3 Gender of respondents**

Categories	Frequency per category	Rel. frequency per category (%)
Female	37	34.3
Male	71	65.7
<b>Total</b>	<b>108</b>	<b>100.0</b>

**Source: Primary data, (2019)**

The respondents were mostly male (65.7%) whereas female investors were less (34.3%) with 37 responses. The study findings indicate a male-dominated industry pointing to perhaps a lesser appreciation of the merits of investing in structured products by female population as supported by Kabra, Mishra and Dash (2011) study, who further observed that men are more ready to take risks and to learn about different investment options than women. This is however contradicted by Kumar and Babu (2018) who highlights that female investors were more willing to take risks than male investors.

### 4.3.3 Level of Education

The respondents were requested to indicate their level of education and the findings observed are presented in Table 4.4 below.

**Table 4.4 Level of education of respondents**

Categories	Frequency per category	Rel. frequency per category (%)
Diploma	13	12
High School Education	4	3.7
Post-graduate Studies	28	25.9
University Graduate	63	58.3
<b>Total</b>	<b>108</b>	<b>100.0</b>

**Source: Primary data, (2019)**

The respondents from this study mostly had a university degree (58.3%), followed by respondents with post-graduate studies (25.9%). The findings indicate that the respondents from this study are generally well educated, which therefore points to the possibility of a need for technical understanding of the structured products offered by the various investment banks to investors for their uptake in the market. The study findings may imply a need to market the structured products to education potential investors and more so the younger demographic, so as to grow their uptake in the market.

#### 4.3.4 Marital Status

The study sought to establish the marital status of the respondents. The results from the study are presented in Table 4.5.

**Table 4.5 Marital status of respondents**

Categories	Frequency per category	Rel. frequency per category (%)
Married	48	44.9
Single	59	55.1
<b>Total</b>	<b>107</b>	<b>100.0</b>

**Source: Primary data, (2019)**

Most respondents were single (55.1%), while the married respondents accounted for 44.9% of the responses. These findings are surprising given most of the respondents (72.9%) are less than 37 years data and may tie to the majority of age group respondents established from this study findings, which was 28-37 years. This observed disparity in marital status was anticipated, given the findings by Yao and Hanna (2005) indicating that marital status had a significant impact on the acceptable amount of investment risk to investors. This effect was however found to be second to that of gender, with married males found more willing to take risks than single female investors. This also appears to hold true in this study when we compare the percentages in the gender and marital status demographic information.

#### 4.3.5 Time as an Investor in the NSE

The study further sought to establish the duration each respondent had been as an investor at the NSE with the result findings presented in Table 4.6.

**Table 4.6 Time as an investor in the NSE**

Categories	Frequency per category	Rel. frequency per category (%)
1 - 3 years	30	28.3
4 - 7 years	46	43.4
8 - 10 years	9	8.5
Over 10 years	21	19.8
<b>Total</b>	<b>106</b>	<b>100.0</b>

**Source: Primary data, (2019)**

Most of the respondents (43.4%) were involved as investors for less than seven years at the NSE, whereas the least involved investors in the NSE (8.5%) were between 8 to 10 years. These findings were in tandem with the age group findings whose results were the investors being mostly aged less than 37 (72.9%), and therefore unlikely to have been involved in the industry for long. It was also clear that the number of investors with 4-6 years investment experience was significantly higher than that of investors with less than 3

years' experience, perhaps indicating a decline in investment activity with increasing experience in trading at the NSE.

#### 4.3.6 Employment Status

The study also required the respondents to state their employment status. The responses are presented in Table 4.7 below.

**Table 4.7 Employment status of respondents**

Categories	Frequency per category	Rel. frequency per category (%)
Employed	93	85.3
Retired	2	1.8
Self Employed	9	8.3
Student	5	4.6
<b>Total</b>	<b>109</b>	<b>100.0</b>

**Source: Primary data, (2019)**

Most responded (85.3%) to the question establishing employment status as shown in table 4.8 are in employment, while the least respondents (1.8%) are retired with 2 responses. This large representation of employed individuals vis-à-vis the age categories per the findings in Table 4.3 in addition to most respondents being unmarried suggests that the respondents have available disposable income to invest in structured products.

#### 4.3.7 Expectation in Investing

The respondents were asked to state their expectations in investing at the NSE. The findings are presented in Table 4.8 below.

**Table 4.8 Expectation in investing in the NSE**

<b>Categories</b>	<b>Frequency per category</b>	<b>Rel. frequency per category (%)</b>
Capital Appreciation	89	82.4
Dividend returns	18	16.7
Dividend returns, Capital Appreciation	1	0.9
<b>Total</b>	<b>108</b>	<b>100.0</b>

**Source: Primary data, (2019)**

The study established that the main driver behind the decision to invest in the NSE was capital appreciation (82.4%) with 89 as is compared to respondents who indicated dividend returns (16.7%) as their reason for investing in the NSE. This may point towards long term pattern of investment for structured products as the preferred type of investor to seek for growth of the investment products in the market, as capital gains is more prevalent with long term investors.

#### **4.3.8 Investment in Structured Products**

To establish investment in the various structured products, the researcher required respondents to choose from a list that contained the following options of structured products, corporate bonds, Stanlib Fahari Income-REIT (FAHR), other commercial papers, and private placement offers. Respondents were prompted to choose all products that applied. Responses are captured in Table 4.9 below.

**Table 4.9 Investment in structured products**

Categories	Frequency per category	Rel. frequency per category (%)
Corporate Bonds	22	20.2
Corporate Bonds, Other Commercial Papers	6	5.5
Corporate Bonds, Other Commercial Papers, Private placement offers	4	3.7
Corporate Bonds, Private placement offers	8	7.3
Corporate Bonds, Stanlib Fahari Income-REIT (FAHR)	1	0.9
Corporate Bonds, Stanlib Fahari Income-REIT (FAHR), Other Commercial Papers, Private placement offers	14	12.8
Corporate Bonds, Stanlib Fahari Income-REIT (FAHR), Private placement offers	2	1.8
Other Commercial Papers	30	27.5
Other Commercial Papers, Private placement offers	2	1.8
Private placement offers	15	13.8
Stanlib Fahari Income-REIT (FAHR)	2	1.8
Stanlib Fahari Income-REIT (FAHR), Other Commercial Papers	1	0.9
Stanlib Fahari Income-REIT (FAHR), Private placement offers	2	1.8

**Source: Primary data, (2019)**

The findings indicate that the modal product was “other commercial papers” (27.5%) with 30 of the 109 respondents indicating that they invested in the product. This is surprising as commercial papers pay more of fixed rates of returns. However the returns paid to commercial papers are tied to the growth of the firm which ties to the question of the expectation of investing at the NSE.

#### 4.4 BEHAVIOURAL BIASES

This section presents descriptive findings with these independent variables with the subsequent section providing inferential analysis results. Respondents were required to indicate their level of agreement with the statements, 1 being strongly disagree, 2 disagree, 3 neutral, 4 agree and 5 strongly agree. A summary of the responses for each of the constructs under study is presented below. The basis of comparison for each question was the median score and the mean score. Descriptive statistics on each of the biases and the decision-making approaches was conducted.

