

**THE EFFECT OF INDIVIDUAL BEHAVIORAL BIASES ON
INVESTMENT CHOICES AT THE NAIROBI SECURITIES
EXCHANGE: A CASE OF KISUMU COUNTY INVESTORS**

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DECLARATION

I hereby declare that the work contained in this Master of Business Administration project is my own work and has not been previously submitted for examination in any other university.

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This research project has been submitted for examination with approval as the University Supervisor.

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DEDICATION

I dedicate this project to my loving parents; Zachariah Ratemo Oseko and Bathsheba Nyanduko Ratemo whose prayers, immense support and sacrifice has made me reach this far. To my dear wife Everline Cherop Ratemo and my children Michelle, Mellanie, Steve and Gideon. You give me the energy to work even harder. I also dedicate this project to my friend and comrade, Dennis Nkobe Kenyoru for his role in kick-starting my MBA experience.

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ABSTRACT

Behavioral finance assumes that investors are normal and have differing views regarding utility maximization. Thus, investors make decisions that are not fully rational based on their beliefs and preferences.

This study sought to establish how individual investors' choices at NSE are affected by behavioral biases for Kisumu County investors. Data from a sample of 60 individual investors was collected through structured questionnaires administered by the researcher. The study employed both descriptive and correlation research design to identify the underlying relationships between individual behavioral biases and investment choices. Data analysis was done using descriptive statistics and linear regression analysis. The results obtained were presented in the form frequencies, percentages, charts and graphs.

The study findings indicated that investors' choices were modified by behavioral biases. Based on the applied regression model, 9.1% of the choices could be explained by behavioral biases considered in this study. The study further found out that representativeness and mental accounting biases were most influential biases. The investors were also indicative of having a high appetite for gains while clinging more on losing stocks.

The study concludes that behavioral biases were an integral part of how investors arrive at their choices. Thus not all investment choices may be arrived at rationally as expected by applying conventional finance models. The study finally recommends investor sensitization on behavioral biases would and that be important for investors to seek investment advice from experts in orders to mitigate cognitive errors of such biases.

TABLE OF CONTENTS

DECLARATION	i
ACKNOWLEDGEMENTS	ii
DEDICATION	iii
ABSTRACT.....	iv
ABBREVIATIONS AND ACCRONYMS	viii
List of Tables	ix
List of Figures.....	x
CHAPTER ONE : INTRODUCTION	1
1.1 Background of the study	1
1.1.1 Behavioral Biases.....	2
1.1.2 Investment Choices	3
1.1.3 Behavioral biases and investment choices	4
1.1.4 The Nairobi Securities Exchange.....	5
1.1.5 Kisumu County Investors	5
1.2 Research Problem	6
1.3 Research objective	9
1.4 Value of the study	9
CHAPTER TWO : LITERATURE REVIEW	10
2.1 Introduction.....	10
2.2 Theoretical literature review	10
2.3 Behavioral biases application in investment choices	12
2.4 Conceptual framework.....	17
2.5 Summary of literature review	18

CHAPTER THREE : RESEARCH METHODOLOGY	20
3.1 Introduction.....	20
3.2 Research Design.....	20
3.3 Population	21
3.4 Sample Design	21
3.5 Data collection	22
3.6 Data Analysis	22
CHAPTER FOUR : DATA ANALYSIS, RESULTS AND DISCUSSION.....	24
4.1 Introduction.....	24
4.2 Background Information.....	25
4.2.1 Age distribution of respondents	25
4.2.2 Respondents' Gender Profile	26
4.2.3 Respondents' Education Levels	26
4.2.4 Respondents' Employment Status	27
4.2.5 Investors period of trading at NSE.....	28
4.2.6 General factors that triggered the investors to trade at NSE.....	29
4.2.7 Investors proportion in securities at NSE to total investment.....	30
4.2.8 Trade-off with investments in other sectors.....	31
4.2.8 Investors' recent trading activities	32
4.3 Behavioral biases application in investment choices	34
4.3.1 Mental Accounting Bias	34
4.3.2 Loss Aversion Bias	34
4.3.3 Representativeness Bias	36
4.3.4 Anchoring Bias and Investment Choices	37
4.3.5 Overconfidence Bias and Investment Choices.....	38
4.4 Inferential Statistics	40
4.5 Summary and interpretation of the study findings.....	42
CHAPTER FIVE : SUMMARY, CONCLUSION AND RECOMMENDATION.....	44
5.1 Introduction.....	44
5.2 Summary of the study	44

5.3 Conclusion	45
5.4 Recommendations.....	45
5.5 Limitations of the Study.....	46
5.6 Suggestions for Further Research	47
REFERENCES.....	48
APPENDICES.....	i
Appendix I: Letter of Introduction	i
Appendix II: Questionnaire	ii
Appendix III: List of stock market participants in Kisumu County.....	vi

ABBREVIATIONS AND ACCRONYMS

APT	-	Arbitrage Pricing Theory
CAPM	-	Capital Asset Pricing Model
CDS	-	Central Depository and Settlement
CDSC	-	Central Depository and Settlement Corporation
CMA	-	Capital Markets Authority
EMH	-	Efficient Market Hypothesis
KES	-	Kenyan Shillings
NSE	-	Nairobi Securities Exchange
SPSS	-	Statistical Package for Social Sciences

List of Tables

Table 3.1	Individual Investors at NSE in Kisumu County	21
Table 4.1	Respondents age distribution	25
Table 4.2	Respondents' employment practices	28
Table 4.3	Top four active companies at NSE in the second quarter of 2016	32
Table 4.4	Shares traded by investors over the last 3 months	33
Table 4.5	The effect of Mental Accounting Bias on Investment Choices	34
Table 4.6	The effect of investment advisors in investment choices	38
Table 4.7	Gender dimension of overconfidence bias	39
Table 4.8	Model Summary	40
Table 4.9	Regression Coefficients	41

List of Figures

Figure 1	Conceptual framework	18
Figure 4.1	Response rate	24
Figure 4.2	Gender profile of investors	26
Figure 4.3	Education level of respondents	27
Figure 4.4	Investors' experience at NSE	29
Figure 4.5	Initiative to invest at NSE	30
Figure 4.6	Percentage of investments at NSE	31
Figure 4.7	Trade-off of other investments with shares	32
Figure 4.8	The effect of loss aversion in investment choices	35
Figure 4.9	Effect of Representativeness Bias in Investment Choices	36
Figure 4.10	Anchoring in past prices	37
Figure 4.11	Effect of overconfidence bias in investment choices	39

CHAPTER ONE : INTRODUCTION

1.1 Background of the study

Acquisition, financing and management of assets form the cornerstone of financial management with the view of value maximization as the overriding goal. The investment decision is important as the first step in identifying the appropriate mix of assets to be included in an investor's portfolio. Universally, financial investment decisions are viewed as very important in financial management practice. Such investment decision are expected to give rise to the desired financial satisfaction as well as to bring about to bring betterment to the quality of life. Investment is anchored about risk and the greatest risk for investors universally is captioned in the feeling of losing the investment – in monetary terms.

Portfolio theory serves as a reference point for development of conventional finance models that explain the spectrum of risk, return, correlation and diversification in portfolio construction. The theory asserts that based on the assumption of rationality, investors would choose lower risk complexion as opposed to a higher level of risk for a particular return. This conventional finance theory presumes that investors act rationally and portray homogeneous decisions making patterns when faced with similar market information. It is on this premise the finance models of asset pricing are founded on rational expectation that is built on individual rationality and consistent beliefs. Such models that are based on rationality include the Capital Asset Pricing Model (CAPM) and the Efficient Market hypothesis (EMH). Ritter (2003) posits that the EMH assumes that markets are rational. Further EMH assumes that market information generate unbiased

future market forecasts. Contrary to view, behavioral finance argues that in some instances the financial markets are not informationally efficient. Behavioral finance therefore posits that the traditional finance theory ignores how real people make decisions.

Shiller (2003) documented the transition from the assumptions of EMH to the theory of behavioral finance. In his argument, the price-to-price feedback theory promoted by word of mouth price speculation heightened the public attention on price enthusiasm. This resulted in the price 'bubbles' effect that culminated in the stock market bubble in March 2000 when investors were concentrating on book-to-market ratios and dividend-price ratios. This resulted in blossoming studies on how human psychology relates to financial markets. This gave rise to behavioral biases that characterize investor decision making in financial markets.

1.1.1 Behavioral Biases

According to Ritter (2003), behavioral finance is built on the research that relaxes the conventional finance assumptions of expected utility maximization of investors in efficient financial markets. This new branch of finance makes use of models in which the market participants are not fully rational. This could be as a result of either their preferences or as a result of their mistaken beliefs.

Behavioral finance manifests itself through a range of decision making behaviours known as biases. These biases affect how people process information and use it to make financial decision that they perceive to be comfortable in. As pointed out by Shefrin (2000), behavioral psychology has shown that people are imperfect processors of

information and that they are influenced by errors, biases and other perceptual illusions. Based on cognitive psychology behavioral biases arise when people make decisions based on their beliefs and preferences. These biases include overconfidence, anchoring, representativeness, loss aversion mental accounting among others.