##### 4.4.1 Herding Biases

The researcher sought to establish how one is influenced by the general decision trends making in the market. The findings for herding bias from this study are presented in Table 4.10.

**Table 4.10 Herding biases responses**

<b>Statements</b>	<b>Median</b>	<b>Mean</b>	<b>Standard deviation (n-1)</b>
When making investing decisions, I use the same information as most people e.g. company profits	3	3.275	1.193
If many people rely on a certain kind of information (e.g. return on assets) then it is likely that the information is reliable	3	2.817	1.164
In times of uncertainty in the market, I will mostly do what other people are doing e.g. sell my structured product	2	2.55	1.28
I am likely to copy the investing decisions made by people that I know	3	2.704	1.113
When purchasing structured products such as a corporate bond, I use the same strategies as most people e.g. ask my advisor for assistance or look at the possible return rate	4	3.422	1.03

**Source: Primary data, (2019)**

Most respondents agreed with the statement that they used similar strategies in investment, as evidenced by a median of 4 and a mean of 3.422, which indicated herding bias. The low standard deviation of 1.03, being the least of all five biases, showed that there



was least dispersion from the mean. The least quoted bias was that of mimicking the behaviour of other traders when unsure, with respondents less likely (mean 2.55 and median 2) to trade in a manner similar to others in the market. The standard deviation was also relatively high, indicating that responses for this particular bias were more dispersed from the mean. The findings indicate that investors even though may not generally mimic the behaviour of others when it comes to investment in structured products, they however may use the same strategies such as seeking information from professional advisors before making an investment decision in structured products.

#### 4.4.2 Overconfidence Biases

The researcher sought to measure where one places their ability to make decision regarding financial trends. The findings for overconfidence bias from this study are presented in Table 4.11.

**Table 4.11 Overconfidence biased responses**

Statistic	Median	Mean	Standard deviation (n-1)
I am generally very good at reading trends in the market	4	3.651	0.886
I use my own predictive skills to outperform the market trends	3	3.505	0.968
I am generally better than other investors when it comes to reading trends in the market	3	3.128	0.904
I generally don't need the services of a financial planner when investing in financial products	3	2.917	1.086
When I make predictions about trends in the market, they are usually very accurate	3	3.239	0.849
If my prediction on the performance of a structured product was accurate before, then it will be accurate next time	3	3.11	1.066

**Source: Primary data, (2019)**

Generally, respondents had a high perception of their ability to read trends within the market relative to other aspects of overconfidence bias; responses on the question presented the highest median score of 4 and a mean rating of 3.651. The low standard deviation of 0.866, showed that there was least dispersion from the mean. However, the

median of 3 (neutral) on five out of six overconfidence biases indicators showed that, generally, the effect of overconfidence bias on the respondents was negligible. The findings are surprising in that most investors believe in their own ability to read trends in the market, even though they may not exhibit strong overconfidence bias. This may perhaps point towards the importance of ensuring investors are educated on structured products investment opportunity so as to be able to analyse the opportunities for themselves even though they may also seek advice from a professional advisor.

#### 4.4.3 Anchoring

The researcher sought to address anchoring bias, on how fixated one is on specific measures and approaches to trend analysis in making investment decision for structured products. The findings for overconfidence bias from this study are presented in Table 4.12.

**Table 4.12 Anchoring responses**

<b>Statement</b>	<b>Median</b>	<b>Mean</b>	<b>Standard deviation (n-1)</b>
The performance of a structured product from last week can be used to predict its performance in the future	3	3.174	1.224
The more the number of previous prices considered in predicating a price, the more likely it is that the predicted price is reliable	3	3.349	1.083
If performance of bank bond is doing well, it is likely that performance of other bank bonds are also doing well	3	3.046	1.142
If a new structured product performs well in the market, then the introduction of a similar product at a later date would likely be successful	3	3.046	1.109
The profit made by a company is a reliable way to assess its structured product price	3	3.306	1.045
Most investors use the same indicators (e.g. liquidity of a firm) to assess performance in banks because these indicators have been proven to be very reliable	4	3.541	1.041

**Source: Primary data, (2019)**

The median of 3 (neutral) on five out of six anchoring bias indicators showed that, generally, the effect of anchoring bias on the respondents was negligible. The tendency to use the same metric in assessing performance was however present in the population as

the question measuring the anchoring factor presented a median rating of 4.0 and a mean rating of 3.541. From the study findings, which established in the demographic data that the respondents were mostly well educated, it may therefore explain why they may not be fixated on specific measures and approaches to trend analysis in making investment decision for structured products, but instead can be expected to do their own analysis. This therefore may indicate the need to ensure investor education so as to mitigate again the effects of the bias in investment decision.

#### 4.4.4 Representativeness

The researcher sought to establish respondent's predisposition to arrive at investment decisions conclusions for structured products based on stereotypes. The findings for overconfidence bias from this study are presented in Table 4.13.

**Table 4.13 Representativeness responses**

Statement	Median	Mean	Standard deviation (n-1)
If a structured product was performing well last month, it is likely to stay the same over the next three months	3	2.927	1.043
If a new financial advisor gives me an accurate prediction about a product today, then she/he is likely to do the same in the future	3	3.183	0.944
If a structured product was highly priced the whole of last year, it is likely to be highly priced next month	3	3.193	0.976
If the price of a structured product dropped over the last months, then it will likely drop in the coming three months as well	3	2.963	1.079
If I mainly focus on a company's profits, I can predict how the company's structured product will perform	3	3.193	1.023
Focusing on a company's profits will tell me all I need to know about its financial performance	3	3.269	1.124

**Source: Primary data, (2019)**

The median scores in question measuring representativeness was 3, which is neutral. This indicated that the effect of representativeness on the respondents' decision-making was negligible. The factor was therefore, based on these responses, not anticipated to have a significant effect on decision making. From the study findings, the bias was therefore noted

not to manifest with the investors for structured products, conclusion been that the investors may not be excessively enthusiastic about structured products investments with a good past record of performance without looking into other details and likewise they may not be overly cynical about structured products with a poor past records of investments. This may imply that to reduce the effect of representative bias, investors should be educated to understand how to analyse past performance information in order to make unbiased investment decision in relation to structured products and avoid making judgement on stereotypes.

#### 4.5 INVESTMENT DECISION

This section sought to establish investment decision approach. The first 2 statements sought to capture information pertaining to intuition value, while the next 2 statements sought to answer information on loss aversion investment decision making approach with the last 2 statements addressing simulation value investment decision making. The study findings are presented in Table 4.14 below.

**Table 4.14 Investment decision responses**

Statement	Median	Mean	Standard deviation (n-1)
If I were very experienced, I would make investment decisions based on what I thought are valuable products	4	3.779	0.859
Successful investors, with time, gain the ability to intuitively know the value of structured products	4	3.776	0.872
I am unlikely to invest in high return products that are risky	3	3.038	1.086
I am more likely to consider the possibility of loss, than profit, when making an investment decision	3	2.991	1.1
I consider a value prediction made through an analysis conducted by my financial advisor to likely to be accurate	3	3.458	1.003
When determining the value of a product, it is necessary to use set approaches that are defined and logical	4	3.888	0.955

**Source: Primary data, (2019)**

The questions measuring tendency towards intuition-based investment decision making both presented median scores of 4.0, with a standard deviation of 0.859 and 0.872, which

showed least dispersion from the mean. The questions measuring tendency to make investment decision based on loss aversion presented a median score of 3, with a higher standard deviation, which showed a higher dispersion from the mean. The last two questions that were examining the role of logic in simulation value, presented mixed results, while value prediction showed a median score of 3.0, with a higher dispersion from the mean, the question on value of the product as a means to investment decision presented a median score of 4 with a slightly lower dispersion from the mean. From the study findings therefore, the question examining the role of logic and defined approaches presented a median rating of 4, which may generally indicate therefore that intuition value was a significant factor in making investment decisions.

We may deduce based on the findings the likelihood of influence on investment decision was highest for intuition value and lowest for loss aversion with regard to investing in structured products. There however was overlap in preference with some respondents giving equal ratings for all or two of the approaches. This may indicate that investment decisions for structured products is more influenced by the inherent reliance on one's experience in assigning value to make the investment decision as opposed to the other two constructs of either motivation to avoid loss than to gain return or assigning value based on the output of computer simulations.

#### **4.6 CORRELATION ANALYSIS**

This section presents findings on the nature of the relationship between behaviour biases and investment decision. The study's independent variable was therefore behavioural biases as measured through the four constructs being, herding bias, representativeness, overconfidence, and anchoring and shown in Table 4.15 below.

**Table 4.15 Correlation Matrix (Spearman)**

<b>Simulation value</b>		<b>Herding</b>	<b>Overconfidence</b>	<b>Anchoring</b>	<b>Representativeness</b>	<b>Investment Decision</b>
<b>Herding</b>	Correlation Coefficient	1	.182	.231	.091	.071
	Sig. (2-tailed)	-	.058	.016	.348	.462
	N	109	109	109	109	109
<b>Overconfidence</b>	Correlation Coefficient	.182	1	.399	.442	.289
	Sig. (2-tailed)	.058	-	.000	.000	.002
	N	109	109	109	109	109
<b>Anchoring</b>	Correlation Coefficient	.231	.399	1	.475	.360
	Sig. (2-tailed)	.016	.000	-	.000	.001
	N	109	109	109	109	109
<b>Representativeness</b>	Correlation Coefficient	.091	.442	.475	1	.217
	Sig. (2-tailed)	.348	.000	.000	-	.023
	N	109	109	109	109	109
<b>Investment Decision</b>	Correlation Coefficient	.071	.289	.360	.217	1
	Sig. (2-tailed)	.462	.002	.000	.023	-
	N	109	109	109	109	109

**Source: Primary data, (2019)**

The study findings analysis showed that herding bias had a weak positive and insignificant association with investment decision ( $P=.071$ ,  $\text{Sig}=.462>.005$ ). The absence of herding behaviour in the investment of structured products among the retail investors from these findings may perhaps indicate that the investors have financial literacy about the products, as they are well educated, and there we can deduce that if a market is efficient and investors are well informed, this would prevent herding. This outcome of findings is

consistent with Bakar and Yi (2015) findings on Malaysian Stock Market whose findings were that herding does not have any significant impact on investor decision-making, and that financial literacy reduces herding behaviour.

Overconfidence bias from the study analysis showed that it had a moderate positive and significant association with investment decision ( $P=.217$ ,  $\text{Sig}=.002<.005$ ). This is consistent with the findings of Hayat and Anwar (2016), that financial literacy increases overconfidence behaviour. From the study analysis, anchoring bias showed that it had a moderate positive and significant association with investment decision ( $P=.360$ ,  $\text{Sig}=.000<.005$ ). This moderate association was found to be consistent with findings from Gupta and Ahmed (2016) in his study from the Indian Stock Market who noted that a strong association was found to be prevalent with experienced investors, and given that the investors from this study have a medium to short experience of less than 7 years at the NSE this perhaps may explain the moderate association.

The representativeness bias from this study showed a moderate positive and significant association with investment decision ( $P=.360$ ,  $\text{Sig}=.023<.005$ ). These study findings are consistent with those from Chen, G., Kim, K. A., Nofsinger, J. R., & Rui, O. M. (2007) who found Chinese investors to be prone to the representative bias, in that the past returns of a stock are indicative of future returns and hence make an investment decision based on this.

To further establish the observations between the variables behavioural bias and investment decision, a nominal regression model was run; no multi-collinearity was observed between the independent variable hence the dataset was deemed suitable for multiple linear regression analysis

#### **4.7 OVERALL EFFECT OF BEHAVIOURAL BIASES ON INVESTMENT DECISION**

An overall regression model was run to examine the effect of the biases in a single model. Results are presented below in Table 4.16.

**Table 4.16 Overall Model Summary**

Model Summary				
Model	R	R <sup>2</sup>	Adjusted R <sup>2</sup>	Std. Error of the Estimate
1	.368 <sup>a</sup>	.135	.102	.6361
a. Predictors: (Constant), Representativeness, Herding, Overconfidence, Anchoring				

**Source: Primary data, (2019)**

The model presented an R square value of .135 therefore indicating that the behavioural biases account for 13.5% of the variance in the dependent variable (investment decision). The regression analysis therefore indicate that the behavioural biases, Representativeness, Herding, Overconfidence, Anchoring explains 13.5% (R.135) variations in investment decision making, while 86.5% variation is explained by other factors not considered in this model. As Smith (2011) noted, observed inferences from the regression are not invalid and should be interpreted in establishing the relationships between variables. The researcher therefore proceeded to discuss in the subsequent section the relationships between the examined constructs.

A further examination of the statistical significance of the research model was done and presented in Table 4.17.

**Table 4.17 Overall ANOVA**

ANOVA <sup>a</sup>						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	6.593	4	1.648	4.073	.004 <sup>b</sup>
	Residual	42.086	104	.405		
	Total	48.679	108			
a. Dependent Variable: Median Decision Making						
b. Predictors: (Constant), Representativeness, Herding, Overconfidence, Anchoring						

**Source: Primary data, (2019)**

The ANOVA results showed an F value of 4.073 significance value associated with the F statistic, which was lower than 0.05 thereby indicating that the generated model was valid



at 95% confidence interval. The null hypothesis under consideration was that indicating that relative to an intercept only model, there wasn't a significant difference observed in the generated model, hence the null hypothesis in the study is rejected. This finding therefore indicates that inferences made based on the relationship between the variables should be considered valid, in that there is a significant relationship between behavioural biases and investment decision making of structured products at the NSE.

#### 4.8 REGRESSION MODEL

The regression coefficients for behavioural and investment decision are displayed in Table 4.18 below.

**Table 4.18 Regression coefficients for behavioural biases and investment decisions**

Coefficients <sup>a</sup>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.397	.353		6.785	.000
	Herding	.003	.066	.005	.049	.961
	Overconfidence	.140	.097	.147	1.443	.152
	Anchoring	.177	.081	.245	2.197	.030
	Representativeness	.049	.086	.062	.568	.571

a. Dependent Variable: Median Decision Making

**Source: Primary data 2019**

From the analysis, they indicate a constant alpha ( $\alpha$ )=2.397 is significantly different from 0 since the p-value  $.000 < .0005$ . The overall regression model as deduced from the beta is displayed below.