According to Oslen (1998), when face with new information, investor do not react logically but end up being overconfident and the change their choices in the face of superficial financial information. Financial psychology has demonstrated that human beings are quite irrational while making stock market investment decisions. This has been emphasized by the fact that indeed psychological factors, noted by (Decourtet *al*, 2005), do have an effect on the investors' rationality in stock market investment decisions.

1.1.2 Investment Choices

Based on the traditional finance theory, investors are assumed to be very rational in making investment choices. They are keen on selecting investments that will maximize their return based on the underlying risk. It is for this reason that there exist investment advisors to give arguably professional investment advice to those who may need. This would be banked on their wealth of knowledge in observing market patterns and predicting possible outcomes based on past present and future market information.

There are various finance models of conventional finance such as the portfolio theory which use the risk based pricing model. They include CAPM, APT and EMH among others. These models serve as yardsticks for the conventional investment decision making process. Mbithi (2014) sought to determine the optimal portfolio size for investors in the NSE. He found out that the investment risk was lowered when on

increases the number of securities in the portfolio. He further found out that the optimal size would be having between 18 and 22 securities. This indicates that there is need for investors to know what mechanisms to put in place to decide on how to arrive at their investment choices.

In making investment choices, people use a number of financial analysis tools such as return on investment, break even analysis, cash flow analysis among others. However, some decisions made by investors seem to deviate from this predisposed norm. Anil (2013) contends in making stock market decisions such as trading and investing, investors are not as rational as they think they are. Contrary to their knowledge, a number of factors intercept their thought process and end up impacting on the ultimate investment choice made. Sawady and Tescher (2008) point out that perceptions, beliefs and attitudes shaped by circumstances and experiences govern financial decision making.

1.1.3 Behavioral biases and investment choices

Investors are recipients of information from a variety of sources. This could be from news in the media, published financial information, opinions and recommendations from various social circles, synthesized information from investment advisors among others. However, processing all this information so as to arrive at an investment choice remains a sophisticated task that varies across investor profiles. Winchester *et al* (2011) contends that, in as much as it is expected that investment choices should be guided by predefined fundamental and technical analysis that uses the acceptable level of risk which is consistent with an investors goals and the set time horizon. The bigger challenge facing investor is that of making long term financial choices.

According to Oslen (1998), behavioral finance gives answers in form of empirical evidence that end up doubt on the other financial models that are anchored on rationality. As elaborated by Raines & Leathers (2011), in the face of uncertainty, people fall back to heuristics and give reliance on their own subjective assessment of risk so as to reduce the complex task of assessing possible outcomes to simpler judgmental operations. This explains how individuals in their own state of mind end up making subjective investment choices

1.1.4 The Nairobi Securities Exchange

As a securities market, the Nairobi Securities Exchange (NSE) gives a platform for traders, both stock brokers and other investors to buy and sell shares and other securities in Kenya. Its establishment dates back to 1954, when it was formed (then referred to as the Nairobi Stock Exchange). However in Kenya, trading in equity started earlier in the 1920's. Presently, the NSE is the largest securities market in East and central Africa and the third largest in sub-Saharan Africa, after Nigeria and South Africa, by virtue of the companies listed and the values of the securities traded.

Trading on the floor is fully electronic and is mainly conducted by the aid of the stockbrokers. The stock brokers (and their agents located in various towns the country), act as financial advisors and carry out orders on behalf of their clients, the investors, through CDS accounts. The investors could be corporate or individual investors.

1.1.5 Kisumu County Investors

Kisumu County is one of the 47 devolved units of government in Kenya with its headquarters being Kisumu City located at the shores of Lake Victoria. Geographically

the county borders six other counties, namely; Kericho County, Nyamira County, Homa Bay County, Siaya County Vihiga County and Nandi County. There are several economic activities undertaken in the county ranging from fishing, agriculture, several medium and small scale industries, local tourism, transport, telecommunication and a variety of financial services.

Kisumu City hosts a number of regional offices for many banks and other financial institutions making it a strategic investment center that necessitated the need for investment advisors in the region. There are four NSE participants in Kisumu City acting on behalf of their main stock broking firms for investors in the western region. A total of 1340 investors in Kisumu County hold CDS accounts with the four investment agents which are used for online trading on the Nairobi Securities Exchange.

Most local studies in Kenya on investors at NSE majorly concentrated on investors in Nairobi. However, Ojwang' (2015) found that several behavioral factors affected investment decisions in an open air market in Kisumu. Majorly, traders' overconfidence in their skills and knowledge about market patters made them belief that they can outperform the market.

1.2 Research Problem

The preference as to what mix of securities one invests in varies from one investor to another. In the actual market place, investors have been found to exhibit investment characteristics that are not consistent with the basic assumption of rationality. The standard finance models have not sufficiently accounted for market anomalies. The present of future dividends cannot comprehensively explain the volatility in the stock

prices. Investors trade in stocks without due consideration of fundamental value, they justify their investment decisions to past performances and they tend to hold back loss making stocks. As explained by Thaler (1980) people often have a tendency of demanding a higher payoff to relinquish an object than they are actually willing to part with so as to acquire the same – a pattern he referred to as endowment effect.

Being an emerging field in finance, scholarly works are being done to address the various dimensions of behavioral finance with a majority of the studies coming from developed markets. For example, in their investigation on investment decision processes of equity investors with substantial holding in the US fortune 500 firms, Nagy and Obenberger (1994) found a number of factors that were of major concern to investors. One of the factors was ‘feeling of the firm’s products and services’. This was in effect was an emotional and a non-rational decision driver. They concluded that individual investors use several varied criteria and do not approach investment choices normally. Less than a half of the sample considered wealth maximization as a variable that affected their investment decision.

Shalini *et al* (2013) carried out an inquiry into the psychological biases affecting the financial investments in India. They used sampling method to collect data which they qualitatively. They found out that there were several perceptions and beliefs surrounding financial investment decisions behavior that brings about bias on the course of action to be taken. Though their methodology was their major limitation, the proposed further research to be conducted based on a larger survey of individual investors. Moreover, since their data collected pertained Indian investors they were of the view that other studies could be conducted across other countries to provide comparative assessment.

From a sample of MBA students at the University of Nairobi, Pudha (2009) surveyed the underlying factors that motivated the investors to invest in shares at NSE. He found out that diversifying of investments, long term saving plans and improving own financial performance as the motivating factors behind investing at NSE. On the other hand, Kimani (2011) conducted another surveyed behavioral factors that influenced investors choices of the securities traded at the NSE. Aduda, Oduor and Onwonga (2012) sought to identify the principles of behavioral finance for individual investors and their financial performance at the Nairobi Stock Exchange. Their sample was obtained from Nairobi based brokerage firms. They found that some investors exhibited rational behavior while others exhibited irrationality and herding behavior that resulted in differences in investors' returns. Mwaka (2013) sought to the link between demographical characteristics and investor behavior at NSE. Her findings showed multifaceted effects of behavioral biases across demographic characteristics. Most recently, Ojwang' (2015) sought to find the behavioral factors the influenced investment decisions for investors trading at Kibuye Market in Kisumu, Kenya. From a sample of 196 traders, he found out that overconfidence, anchoring bias loss aversion and mental accounting significantly influenced their decision making.

From the aforementioned literature, local studies have not addressed the influence of behavioral finance in portfolio construction for investors holding investments at the NSE. Moreover, the investment products referred to in the studies were limited predominantly to listed securities. This particular study sought to fill the aforementioned research gap by establishing the influence of behavioral biases on the nature and composition of

investments undertaken by local investors in other parts of Kenya and in Kisumu County in particular.

1.3 Research objective

The objective of this study was to establish the effect of behavioral biases in investment choices made by individual investors at NSE by Kisumu County investors.

1.4 Value of the study

Toward the development of the existing literature, this study would contribute interrogating the intrigues in the area of behavioral finance. It would add on empirical evidence in appreciating the matrix surrounding investment decisions made under the cover of behavioral biases.

In practice, study would be of help to investors to be able to make plausible decisions that are not largely influenced by personal intuition. It will thus seek to enlighten investors to take into consideration a wide range of factors before making financial investment commitments

Lastly, the findings would be of value to financial service providers and regulators to design and acknowledge various financial products that might increase the current financial well-being.

CHAPTER TWO : LITERATURE REVIEW

2.1 Introduction

This chapter documents the literature that advances the concept of behavioral finance. It introduces concepts of the conventional finance theory which paves way for the discussion and eventual development of behavioral finance. It also provides the empirical underpinnings for the various finance concepts outlined.