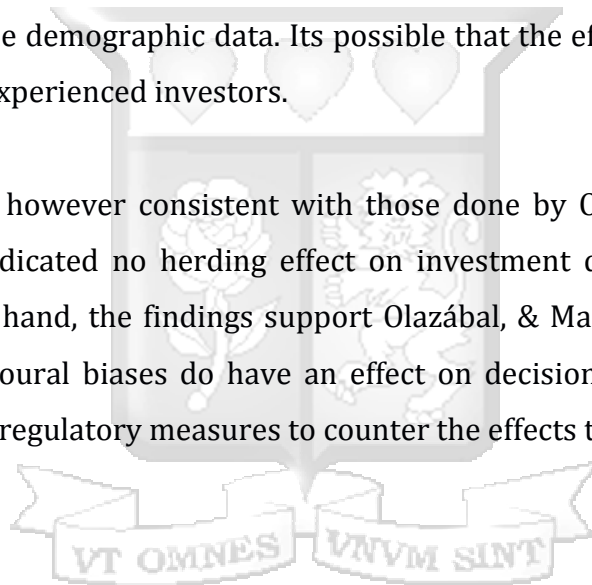
$$\text{Decision making} = 2.397 + .003 \text{ Herding} + .140 \text{ Overconfidence} + .177 \text{ Anchoring} + .049 \text{ Representativeness}$$

A unit change in herding bias will result in a .003 unit change in the investment decision for structured products, which is weak, while a unit change in overconfidence will result in a

.140 unit change in the investment decision for structured products at the NSE. Further, a unit change in anchoring bias will result in a .177 unit change in the investment decision for structured products, while at the same time a unit change in representative bias will result in a .049 unit change in the investment decision for structured products.

The model therefore suggests that by ordering of magnitude, anchoring presents as the most influential behavioural bias. Herding, representativeness, overconfidence by ordering, have less of an effect on decision making in the market. It is however noteworthy that anchoring presented as the only significant predictor at the confidence level and this may indicate that investors have not had as much experience with investment in structured products, as noted in the demographic data. Its possible that the effect on anchoring effect maybe less with more experienced investors.

The study findings are however consistent with those done by Ofir and Wiener (2012), whose study results indicated no herding effect on investment decisions for structured products. On the other hand, the findings support Olazábal, & Marmostein, (2010) study, who posits that behavioural biases do have an effect on decision making for structured products and proposed regulatory measures to counter the effects to retail investors.



## **CHAPTER FIVE: DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 INTRODUCTION**

This chapter discusses and summarizes the findings in relation to the research problem and research objectives by showing how the data collected answered the objectives and how resulting findings relate to the body of knowledge. This chapter aims to highlight the conclusions, recommendations and limitations of the study.

### **5.2 DISCUSSIONS**

The purpose of this section is to provide a discussion of the findings on the various objectives put forward in the study. The section is thus structured into four sub-sections each addressing the study objectives that had been forth.

#### **5.2.1 The Effect of Herding Biases on Investment Decision for Structured Products**

Shiller (2002) propose the herding theory as a lens through which to assess trading behaviour. As put forward by the author, mass selling and buying in financial markets can be explained by the tendency of individuals to seek participation in a group. Odean et al (2007) in further elaboration on the topic posits that the tendency to engage in group trading is informed by a general lack of information among traders. Most respondents from this study indicated low ratings on herding bias except for examination of susceptibility to the construct in way of reliance on common trading approach approaches. Based on these study findings, this observation indicates a low prevalence of the bias in the local market with reference to investment decision for structured products by retail investors. This finding, therefore, in relation to the herding theory, indicates that most traders in the market did not suffer an insufficiency in information and were thus less inclined to solely rely on the decision-making approaches of others within the industry.

Tan et al, (2008) define herding bias as the behavioural tendency of an investor to follow the actions of others mainly due to reliance of collectively, over privately held information. Results presented in this study indicate that with respect to decision making for structured products, herding presented as a weak influencer, and may indicates that the retail investors in the local market were more likely to make decisions on an individual level as

opposed to collectively. The findings from this study agree with those of Ofir and Wiener (2012), whose study results indicated no proof of herding in structured products. However study by Cherono, I., Olweny, T., & Nasieku, T. (2019) revealed that herding behaviour has a significant effect on Kenyan stock market reaction, a contrasting finding from this study.

Based on the nature of the relationship between behaviour biases and investment decision, it was notable that herding presented as the only variable with insignificant association with investment decision, and perhaps may present a different outcome if it was considered against the individual investment constructs of intuition value, loss aversion, and simulation value. More literature is therefore necessary to ascertain the factors that contribute to herding effect for different investment opportunities, as well as to determine whether the effect of herding would be different for professional investors versus retail non-professional investors. More study can also be done to investigate the effect with different demographic factors and socio-economic conditions.

### **5.2.2 The Effect of Overconfidence on Investment Decision for Structured Products**

Both herding and prospect theory are of significance in assessing the effect of overconfidence bias. A prevalence of overconfidence as a preferred approach in the trading of a product would result in a herding effect in that individuals not susceptible to overconfidence, would be susceptible to the influence of herding thereby resulting in mass trading on the basis of overconfidence. According to the prospect theory, beneficial outcomes from a reliance on overconfidence would result in further mass perpetuation of the bias in the financial market in question. The variable overconfidence bias from this study presented a marginal effect on investment decision for structured products. Pompian (2012) defines overconfidence, as involving the unjustified faith on intuitive reasoning as a result of one's cognitive and judgment skills. Overconfidence bias presents as a risk when people consider themselves better and superior relative to others (Larrick, Burson & Soll 2007). The lack of a significant relationship between the factor and decision-making for structured products by retail investors in particular however indicated that, overconfidence did not significantly affect investment patterns for this product group. This

finding is particularly surprising given that most respondents were young in age, a demographic often associated with overconfidence in investment.

A study by Usman (2018) revealed that overconfidence had a significant influence in the decision-making process of Nigerian investors. A similar effect of overconfidence is reported in other literature as well (Costa et al, 2017, Merkle, 2017). Therefore, more research is required to establish whether it is an anomaly specific to the product group in countries with a similar investment environment.

### **5.2.3 The Effect of Anchoring Biases on Investment Decision for Structured Products**

Tversky (1979) in providing an exposition of the prospect theory argues that the framing of an outcome influences expected utility. The supposition therefore is that prior gains or losses attributed to a particular structured product would likely inform future decision in trading in the same product. The study findings showed that most respondents were neutral to the effect of anchoring. However, as assessed through regression analysis, it was evident that the bias had a positive effect on decision making. This therefore indicates that most respondents relied on different metrics (other than the common ones) when making subsequent investment decisions and that they often do not seek to rest of previously used metrics. In light of the prospect theory, this finding indicates that traders generally rely on a robust array of metrics therefore shielding them from erroneous decision-making approaches. This finding, as assessed through regression analysis, was the only one indicating statistical significance at the 95% confidence level and therefore, compared to the herding effect, overconfidence and representativeness, the construct should be preferentially considered is examining the shaping effect of behavioural biases in investment in the local market.

Despite having a marginal relationship with investment decision, anchoring bias was notably the most influential behavioural bias and the only significant predictor at the confidence level. This therefore indicates that the Kenyan market for structured products is more influence by anchoring bias as opposed to any other bias under this study. Perhaps

this outcome could be different if the bias was studied against the individual investment decision constructs.

Khan et al (2017) define anchoring as a heuristic resulting from the tendency of people to evaluate a quantity relative to a certain datum. A reliance on a single metric – as would be characteristic of anchoring bias – as viewed through the herding theory may result in mass reliance on an erroneous trading approach as anchoring introduces the error associated with an inclination to make evaluations that are close to the “anchor” regardless of the proven reliability of the anchor. It also hampers one’s ability to give due gravity to new information in decision-making. Jetter and Walker (2017) highlight the effect of the bias indicating that it has a significant effect on decision-making.

#### **5.2.4 The Effect of Representativeness on Investment Decision for Structured Products**

Findings from this study indicate that the representative bias was of marginal impact on decision making for structured products in the Kenyan market. The implication therefore is that unlike the developed markets where most studies on effects of behavioural biased on investment decision for structured products have been done, the Kenyan market is peculiar in its decision-making approach, as individuals do not tend to establish value as a function of representativeness.

This finding is surprisingly different from that done by Habbe (2017), who established that despite the participants having high-level backgrounds in accounting principles, they were susceptible to this bias. The study findings indicate a possible need for further research area in the market on the effects of representative bias on investment decision for structured products by retail investors in Kenya.

### **5.3 CONCLUSION**

This study sought to establish the role of behaviour biases in decision-making for structured products by retail investors. In particular, the independent variables under consideration as influencers of decision-making were herding bias, overconfidence bias,

anchoring bias and representativeness bias, with investment decision making as the dependent variable. The overall approach was that involving establishing correlations and relationships between the variables with a high score on value across all parameters indicating a tendency towards objective decision making. With respect to the influencing factors, high ratings indicated a high susceptibility to the specific bias.

Findings from this study were unique and differ from those observed in nascent literature in that whereas most researchers indicate a positive strong relationship between biases and investment decision, findings yielded from this study indicate that anchoring presented as the only significant factor. The peculiarity in findings is in part attributed to the overlap in investment decision as operationalized under the contrasts intuition value, loss aversion and simulation value approaches. The findings may therefore be different if analysed according to each of the investment decision constructs. The current finding do not, however, negate the validity of the findings. This is particularly true given that Cherono, Olweny, & Nasieku, (2019) as was the case in this study, observes a low influence of herding in the local market. These findings therefore point to a peculiarity in the decision-making patters for structured products by investors in Kenya's local market.

The findings from this study point to a preference of the investment in structured products by younger investors than older investors and therefore need to identify the measures that can be used to encourage further growth of the young demography in the investment of structured products. The finding therefore addresses the main objective of the study, which sought to effect of behavioural biases on decision-making for structured products by retail investors. The researcher further sought to establish the exact impact of the behavioural biases on the various aspects of decision-making revealing that anchoring as the only significant factor, at the 95% confidence level.

The prospect theory was therefore of relevance to the study as it explained how individuals frame their investment decisions on structured products depending of its prospective value given while at the same time, they need to avoid losses, which is loss aversion, that is greater value is lost when x amount is lost in an investment than the utility obtained with

the exact value being gained, especially given that structured products have an element of been capital protected. This highlights the value-setting approach applied in determining the price assigned to a structured product. In addition, the study demonstrates the important of herding theory (Shiller, 2002) as a lens through which to assess trading behaviour. The investors in structured products from this study in the Kenyan market often may not necessarily mimic the actions of others, thereby not affecting an entire market.

#### **5.4 LIMITATIONS OF THE STUDY**

The main limitation observed in conducting the study was on access to the various investors through the investment banks, which resulted in a lack of equal representation of the various investment banks; this was due to an unwillingness to provide information on clients. The researcher was therefore left to rely on direct visits to the organizations to find respondents seeking to conduct business within the premises.

#### **5.5 RECOMMENDATIONS AND AREAS FOR FURTHER RESEARCH**

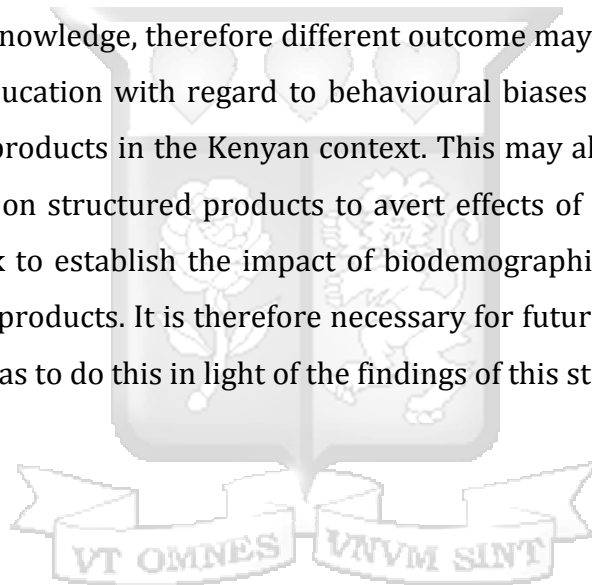
The main recommendation forthcoming from this study is the need among investment banks, to determine the actual practical impact of anchoring as a possible factor affecting investors. From an investor point of view, it is recommended that trading decisions be made without regard for previous metrics and specific metrics typically used in the market so as to avoid erroneous decision-making approaches. It is however noteworthy that though significant, the role of behavioural biases is limited in the market and therefore crises typically expected to result from such biases at a macro level are unlikely to be observed in the structured products market in Kenya. Further studies however, can be done on implication of these findings with regard to the particular demographic age group of above 37 years, in its decision-making approach for structured products to understand why they present different effects on behavioural biases.

From an academician's vantage point, the main area for further research is that addressing the reasons behind the divergence between findings from this study and those conducted



in different sectors at the NSE. While it is apparent that the role of behaviour biases is well established, it does not present as so with peculiarities within the structured products investments in the Kenyan market. Further studies should also be conducted to examine the various constructs using measures other than self-reported scales; such approaches would allow for more objective observations in establishing the relationships between the presented variables. Perhaps the study findings would present some unique outcomes if was done on the effect of each of the behavioural biases effect on each of the investment decision constructs.

Additionally, the demographic involved in the study mainly involved younger participants. Furthermore, most respondents had a university education, therefore pointing to possibility of financial knowledge, therefore different outcome may be observed from those without this level of education with regard to behavioural biases effect on their decision making for structured products in the Kenyan context. This may also open up a policy gap on educating investors on structured products to avert effects of behavioural biases. The researcher did not seek to establish the impact of biodemographic factors on investment decision for structured products. It is therefore necessary for future researcher to examine the impact of the factor as to do this in light of the findings of this study.