2.2 Theoretical literature review

The tenets of behavioral finance as documented by Bodie, Kane and Marcus (2009) is that the conventional finance theory ignores how real people make decisions. According to Barberis and Thaler (2003), behavioral finance is an emerging approach to financial markets that seeks to respond to the underlying challenges that have accustomed the traditional finance paradigm in giving explanations to the financial market results. In the early 1930's, an Economist John Keynes documented the role of psychology in economics. This was way long before the behavioral economics and behavioral finance were acknowledged. In his argument, unrealistic pessimism and optimism were sentiments that resulted into booms and bursts.

However, it was from the foundation work of Kahneman and Tversky (1979) that introduced the discussion on behavioral finance. They are the founders of “prospect theory” based on their very influential paper on decision making under uncertainty. Their paper focused on attitude towards risk where they showed that peoples attitude towards

gains are different from those towards losses. They indicated that people tend to underway outcomes that are uncertain/probable as opposed to sure outcomes.

Statman (2008) infers that the distinction between rationality and normalcy forms the basis of the differences between standard finance and behavioral finance. As noted by Ritter (2003), behavioral finance developed as a result of the inadequacy of standard finance to explain the empirical inconsistencies in market patterns including the stock market bubbles witnessed in Japan, Taiwan and the U.S. In furtherance of this, Baker and Wurgler (2013) contend that the concept of behavioral finance became more pronounced during the unprecedented rise and fall of the internet stocks in 1990s and 2000. During this period it was difficult to explain both at the level of the market as a whole and at individual stocks and other securities, without appealing to some degree of investor and managerial irrationality. This forms the premise of behavioral finance where psychology and other cognitive factors outweigh rationality to influence investors' decision making process.

Based on the doctrine of efficient market theory and the conventional finance valuation models, the stock price would represent the present value of optimal forecasted earnings, where the price would be thought to be responding only to objective information about it. However, Shiller (2003) points out a major finding about the value of stocks that sought more question than answers based on the analysis of data from Standard & Poor's Composite Price Index for over one hundred years from 1871-2002. They analyzed the same and found out that the discounted present value actual dividends paid using real discount rate and plotted the same against time which showed a stable trend. However, the stock prices oscillated wildly up and down the trend. This observed phenomenon was

not consistent to the expected resemblance inferred by the valuation models of conventional finance.

On their part, Knez *et al.*, (1985) pointed the difference in value for buying and selling prices that emanate from the thoughtless bargaining habits of willingness to pay and willingness to accept. They noted that people understate the price they are willing to pay while buying and overstate the minimum they are willing to accept for a sale. These manifestations do not disappear even when people are exposed to market settings. Shiller (2003) argues that though conventional finance models such of efficient markets have can be used to explain market characterizations of the ideal world, they cannot be maintained in their entire form when examining actual markets. As pointed by Barberis and Thaler (2003), rationality would mean that when market agents are faced with new market information, they internally updated their beliefs appropriately, and subject to their beliefs they make their choices that are then normatively acceptable. The convergence of rationality and irrationality is explained is explained by the theory of limited arbitrage whereby as irrational traders bring about deviations in the intrinsic value of financial assets, rational investors eventually be rendered powerless and would do nothing about it. Consequently, the behavioral finance paradigm suggests that the investment decisions are to a large extent modified by psychological, emotional and other sentimental factors.

2.3 Behavioral biases application in investment choices

People make complicated financial decisions and when confronted with a given set of probability distribution of returns they end up making inconsistent and systematically less than optimal decisions (Bodie *et al.*, 2009) Mwaka (2013), points out that demographic

characteristics affect the way different investors make investment decisions. Clearly there are various behavioral biases that come to play in the investment cycle. These are cognitive illusions that could be either due to heuristic decision process or adoption of mental frames.

Heuristic driven biases are beliefs inclined to the rule of the thumb that are used by people in making choices in complex and uncertain environments. Kahneman and Tversky (1979) argue even when all the relevant information is collected and objectively evaluated, it does not deter people from making mental shortcuts in arriving at their decisions. Biases that result for heuristic illusions include overconfidence, anchoring and representativeness bias.

The overconfidence bias relates to the belief that investors hold to the fact that they can exercise more control in their decision than they can really do. Overconfident investors put more reliance on their predictive skill in identifying and picking winning investments. In a study documented by De Bond (1998), such effluent investors report that their exceptional stock picking skills were crucial in their portfolio performance. Such investors remain very optimistic of the particular shares they select while on the other hand they underestimate the effect of the overall market on their portfolio performance.

In a study done in the U.S by Barber and Odean (2000), a sample of male and female investors was used to compare the trading activities and average returns for common stocks investments in brokerage firms. From their findings, males had a higher trading activity than men which affirmed greater overconfidence levels in men. When investors are overconfident of their beliefs they may end up over-trading and they holding high-

risk portfolios. Bodie *et al* (2009) point out as a result of overconfidence, investors tend to overestimate their ability to develop market forecasts. In another study that investigated the stock market performance of individual investors, Barber and Odean (2000) found that excessive trading leads to poor investment performance. From their results, 20% of the accounts of most active investors performed poorer by 7% points when compared to other 20% of accounts that had a low turnover rate.

Some studies portray male investors as being more actively engaged in stock market activities (Aduda *et al*, 2012). This shows a higher level of overconfidence in the male gender. This is consistent to what is documented in psychological research which indicates that male investors are more prone to overconfidence as compared to their female counterparts, more so in male dominated areas such as finance. In their research, Barber and Odean (2001) found that over a trading horizon of six months, men on average traded 45% more than what women did. On the contrary, Onsomu (2014) and Ojwang' (2015) did not find gender as a dominant factor in active trading based on their sampled respondents.

Anchoring bias comes to play when an investor makes use past price as reference point for creating an expected trading range. In this regard investors tend to anchor their expectations on past prices and in particular the purchase price of the securities. Previous prices determine the range within which investors can change their mindset even in the wake of new market information. According to Raines and Leathers (2011), investors assign more weight on recent experiences on the belief that recent prices are about right. While studying the effect of behavioral factors on investment decision making for unit

trust companies in Kenya, Shikuku 2012 found that a total of 81% of unit trust were influenced by behavioral past performance of their portfolios.

Representativeness bias is based on the belief by investors that a small sample is representative of the population. Consequently, these investors become quick to infer patterns and end up extrapolating the same trend into the future. Chopra, Lakonishok, and Ritter (1992) argue that, based on recent good performance of securities, investors modify their assessment of a probable future performance which results in an increased buying pressure that eventually sends the prices upwards. These too extreme beliefs by investors create gaps between intrinsic values and the prices of stocks. Omullo (2013) contend that recent performance is viewed as a function of better skills of a fund manager and the same becomes a pointer to the expected future prospects of the fund.

As explained by Agrawal (2012), people consider events and categorizing events and thereby presuming that the same can be treated as representative of a well-known class of investments. Consequently, investors make general categorization based on probability estimates without apportioning appropriate attention about their underlying probabilities. As a result of this bias, people tend to ascribe more weight to “hot” stocks and thereby avoiding stocks that have performed dismally in the recent past.

As postulated by Kahenman and Tversky (1979), people ascribe value to decisions in uncertainty based on potential gains and losses with the purchase prices as the reference point. Their version of prospect theory then was designed with gambles with a t least two none zero outcomes, people have the tendency to select the one with the highest value.

These illusions capture the state of mind that affects the individual decision making process. Biases relating to prospects include loss aversion and mental accounting.

As explained by Samuelson and Zachauer (1988), loss aversion creates reluctance in people to make decisions for change for the mere fact that they greatly focus on what they are likely to lose than what they may end up gaining. This is a condition referred to as “investment inertia” or the status quo bias. The scenario exhibited by investors in general terms is that are in possession of losing positions, they acquire a stronger desire to restore their position just even to a break even status. This behavior generally puts investors in a risk averse position when face with profits as they would rather sell and lock a sure gain. On the other hand, the same investors would possess a risk tolerant behavior or be risk seeking when facing a loss and thereby they could wish to hold on the investments with the hope that prices rise up again. Montier (2002) concurs that in behavioral finance terms, investors are more sensitive to risk and return in the sense that they weigh potential losses more than twice as heavy as when they have potential gains.

Johnson, Lindblom and Platan (2002) conducted a research to establish what factors that influenced the speculative bubble in the period 1998 to 2000 and they further investigated as to whether the investors’ objectives and the underlying factors that influenced their decision making had changed for the said period. The speculative bubble was a situation high securities prices are maintained largely by the enthusiasm of investors as opposed to the objective and consistent estimation of real value. They surveyed 150 active private investors who were members of Aktiespararna Associations in Southern Sweden in December 2001 and 47 institutional investors comprising of banks, mutual funds and

investment banks was conducted through questionnaires. The study found that among other factors loss aversion contributed significantly to the speculative bubble.

In yet another bias, investors have the tendency of building mental frames in connection with their investments. This bias is known as mental accounting and it describes a behavior in which investors place particular decision into particular mental accounts that are derived from their own superficial attributes (Shiller 1997). In 2006, Werah conducted a survey of the influence of behavioral factors on the investment activities at the Nairobi Stock Exchange. The findings of her study were that mental accounting was a factor that was more prevalent in individual investors than institutional investors.

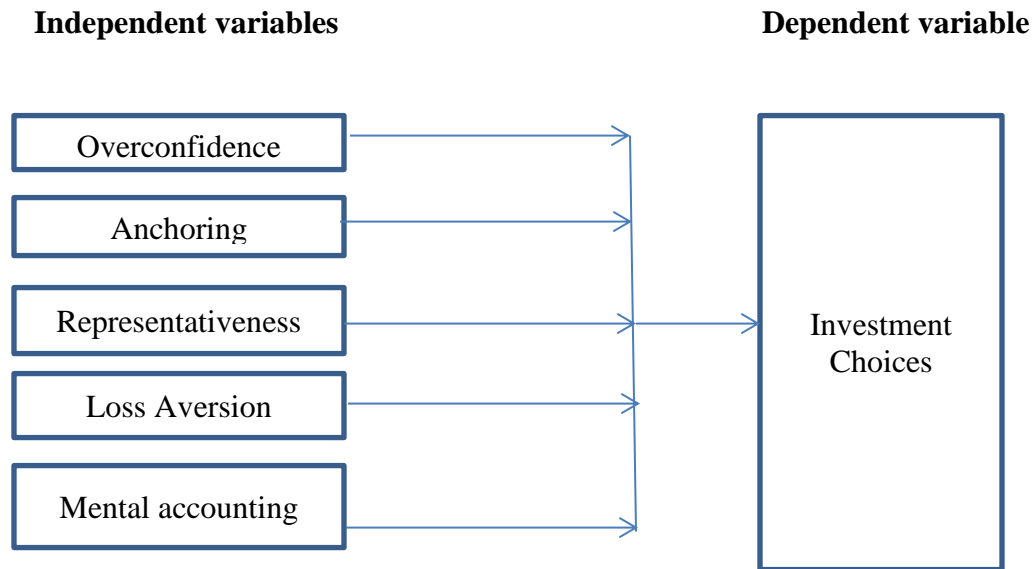
In a study by Ojwang' (2015) it was found out that over 60% of traders treat each basket of their goods separately. The tendency of investors to create mental frame is fueled by investment condition where investors feel more pain when they are accustomed to a loss and arguably they derive more pleasure when achieve a gain from a particular investment. As a result they end up looking at each stock separately as opposed to analyzing their portfolio as a whole. The resultant of such treatment is that investors end up making inconsistent and inefficient investment choices. Such choices are made on the basis of investors' perceived realities and to them each element of their investment has no connection to the other investments in the portfolio held.

2.4 Conceptual framework

Investment choices results from an interaction of various factors. Behavioral biases have a bearing in on the ultimate choices arrived at by the investors. As portrayed in figure 1,

investment choice is a dependent variable that comes out as a result of the independent interaction of various behavioral biases.

Figure 1: The conceptual framework



Source: Researcher (2016)

2.5 Summary of literature review

Conventionally, in line with overall goal of goal of financial management, investors are deemed to be wealth maximizers. Every investor sacrifices current financial endowment with an aim of reaping enhanced future benefits. It is on this premise that traditional finance came up with models of fundamental analysis used in investment selection and portfolio selection. Based on the risk return trade-off, investors have been assumed to be rational and that they keenly study available and prospective while making investment decisions. Stock prices have been found to deviate from their fundamentally analyzed values which are occasioned by that tendency if investor overreacting and/or overreacting to certain circumstances in the stock market. In this way investors deviate from the

rational decision making and thus bringing into play psychological biases in informing their investment decisions.

Financial psychology has demonstrated that human beings are indeed irrational while making stock market investment decisions. Behavioral factors have been found to have an unseen hand in the success or failure of the investments made by investors. There is no homogeneity among investors in analysis of similar market characteristics. Financial decisions are coupled with personal intuition, beliefs and beliefs.

Behavioral finance has emerged as a paradigm shift from the assumptions of standard finance regarding to how investors gather, synthesize, analyses interpret and utilize financial information in arriving at financial decisions. From existing empirical literature, it is evident that behavioral biases stemming from investor beliefs such as overconfidence, anchoring and representativeness define the perceived satisfactory investor decisions. Others biases that emanate from investor preferences such as prospect theory, loss aversion framing and mental accounting do modify and solidify the ultimate investor decisions.

Empirical literature has shown that investors are not immune to group effect and that the media the noise in the market, though not consistent with models of rationality, affects how investors make decisions. However, given that human behavior is complex and unpredictable, behavioral biases influence decision making differently to different investors.

CHAPTER THREE : RESEARCH METHODOLOGY

3.1 Introduction

This chapter explains the research methodology which covers the specific procedures that were followed while undertaking this study. It captures the research design used, the population and the sampling procedure. The chapter also explains the manner in which research data was collected and analyzed.

3.2 Research Design

Research design is the blueprint that guides the plan and structure that conceives answers to the research questions. The study used both descriptive and a correlational research designs. A descriptive research design aims establishing the what, where and how of a phenomenon. The descriptive research design entails a process of collecting data so as to obtain answerers regarding the status of the subjects of the study (Mugenda & Mugenda, 1999). The descriptive research design therefore describes the phenomenon associated with the population elements that have certain characteristics.

A correlational research design attempts to establish the effect of various factors to a particular phenomenon of interest. This gives in-depth information about the characteristics of subjects and thus bringing out the relationships between variables. This design has been used successfully by a number of researchers aiming to discover the intrigues surrounding investor behavior patterns.

3.3 Population

The study population for this study was the individual investors in Kisumu County trading at the Nairobi Securities Exchange. There was an aggregate of 1,340 individual investors who had CDS accounts opened through NSE investment agents in Kisumu County. This was according to CDSC data in June 2016. This consisted of those individual investors whose data capture of CDS accounts confine them to Kisumu County.

3.4 Sample Design

Investors use brokerage firms and investment banks to trade at NSE. These brokerage firms in turn have appointed agents distributed in various towns in the country. The study sampled 60 out of the 1,340 individual investors in Kisumu County. The 60 investors were selected from the four authorized agent's database by picking a proportional sample from each of the agents as shown in table 3.1 below.

Table 3.1 Individual Investors at NSE in Kisumu County

Agent	Number of investors	Sample
Equity Investment Bank Limited	360	16
KCB Capital	400	18
Old Mutual Securities Limited	280	13
Rapid P. Investments (K) Limited	300	13
Total	1,340	60

Source: CDSC (2016)

This provided a manageable number of investors given that an entire survey would have been impractical. It was assumed that investors in the county were normally distributed and the selected sample could represent the attributes of the population.

3.5 Data collection

Both primary and secondary data were used in this study. Primary data was collected from respondents using questionnaires with both open ended and closed ended questions capturing various aspects of investor attributes. Questionnaires are appropriate in obtaining objective information from that is not directly observable. Questionnaires are appropriate in capturing feelings, attitudes, beliefs and experiences, which in this case, underlie investment decisions. The researcher used triangulation to administer the questionnaires. For those particular investors who were not physically accessible with ease, their questionnaires were provided to them either through electronic media such via telephone calls.

Secondary data was gathered from published reports from NSE and CMA with regard to performance attributes (dividend per share, and earnings per share) of securities held by respondents.

3.6 Data Analysis

The data in the questionnaires collected was checked for completeness. The research employed content analysis and descriptive statistics to code, summarize and analyze the responses. The responses were be coded into various categories to be used for analysis by SPSS. The results were then presented in frequencies, percentages, tables and graphs.

The study used a multiple linear regression model below to establish what effect the behavioral biases had on investment choices

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n + \varepsilon$$

Where:

Y - as the dependent variable represents the investor choices to be measured based on the scores delivered from the 5 point Likert scale of a behavioral bias.

X₁ ... X_n are predictor variables representing various behavioral biases:- Overconfidence bias, Anchoring bias, Representativeness bias, Loss Aversion bias, Mental accounting bias

β₁ ... β_n are coefficients that give the strength and relationship between the dependent and the independent variables

α - is a constant representing autonomous investment decision factors.