## REFERENCES

- Aduda, J., Oduor, E., & Onwonga, M. (2017). The Behaviour and Financial Performance of Individual Investors in the Trading Shares of Companies Listed at the Nairobi Stock Exchange, Kenya. *Journal of Finance and Investment Analysis*, 1(3), 33-60.
- Aduda, J., Masila, J. M., & Onsongo, E. N. (2012). The determinants of stock market development: The case for the Nairobi Stock Exchange. *International Journal of Humanities and Social Science*, 2(9), 214-230.
- Agrawal, K. (2012). A Conceptual Framework of Behavioural Biases in Finance.
- Anderson, K., & Zastawniak, T. (2017). Glamour, value and anchoring on the changing P/E. *The European Journal of Finance*, 23(5), 375-406.
- Baddeley, M. (2017). Investment: Theories and Analyses. *Macmillan International Higher Education*.
- Barberis, N., & Thaler, R. (2003). A survey of behavioural finance. *Handbook of the Economics of Finance*, 1, 1053-1128.
- Berg, J. E., & Rietz, T. (2017). *Longshots, overconfidence and efficiency on the Iowa Electronic Market*.
- Boyd, N. E., Büyükşahin, B., Haigh, M. S., & Harris, J. H. (2016). The prevalence, sources, and effects of herding. *Journal of Futures Markets*, 36(7), 671-694.
- Central Markets Authority. (2018). *Quarterly Statistical Bulletin ( QSB ) Issue 37 / 2018 Quarter ended December 2018*. Capital Marktes Authority Bulletin. Nairobi, Kenya.
- Chen, G., Kim, K. A., Nofsinger, J. R., & Rui, O. M. (2007). Trading performance, disposition effect, overconfidence, representativeness bias, and experience of emerging market investors. *Journal of Behavioral Decision Making*, 20(4), 425-451.
- Cherono, I., Olweny, T., & Nasieku, T. (2019). Investor Behavior Biases and Stock Market Reaction in Kenya. *Journal of Applied Finance and Banking*, 9(1), 147-180.
- Chow, S. C., Shao, J., Wang, H., & Lokhnygina, Y. (2017). *Sample size calculations in clinical research*. Chapman and Hall/CRC.

- Costa, D. F., de Melo Carvalho, F., de Melo Moreira, B. C., & do Prado, J. W. (2017). Bibliometric analysis on the association between behavioural finance and decision making with cognitive biases such as overconfidence, anchoring effect and confirmation bias. *Scientometrics*, 111(3), 1775-1799.
- Daniel, K., & Hirshleifer, D. (2015). Overconfident investors, predictable returns, and excessive trading. *Journal of Economic Perspectives*, 29(4), 61-88.
- De Bondt, W. F., Muradoglu, Y. G., Shefrin, H., & Staikouras, S. K. (2015). Behavioural finance: *Quo vadis*.
- Drehmann, M., Oechssler, J., & Roeder, A. (2005). Herding and contrarian behaviour in financial markets: An internet experiment. *American Economic Review*, 95(5), 1403-1426.
- Economou, F., Kostakis, A. & Philippas, N. (2011). Cross-country effects in herding behaviour: Evidence from four south European markets. *Journal of International Financial Markets*, 21(3), 443-460
- Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American Journal of Theoretical and Applied Statistics*, 5(1), 1-4.
- Filip, M. T. (2015). Behavioural biases of the investment decisions of Romanian investors in the Bucharest Stock Exchange. *Procedia Economics and Finance*, 32, 200 – 207.
- Habbe, A. H. (2017). Estimation error of earnings information: A test of representativeness and anchoring-adjustment heuristic. *International Journal of Economics and Financial Issues*, 7(1), 224-233.
- Hirshleifer, D. (2015). Behavioural finance. *Annual Review of Financial Economics*, 7, 133-159.
- Ghauri, P. N., & Grønhaug, K. (2005). *Research methods in business studies: A practical guide*. Pearson Education.
- Hardy, M. A., & Bryman, A. (Eds.). (2009). *Handbook of data analysis*. Sage.
- Harrison, R. T., Mason, C., & Smith, D. (2015). Heuristics, learning and the business angel investment decision-making process. *Entrepreneurship & Regional Development*, 27(9-

10), 527-554.

- Hughes, J. A., & Sharrock, W. W. (2016). *The philosophy of social research*. Routledge.
- Islamoglu, M., Apan, M. & Ayvali, A. (2015). Determinations of factors affecting individual investor behaviours: A study on Bankers. *International journal of Economics and Financial*, Issue 2(5), 531-543
- Jetter, M., & Walker, J. K. (2017). Anchoring in financial decision-making: Evidence from Jeopardy!. *Journal of Economic Behaviour & Organization*, 141, 164-176.
- Kabra, G., Mishra, P. K., & Dash, M. K. (2010). Factors influencing investment decision of generations in India: An econometric study.
- Kahneman, D., & Tversky, A. (1979). Prospect theory: an analysis of decision-making under risk", *Econometrica*, 47(2), 263-291
- Kahneman, D., P. Slovic & A. Tversky (1982). Judgment Under Uncertainty: Heuristics and Biases. *Cambridge University Press*.
- Kahneman, D. & M. Riepe (1998). Aspects of investor psychology. *Journal of Portfolio Management* 24, 52-65
- Kauffman, R. J., Liu, J., & Ma, D. (2015). Technology investment decision-making under uncertainty. *Information Technology and Management*, 16(2), 153-172.
- Kengatharan, L (2014). The Influence of Behavioural Factors in Making Investment Decisions and Performance: Study on Investors of Colombo Stock Exchange, Sri Lanka. *Asian Journal of Finance & Accounting*, 6 (1), 120-145
- Kimeu, C., Anyango, W. & Rotich, G. (2016). Behavioural factors influencing investment decisions among individual investors in Nairobi Securities Exchange, *The strategic journal of business change*, 4(3), 75-92
- Khan, H. H., Naz, I., Qureshi, F., & Ghafoor, A. (2017). Heuristics and stock buying decision: Evidence from Malaysian and Pakistani stock markets. *Borsa Istanbul Review*, 17(2), 97-110.

- Kioko, C. W. (2015). The effect of aggressive working capital policy on profitability of non-financial firms listed at Nairobi securities exchange. *International Journal of Commerce & Business Studies*, 3(4), 15-24
- Kumar, A. A., & Babu, M. (2018). Socio Economic Profile and Investment Risk Perception of Salaried Employees. *International Journal on Global Business Management & Research*, 7(1), 1-8.
- Larrick, R. P., Burson, K. A., & Soll, J. B. (2007). Social comparison and confidence: When thinking you're better than average predicts overconfidence (and when it does not). *Organizational Behavior and Human Decision Processes*, 102(1), 76-94.
- Mbaluka, P., Muthama, C., & Kalunda, E. (2012). Prospect Theory: Test on Framing and Loss Aversion Effects on Investors Decision-Making Process at the Nairobi Securities Exchange, Kenya. *Research Journal of Finance and Accounting*, 3(9), 31-41.
- Merkle, C. (2017). Financial overconfidence over time: Foresight, hindsight, and insight of investors. *Journal of Banking & Finance*, 84, 68-87.
- Mithiku, E. (2011). Demand of Structured Products in a Prospect utility framework Utility increase from capital protected index linked products.
- Moore, D. A., & Healy, P. J. (2008). The trouble with overconfidence. *Psychological review*, 115(2), 502.
- Ngugi, S. M., & Afande, F. O. (2015). Raising Finance in the Kenyan Bond Market ( A Case of Listed Companies on the Nairobi Stock Exchange ). *Developing Country Studies*, 5(7), 96-118.
- Novikov, A. M., & Novikov, D. A. (2013). *Research methodology: From philosophy of science to research design*. CRC Press.
- NSE (2017). Regulatory Framework. Retrieved from Nairobi Stock Exchange
- Olazábal, A. M., & Marmostein, H. (2010). Structured products for the retail market: the regulatory implications of investor innumeracy and consumer information processing. *Ariz. L. Rev.*, 52, 623.