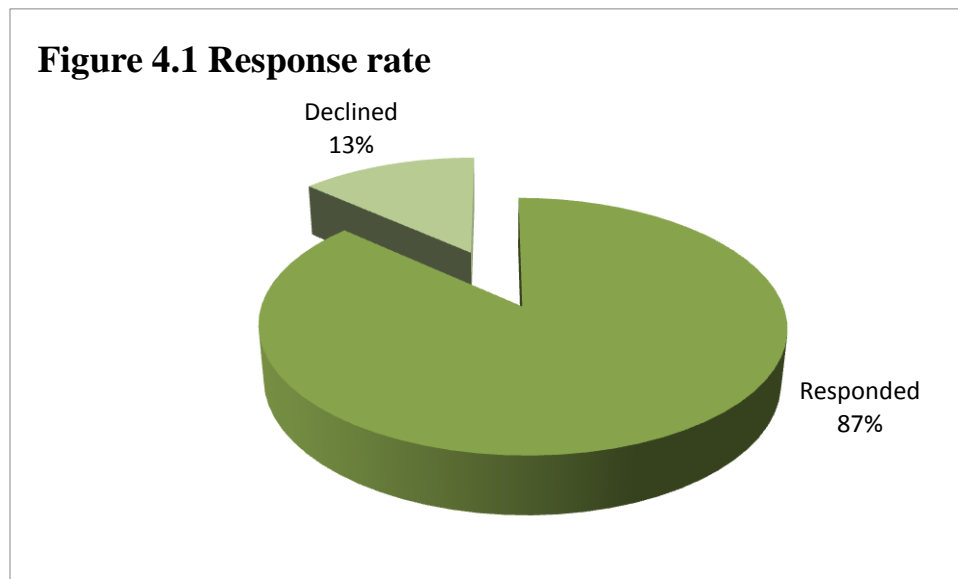
ε – represents the error term at 5% significance level.

CHAPTER FOUR : DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 Introduction

This chapter presents the analysis and discussion of the study findings together with summary of the study findings.

From the study sample, 60 questionnaires were administered and 52 respondents returned the questionnaires fully filled representing a response rate of 87% as summarized in figure 4.1 below. A response rate of over 70% is classified as excellent according to Mugenda and Mugenda (2009). Thus the response rate for this study was sufficient to give credence to the research findings.



Source: Research Data (2016)

4.2 Background Information

This section sought to capture the respondents' general details that would have a bearing to investors' behavioral characteristics. This included attributes like respondents' age, gender, level of education, employment status and stock trading behavior among others. The findings were as presented below.

4.2.1 Age distribution of respondents

The researcher sought to establish the age distribution of the respondents. Their responses were summarized in table 4.1 below. From the findings, out that 48.1% of the respondents were aged below 30 years while 30.8% of them were aged between 30 and 40 years. . This indicated that a convincing majority of stock investors, totaling to 78.9%, are of the lower age brackets. 19.2% of the respondents were of over 40 years. Only one questionnaire had the question on age unanswered.

Table 4.1 Respondents age distribution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below 30 years	25	48.1	49.0	49.0
	Between 30 to 40 years	16	30.8	31.4	80.4
	Above 40 years	10	19.2	19.6	100.0
	Total	51	98.1	100.0	
Missing	System	1	1.9		
Total		52	100.0		

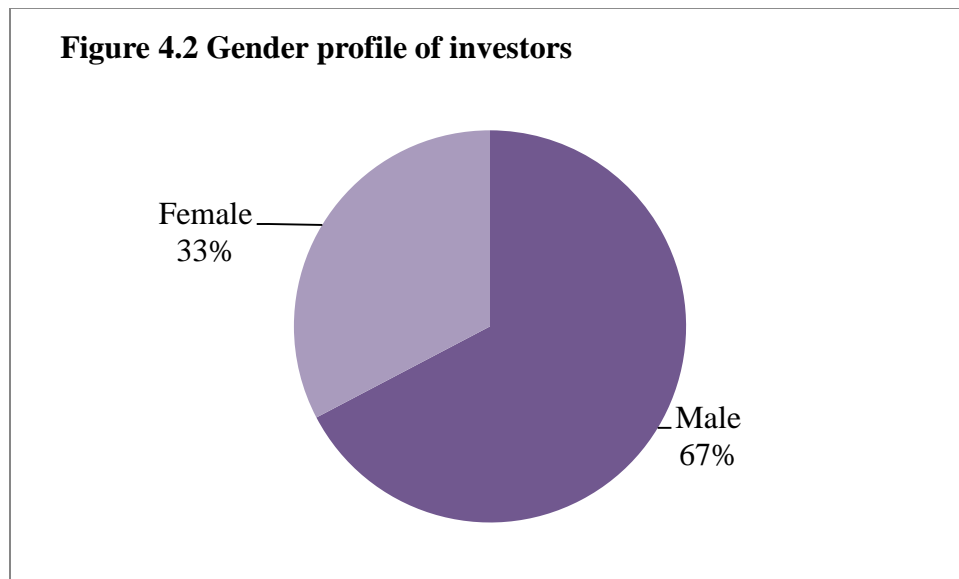
Source: Research Data (2016)

These findings imply that the younger generation was more involved in stock trading majorly for purposes of finding alternative sources of income and investing for the future.

This would later be followed by divesting at advanced ages to supplement earning for those above 40 years.

4.2.2 Respondents' Gender Profile

Respondents were required to indicate their gender. From the research data, 67.3% (35) of the respondents were males whereas the remainders 32.7% (17) were females. These findings were presented in figure 4.2 below. The study findings indicated that males were more active participants in the securities market. It can therefore be deduced that males were active than their female counterparts when it comes to activities of the Nairobi Securities Exchange.

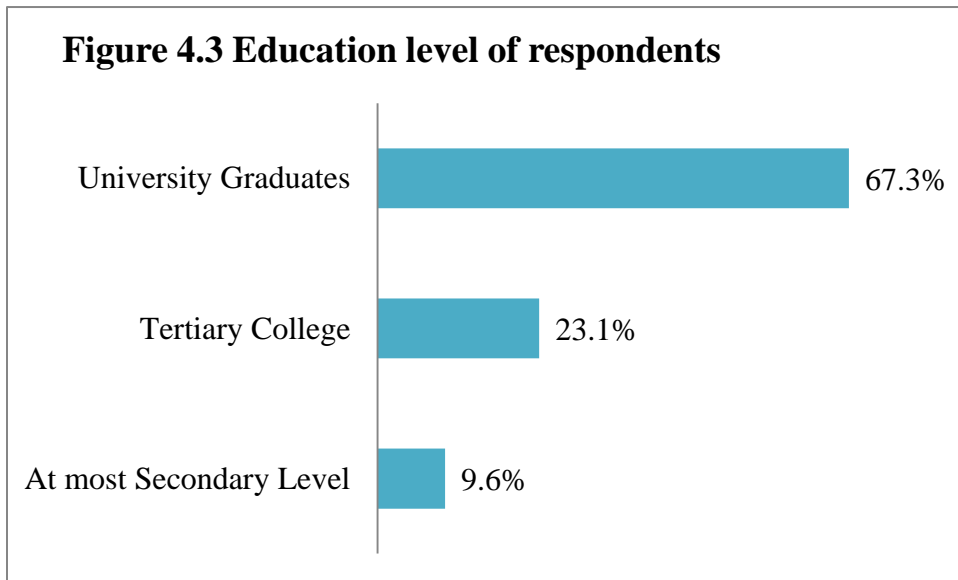


Source: Research Data (2016)

4.2.3 Respondents' Education Levels

The respondents were further required to indicate their levels of education. A summary of their responses were as shown in figure 4.3. The findings indicated that 9.6 % of the

respondent had at most a secondary education whereas 23.1% had attained some form of tertiary college education. The rest 67.3% of the respondents had attained at least a university degree. This indicated that the sampled investors had plausible level of education to understand and make their investment choices at NSE.



Source: Research Data (2016)

4.2.4 Respondents' Employment Status

Table 4.2 gives a summary of the respondents' employment practices. On their employment status, 75.0% (29) were in formal employment whereas 53.8% (28) of the respondents were self-employed. A further analysis of the responses indicates that 46.2% of the investors were in formal employment only while 25.0% were in self-employment only and consequently that 28.8% of the respondents were both in and formal employment.

These findings indicate all investors engage in a number of practices so as not to depend on a single source of income.

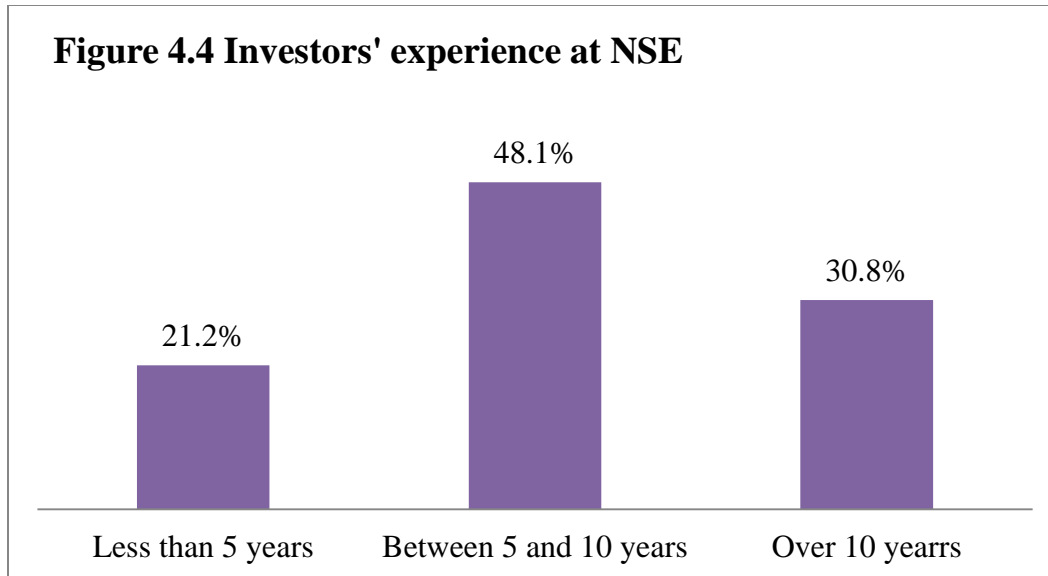
Table 4.2 Respondents employment practices