- Odean, T. & Olsen, R. (1998). Behavioural finance and its implications for stock price volatility, *Financial Analysts Journal*, 54(2), 210–218.
- Ofir, M., & Wiener, Z. (2012). Investment in financial structured products from rational and behavioural choice perspectives.
- Olang, M. (2017). The effect of financial leverage on profitability of firms listed at Nairobi securities exchange. *International Journal of Science & Research*, 6(7), 80-95
- Pompian, M. (2012). Behavioural Finance and Investor Types: Managing Behaviour to Make Better Investment Decisions. *New York: John Wiley & Sons*.
- Raines, J. (2011). Behavioural Finance and Post Keynesian-Institutional Theories of Financial Markets. *Journal of Post Keynesian Economics*. 56(3)88-96.
- Rutkauskas, A. V., Miečinskiene, A., & Stasytyte, V. (2008). Investment decisions modelling along sustainable development concept on financial markets. *Technological and Economic Development of Economy*, 14(3), 417-427
- Reilly FK, Brown KC (2003). Investment analysis and portfolio management. 7th ed., Ohio: South Western Thomson.
- Rekik, Y. M., & Boujelbene, Y. (2013). Determinants of individual investors' behaviours: Evidence from Tunisian stock market. *IOSR Journal of Business and Management*, 8(2), 109-119.
- Ritter, J. (2003), Behavioral Finance, *Pacific-Basin Finance Journal* Vol. 11, No. 4, pp. 429-437.
- Shah, S. Z. A., Ahmad, M., & Mahmood, F. (2018). Heuristic biases in investment decision-making and perceived market efficiency: A survey at the Pakistan stock exchange. *Qualitative Research in Financial Markets*, 10(1), 85-110.
- Shefrin, H., & Statman, M. (2000). Behavioural portfolio theory. *Journal of financial and quantitative analysis*, 35(02), 127-151.
- Shiller, R.J. (2002). From efficient market theory to behavioural finance. *Cowles Foundation, Yale University*. Discussion Papers 1385.

- Siddiqi, H. (2018). Anchoring-Adjusted Capital Asset Pricing Model. *Journal of Behavioural Finance*, 19(3), 249-270.
- Streiner, D. L. (2003). Starting at the beginning: an introduction to coefficient alpha and internal consistency. *Journal of personality assessment*, 80(1), 99-103.
- Swedroe, L. E., & Kizer, J. (2008). The only guide to alternative investments you'll ever need: The good, the flawed, the bad, and the ugly. *New York: Bloomberg Press*.
- Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education*, 48(6), 1273-1296.
- Tan, L., Chiang, T. C., Mason, J. R., & Nelling, E. (2008). Herding behaviour in Chinese stock markets: An examination of A and B shares. *Pacific-Basin Finance Journal*, 16(1-2), 61-77.
- Thangamani, V. (2014). Security analysis and portfolio management. *Department of Management Sciences*, Sasurie College of engineering.
- Wong, C. H., Chuah, C. Y., Kui, S. B., Soo, L. H., & Ang, S. Z. (2016). The Effect of Personality Traits and Demographic Characteristics towards Risk Tolerance and Investment Decision Making (Doctoral dissertation, UTAR).
- Usman, I. (2018). Influence of Cognitive Biases on Investment Decision Making in Property Market in Plateau State, Nigeria.
- Yao, R., & Hanna, S. D. (2005). The effect of gender and marital status on financial risk tolerance.
- Yuniningsih, Y., Widodo, S., & Wajdi, M. B. N. (2017). An analysis of Decision Making in the Stock Investment. *Economic: Journal of Economic and Islamic Law*, 8(2), 122-128.
- Zwick, E., & Mahon, J. (2017). Tax policy and heterogeneous investment behaviour. *American Economic Review*, 107(1), 217-48.





(NACOSTI) Letter



**NATIONAL COMMISSION FOR SCIENCE,  
TECHNOLOGY AND INNOVATION**

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Ref No. **NACOSTI/P/19/38100/28880**

Date: **12<sup>th</sup> April, 2019**

Grace Wambui Weru  
Strathmore University  
P.O. Box 59857-00200  
**NAIROBI.**

**RE: RESEARCH AUTHORIZATION**

Following your application for authority to carry out research on "*Effect of behavioural biases on investment decision for structured products by retail investors at Nairobi Securities Exchange*" I am pleased to inform you that you have been authorized to undertake research in **Nairobi County** for the period ending **12<sup>th</sup> April, 2020**.

You are advised to report to **the County Commissioner and the County Director of Education, Nairobi County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit a **copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

**GODFREY P. KALERWA MSc., MBA, MKIM  
FOR: DIRECTOR-GENERAL/CEO**

Copy to:

The County Commissioner  
Nairobi County.

The County Director of Education  
Nairobi County.

## APPENDIX II: Strathmore Business School Introductory Letter



Strathmore Business School

12<sup>th</sup> March 2019

To Whom It May Concern

Dear Sir/ Madam

**RE: FACILITATION OF RESEARCH – GRACE WAMBUI WERU**

This is to introduce Grace Wambui Weru who is a Master of Business Administration student at Strathmore Business School, admission number MBA/76890/13. As part of our MBA Program, Grace is expected to do applied research and undertake a project. This is in partial fulfilment of the requirements of the MBA course. To this effect, she would like to request for appropriate data from your organization.

Grace is undertaking a research paper on **“Effect of Behavioural Biases on Investment Decision for Structured Products by Retail Investors at Nairobi Securities Exchange.”** The information obtained from your organization shall be treated confidentially and shall be used for academic purposes only.

Our MBA seeks to establish links with industry, and one of these ways is by directing our research to areas that would be of direct use to industry. We would be glad to share our findings with you after the research, and we trust that you will find them of great interest and of practical value to your organization.

We appreciate your support and shall be willing to provide any further information if required.

Yours sincerely,

Caroline Tiara.  
Manager – Masters’ Programmes



Ole Sangale Road, Madaraka Estate  
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Email: info@sbs.ac.ke or visit www.sbs.strathmore.edu  
Twitter: @SBSKenya .

Strathmore Business School is a proud member of:



### APPENDIX III: Questionnaire

Dear respondent, am an MBA student at Strathmore Business School and carrying out a research titled “Effect of Behavioural Biases on Investment Decision for Structured Products by Retail Investors at Nairobi Securities Exchange” as part of the requirements for the attaining of a Master’s in Business Administration from the Strathmore Business School. This questionnaire is intended to provide information pertaining to study on behavioural biases and their impact on investor decision making.

#### SCREENING SECTION: OWNERSHIP OF STRUCTURED PRODUCTS

**What structured product have you invested in?** (Tick where applicable)

- Corporate Bonds
- Stanlib Fahari Income-REIT (FAHR)
- Other Commercial Papers
- Private placement offers e.g. cash management

If at least one is ticked, please proceed to the next section of the questionnaire.