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Formal only	24	46.2	46.2	46.2
	Both	15	28.8	28.8	75.0
	Self-employed only	13	25.0	25.0	100.0
	Total	52	100.0		

Source: Research Data (2016)

4.2.5 Investors period of trading at NSE

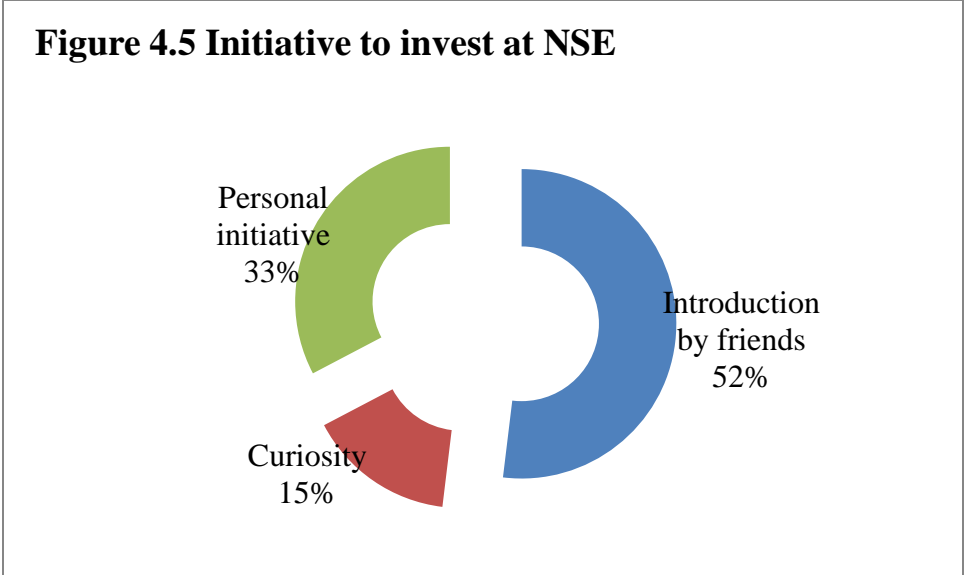
Investors were supposed to indicate the level what experience they have in trading at NSE. Their responses were as presented in figure 4.4 on the next page. The results indicated 48.1% had trading experience of between 5 and 10 years. Another 30.8% had traded for over years whereas the remaining 21.2% if the investors had less than 5 years of active participation at the NSE. An aggregate of 78.8% of the investors sampled had an investment experience of above 5 years. Thus a majority of the investors had adequate exposure in the securities trading from which behavioral characteristics can be studied.



Source: Research Data (2016)

4.2.6 General factors that triggered the investors to trade at NSE

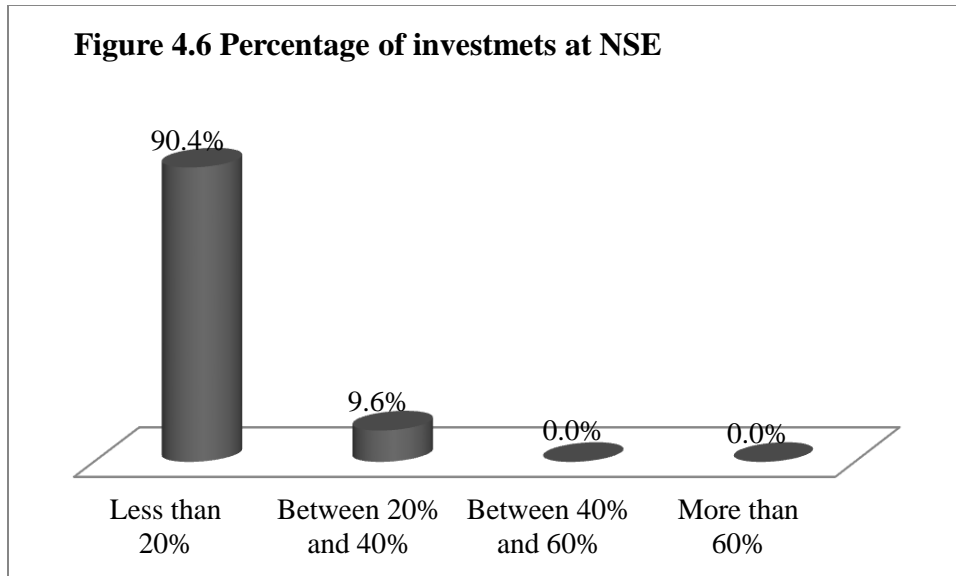
The investors were required to give a choice of their decision to invest at NSE. The responses obtained were summarized in figure 4.5. A portion of the investors, 32.7%, made their personal initiative to invest in shares. They based their decision as avenues to reap a return without being actively involved in the management of shares. Others invested so as to apply their finance knowledge learnt. A majority 51.9% of the investors traded at NSE as a result of introduction by friends or influence from other advisors. Some were as a result of gains made by friends who had made profits from trading on certain shares. Lastly, 15.4% were curious investors who had the desire to know the operation of the stock market. They got their drive from the information they receive from both broadcast and print media. As such their investment was on experimental basis and just being adventurous.



Source: Research Data (2016)

4.2.7 Investors proportion in securities at NSE to total investment

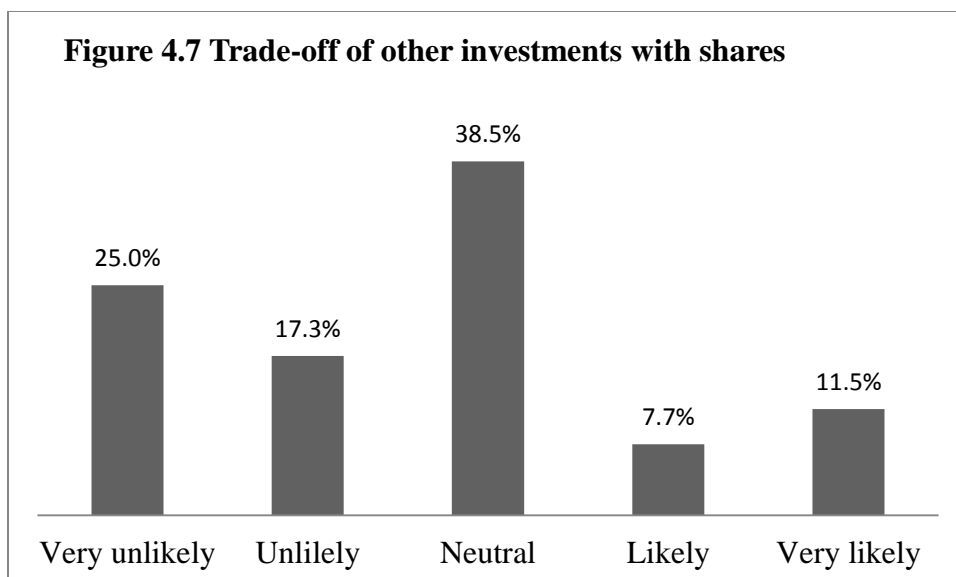
The study required the respondents to state what proportion their investments in securities at NSE form as a percentage of their total investment with other sectors. The study findings presented in figure 4.6 show that investments at NSE were not their primary investment areas. 90.4% of the investors ranked their investment in shares as less than 20% of their aggregate investment portfolio. The other 9.6% of the respondents reported that their investment at the securities market fell between 20% and 40% of their total investment when combined with other sectors. There was no respondents reported investment of over 40% of their investments at NSE.



Source: Research Data (2016)

4.2.8 Trade-off with investments in other sectors

Respondents were required to indicate whether they may consider liquidating part of their investment in other sectors and invest in the stock market in case the securities market performed better. The indications were that a majority were unlikely to trade-off their current investments in other sectors in favor of the securities market. 25% of the respondents affirmed that they were very unlikely to execute the trade-off, while 17.3% were unlikely. 38.5% of the investors indicated they were indifferent as to whether they supported such a tradeoff. A minority were indicative that they would approve such a switch with 7.7% stating they were likely and 11.5% being very likely. This affirmed that though the respondents considered their investments in other sectors as more valuable there was still a likelihood that they could invest further at the NSE. Figure 4.7 gives a summary of these observations.



Source: Research Data (2016)

4.2.8 Investors' recent trading activities

The respondents were required to indicate the shares they actively bought or sold over the last 3 months. The responses were summarized in summary in table 4.4 and they indicated more active trade using Safaricom Limited (17.3%) and Kenya Commercial Bank Limited (13.5%). Coincidentally, these two companies were among the top 4 by virtue of their market capitalization and equity turnover as at the end of the second quarter of 2016 as tabulated in table 4.3 as obtained from CMA quarterly bulletin for the second quarter ending June 2016.

Table 4.3 Top four active companies at NSE in the second quarter of 2016

Listed Company	Market Capitalization in KES billion		Equity Turnover in KES billion	
	Q2/2016	Average	Listed Company	Q2/2016 Average
Safaricom	693.8		Safaricom	2,894.38
East African Breweries	231.17		Equity Bank	2,420.97
Equity Bank	149.06		East African Breweries	1,794.31
Kenya Commercial Bank	115.71		Kenya Commercial Bank	1,618.14

Source: CMA (2016)

These companies had also posted favorable end of year results that had been recently published and each had increase in both the dividend and earnings per-share. The earnings- per- share for Safaricom increased by 18.75% from KES. 0.80 per share for the year ending March 2015 to KES 0.95 in 2016. Those of Kenya Commercial Bank Limited increased from KES5.30 per share for the period ending December 2014 to KES5.45 for the year ending December 2016. Moreover, the companies had announced a joint undertaking for KCB-MPESA that suggested a profitable undertaking for the two companies in the coming years.

Table 4.4 Shares traded by investors over the last 3 months

Company name	Frequency	Percent
Safaricom Limited	9	17.3
Kenya Commercial Bank Limited	7	13.5
Equity Bank Limited	3	5.8
East African Breweries Limited	3	5.8
Mumias Sugar Company Limited	3	5.8
Kenya Power & Lightning	3	5.8
Centum Investments	3	5.8
KenGen	3	5.8
National Bank of Kenya	3	5.8
Barclays Bank of Kenya	2	3.8
Kenya Re Insurance Corporation	2	3.8
Kenya Airways	2	3.8
The Co-operative Bank of Kenya	2	3.8
British American Tobacco Kenya	2	3.8
Kenya Power & Lighting Limited	2	3.8
Uchumi Supermarket Limited	1	1.9
Total Kenya Limited	1	1.9
Jubilee Holdings Limited	1	1.9
Total	52	100

Source: Research Data (2016)

4.3 Behavioral biases application in investment choices

4.3.1 Mental Accounting Bias

The researcher sought to establish whether the investors categorize each class of their shares held distinctly when choosing to buy or to sell them. This was intended to establish whether while making investment choices, investors consider each type of shares as a separate basket or whether all shares are taken as homogenous investments in securities. The study found out that a total of 36.5% (19) of the investors strongly agreed to the fact that they consider each class of shares as a separate investment. Another 21.2% (11) of the investor were in agreement to this fact. This makes an aggregate of 57.7% of investors who were in agreement that mental accounting bias affects their trading behavior at the NSE. On the other hand, only 9.6% of the investors strongly disagreed to this opinion while 13.5% disagreed. The remaining 19.2% were neutral. The findings are as tabulated in table 4.5 below.

Table 4.5 The Effect of Mental Accounting Bias on Investment Choices

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	5	9.6	9.6	9.6
	Disagree	7	13.5	13.5	23.1
	Neutral	10	19.2	19.2	42.3
	Agree	11	21.2	21.2	63.5
	Strongly Agree	19	36.5	36.5	100.0
Total		52	100.0	100.0	

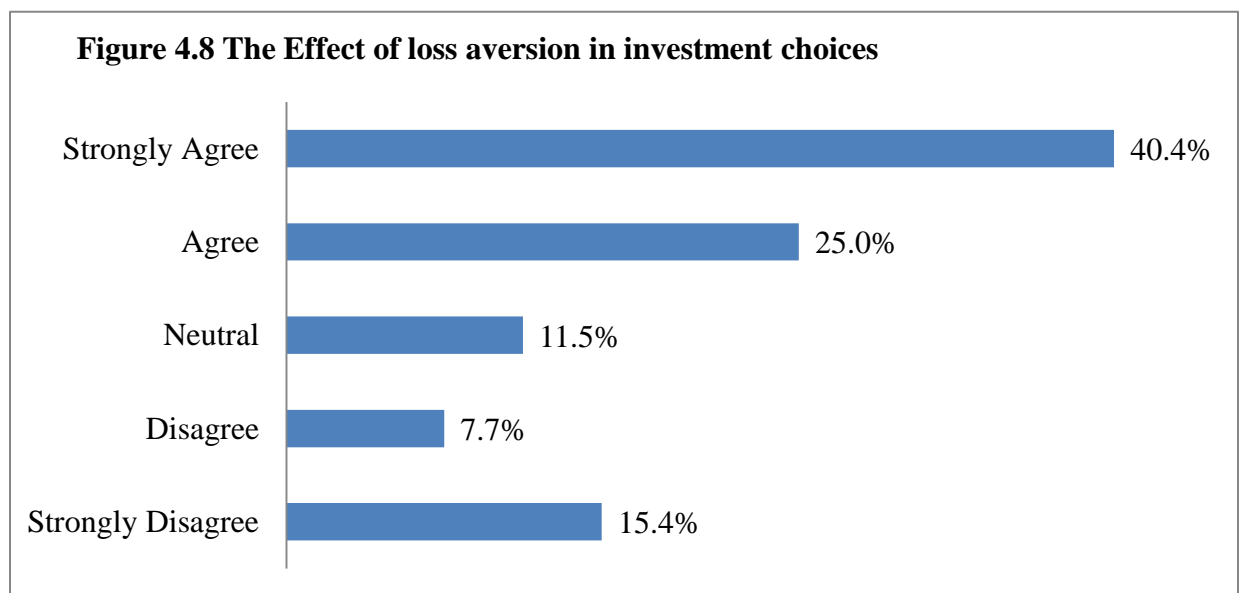
Source: Research Data (2016)

4.3.2 Loss Aversion Bias

Investors were asked to indicate whether they were more likely to sell more shares when the market price of the shares they owned was above the original purchase price than when it fell below it. Their responses for this were as presented in figure 4.8. The

findings indicate that over 65% of the investors were affected by loss aversion bias in making their investment decisions. In particular, 40.4% of the investors strongly agreed that when prices of the shares they held rose above the purchase price, they would dispose such stock. Additionally, 25% of the investors were in agreement to such a practice.

The effect of selling a winning stock was not a consideration to a minority of the investors sampled. From the study, 15.4% strongly disagreed to and 7.7% only disagreed, whereas 11.5% were neutral.



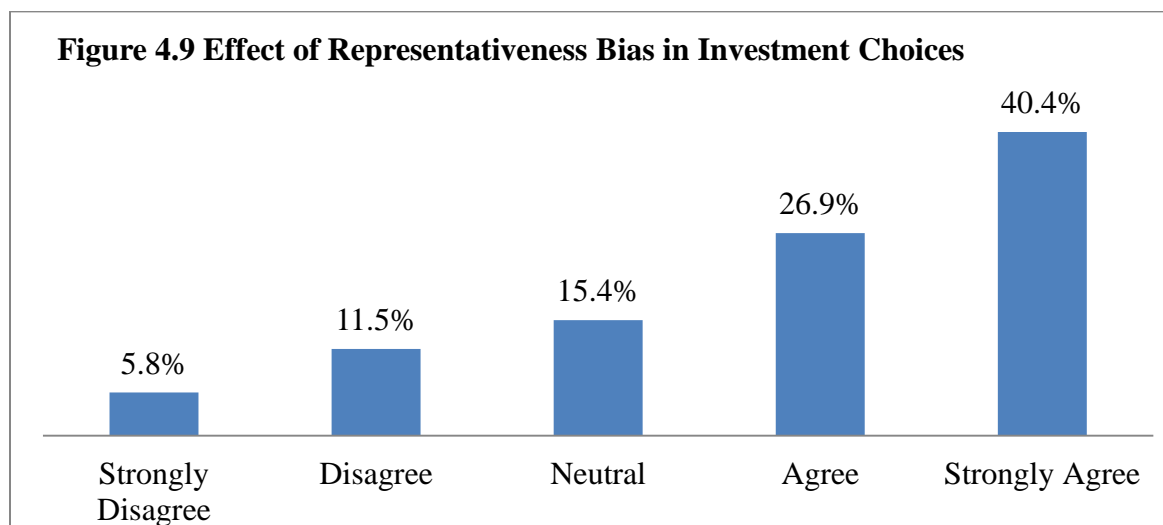
Source: Research data (2016)

In effect, the investors would prefer to quickly dispose of a winning stock but cling on to losers for a longer period with the hope that the prices would rise at a later period before they execute the disposal of such shares.

4.3.3 Representativeness Bias

The study used question 11 to test whether considered the general market opinion about perception of market performance in making their investment choices. This was to test the whether the investors held the belief that a small sample of their investment was representative of a large population. The findings were that this was the most influential bias that was at play in determining the purchase and disposal of shares.