#### SECTION A: RESPONDENT’S PROFILE

1. Kindly indicate your age group.

- 18 to 27
- 28 to 37
- 38 to 47
- 48 to 57
- Above 58

2. Kindly indicate your gender

- Male
- Female

3. Kindly indicate your highest level of education

- University Graduate
- Diploma
- High School Education
- Other

4. Kindly indicate your marital status.

- Married
- Single

5. How long have you been an investor at the Nairobi Securities Exchange (NSE)?

- 1 to 3 years
- 4 to 7 years
- 8 to 10 years
- Over 10 years

6. Please indicate your employment status

Employed  Self Employed  Retired  Other

7. What is your expectation by investing/ trading at the NSE

Dividend returns  Capital Appreciation  Other

### SECTION B: HERDING BIASES

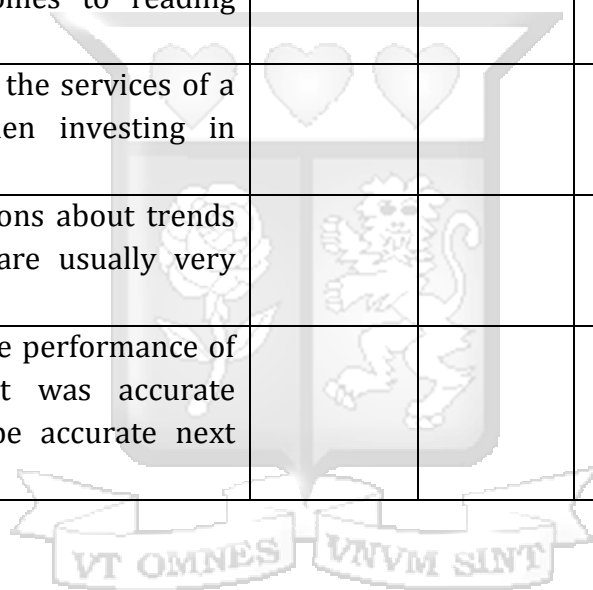
This section examines how one is influenced by the general decision trends making in the market. Kindly indicate your level of agreement with the following statements.

Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
When making investing decisions, I use the same information as most people e.g. company profits.					
If many people rely on a certain kind of information (e.g. return on assets) then it is likely that the information is reliable.					
In times of uncertainty in the market, I will mostly do what other people are doing e.g. sell my structured product.					
I am likely to copy the investing decisions that are similar to people that I know.					
When purchasing structured products such as a corporate bond, I use the same strategies as most people e.g. ask my advisor to assistance or look at the possible return rate					
If I notice that a certain advisor's strategy seems to be working, then I am likely to copy it.					

**SECTION C: OVERCONFIDENCE BIASES**

This section examines where one places their ability to make decision regarding financial trends. Kindly indicate your level of agreement with the following statements.

Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
I am generally very good at reading trends in the market.					
I use my own predictive skills to outperform the market trends					
I am generally better than other investors when it comes to reading trends in the market.					
I generally don't need the services of a financial planner when investing in financial products.					
When I make predictions about trends in the market, they are usually very accurate.					
If my prediction on the performance of a structured product was accurate before, then it will be accurate next time.					



**SECTION D: ANCHORING**

This section addresses how fixated one is on specific measures and approaches to trend analysis. Kindly indicate your level of agreement with the following statements.

Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
The performance of a structured product from last week can be used to predict its performance in the future.					
The more the number of previous prices considered in predicating a price, the more likely it is that the predicted price is reliable					
If performance of bank bond is doing well, it is likely that performance of other bank bonds are also doing well.					
If a new structured product performs well in the market, then the introduction of a similar product at a later date would likely be successful					
The profit made by a company is a reliable way to assess its structured product price.					
Most investors use the same indicators (e.g. liquidity of a firm) to assess performance in banks because these indicators have been proven to be very reliable					

## SECTION E: REPRESENTATIVENESS

This section examines how one goes about making observations about trends in the market with regard to specific indicator. Kindly indicate your level of agreement with the following statements.

Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
If a structured product was performing well last month, it is likely to stay the same over the next three months.					
If a new financial advisor gives me an accurate prediction about a product today, then she/he is likely to do the same in the future.					
If a structured product was highly priced the whole of last year, it is likely to be highly priced next month.					
If the price of a structured product dropped over the last months, then it will likely drop in the coming three months as well.					
If I mainly focus on a company's profits, I can predict how the company's structured product will perform.					
Focusing on a company's profits will tell me all I need to know about its financial performance					

**SECTION F: INVESTMENT DECISION**

This section investigates your decision-making approach. The items under consideration are Intuition value, loss aversion value, and simulation value. Kindly indicate your level of agreement with the following statements.

Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
If I were very experienced, I would make investment decisions based on what I thought are valuable products.					
Successful investors, with time, gain the ability to intuitively know the value of structured products					
High return products are often very risky and therefore I am unlikely to invest in them.					
I am more likely to consider the possibility of loss, more than profit, when making an investment decision.					
I consider A value prediction made through an analysis conducted by my investor is likely to be accurate.					
When determining the value of a product, it is necessary to use set approaches that are defined and logical.					

**Thank you for taking time to fill in this questionnaire.**



#### APPENDIX IV: Investment Banks

1	African Alliance Kenya Investment Bank Limited	P.O. Box 27639, Nairobi	1st Floor, Wing B, Transnational Plaza, Mama Ngina St, Nairobi
2	Barclays Financial Services Limited	P.O. Box 30120-00100, Nairobi	Barclays bank Westend Building 5th Floor, westlands
3	CBA Capital Limited	P.O. Box 30437-00100, Nairobi	CBA Centre Mara Ragati Road Junction, Upper Hill
4	Dyer & Blair Investment Bank Limited	P.O. Box 45396-00100, Nairobi	Pension Towers, 10th floor
5	Equity Investment Bank Ltd	P.O. Box 74454-00200, Nairobi	Ground Floor, Equity Centre Hospital Road, Upperhill
6	Faida Investment Bank Ltd	P.O. Box 45236-00100, Nairobi	Windsor House, 1st Floor. University way/ Muindi Mbingu Street.
7	Genghis Capital Limited	P.O. Box 9959-00100, Nairobi	6th Floor, Prudential Assurance Building
8	KCB Capital Limited	P.O. Box 48400-00101, Nairobi	Kencom house, 2nd Floor
9	NIC Capital Limited	P.O. Box 44599-00100, Nairobi	NIC House, Masaba Road, Upperhill
10	Renaissance Capital (Kenya) Limited	P.O. Box 40560-00100, Nairobi	6th Floor, Purshottam Place Westlands Road, Chiromo
11	SBG Securities Limited	P.O. Box 47198-00100, Nairobi	CFC Stanbic Centre, 2nd Floor, Chiromo
12	Standard Investment Bank	P.O. Box 13714-00800, Nairobi	ICEA Building, 16th Floor. Kenyatta Avenue
13	Kestrel Capital (East Africa) Limited	P.O. Box 40005-00100, Nairobi	ICEA Building, 5th Floor Kenyatta Avenue
14	Sterling Capital	P.O. Box 45080-00100, Nairobi	11th Floor, Barclays Plaza, Loita St
15	Dry Associates Investments Group	P.O. Box 684-00606, Nairobi	Brookside Drive, Westlands
16	Sanlam Investments East Africa Limited	P.O. Box 14939-00100, Nairobi	Pan Africa Life House Kenyatta Avenue