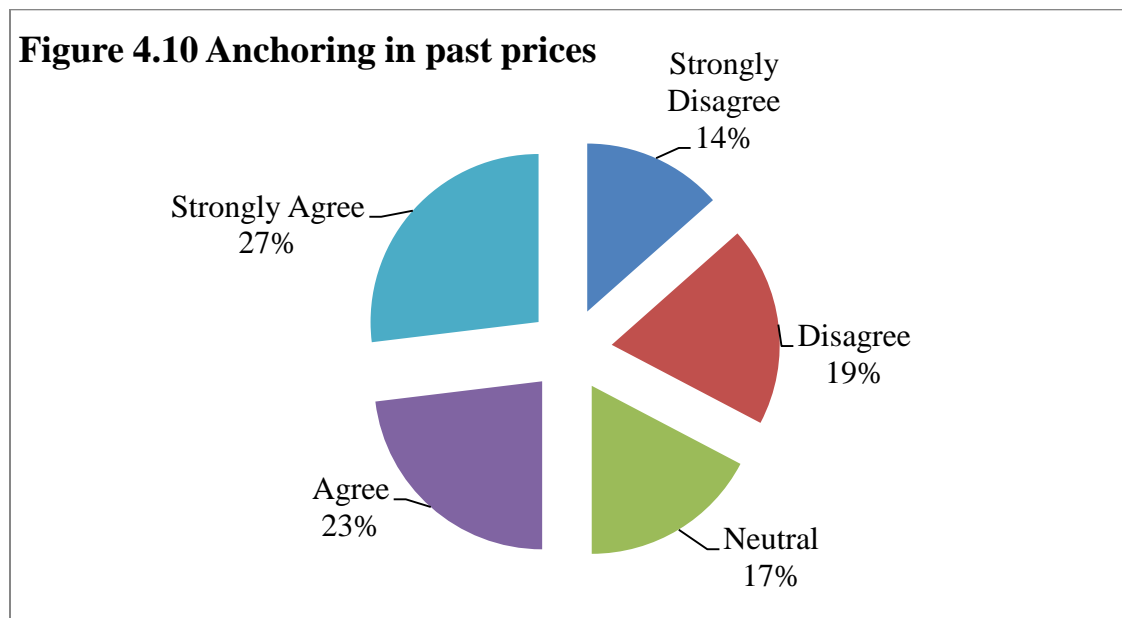
The study findings indicate that, 40.4% of the investors were in strong agreement familiar shares were less risky to buy or sell at NSE. A further 26.9% of the investors agreed that they based their investment choices on the general perception about the market performance. 5.8% (3) investors strongly disagreed while 11.5% (6) of them disagreed to be influenced by the general market performance. Lastly, 15.5% (8) investors were of the view that they were neutral to the effect of representativeness bias. These study findings were summarized as per the figure 4.9 below.



Source: Research data (2016)

4.3.4 Anchoring Bias and Investment Choices

Respondents were required to rate their consideration of recent and previous trend in stock prices when making their investment options. The findings indicated that 50.0% of investors were anchored their investment decisions on the observed trend of past share prices. 26.9% (14) of the investors strongly agreed and 23.1% (12) of them agreed to be basing their purchase or investment decisions on past price trends. 13.5% (7) of the respondents strongly disagreed while 19.5% (10) of them disagreed. Lastly, 17.3% (9) of the respondents replied that they were neutral to such considerations. These findings were summarized as par the figure 4.10 below.



Source: Research data (2016)

The respondents were further required to indicate whether they sought investment advice from investment advisors about past prices to and anchored the same in buying or selling their shares at the securities exchange. The results indicated that though the investment

advice was valuable, it was not their major deciding factor in tilting their investment decision. 19.2% of the respondents strongly disagreed to have sought the advice of investment advisors while 25% of the disagreed to it. 15.4 % of the investors agreed and an additional 17.3% of them strongly agreed to have sought and used investment advisors analysis of recent trends in past share prices to make their investment choices. 23.1% of the investors were noncommittal as their response was neutral. The table 4.6 below summarizes these observations.

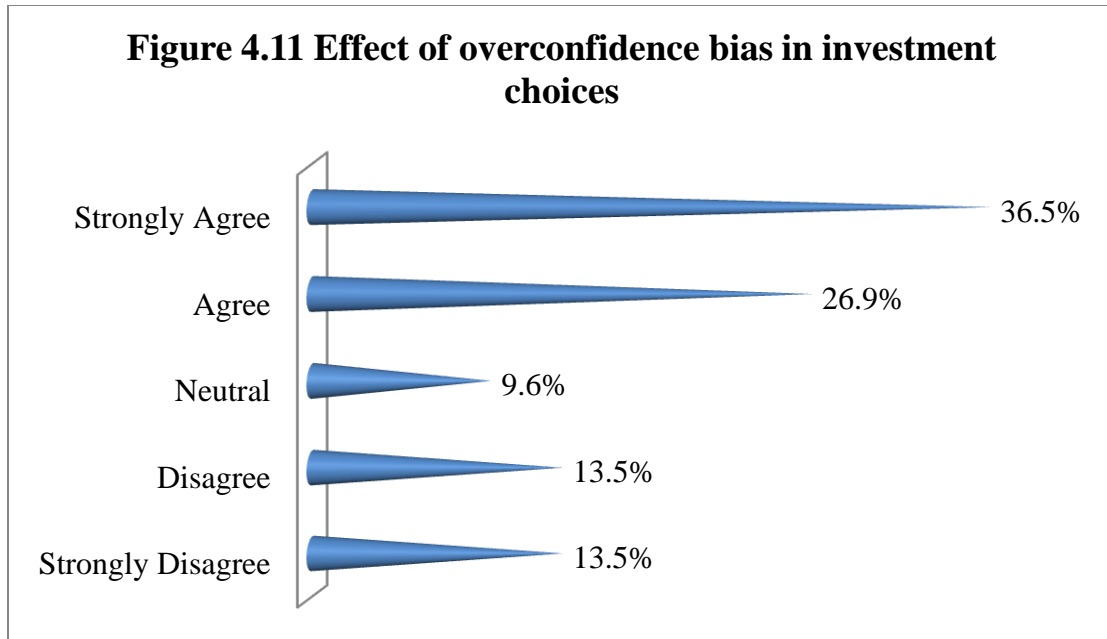
Table 4.6 The effect of investment advisors in investment choices

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	10	19.2	19.2	19.2
	Disagree	13	25.0	25.0	44.2
	Neutral	12	23.1	23.1	67.3
	Agree	8	15.4	15.4	82.7
	Strongly Agree	9	17.3	17.3	100.0
Total		52	100.0	100.0	

Source: Research data (2016)

4.3.5 Overconfidence Bias and Investment Choices

Overconfidence bias considers the belief that investors do exercise self-control over their investments than they do. In view of this the researcher sought to establish whether the make their own analysis without reliance of undue influence to make their personal investment decisions. The responses were presented in figure 4.11. The study found out that 38.5% (20) investors strongly agreed and 26.9% (14) agreed. 11.5% (6) strongly disagreed, 13.5% disagreed while 9.6% (5) were neutral.



Source: Research data (2016)

A further analysis of the responses presented in table 4.7 showed that male were more overconfident than female investors in terms of basing their own independent analysis in making investment choices. From the findings, 45.7% (16) of male investors strongly agreed 34.3% (12) agreed to have used their own analysis if the market to make their investment choices. 5.7% (2) responded that they were neutral, 8.6% (3) disagreed and lastly 5.7% (2) strongly disagreed.

Table 4.7 Gender dimension of overconfidence bias

	Males		Females		Total	
	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
Strongly Disagree	2	5.7	5	29.4	7	13.5
Disagree	3	8.6	4	23.5	7	13.5
Neutral	2	5.7	3	17.6	5	9.6
Agree	12	34.3	2	11.8	14	26.9
Strongly Agree	16	45.7	3	17.6	19	36.5
Total	35	100.0	17	100.0	52	100.0

Source: Research data (2016)

The analysis of female responses showed that 29.4% (5) of them strongly disagreed, 23.5% (4) disagreed and 17.6% (3) of them responded to be neutral. 11.8% (2) of them agreed while 17.6% (3) of the female investors agreed to have based their investment choices on their own analysis of the securities market.

4.4 Inferential Statistics

The study sought to establish the effect of Overconfidence bias, Anchoring bias, Representativeness bias, Loss Aversion bias and Mental Accounting bias on investment choices made by individual investors at NSE by Kisumu County investors.

A multiple regression analysis of the research data produced a model summary presented in table 4.8 below. The resultant coefficient of determination R^2 was 0.091 which could be interpreted that 9.1% of the observed changes in investors' choices could be explained by behavioral biases.

Table 4.8 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.302 ^a	.091	-.007	1.27318

a. Predictors: (Constant), Representativeness Bias, Anchoring Bias, Overconfidence Bias, Mental Accounting Bias, Loss Aversion Bias

The regression equation the implied relationship was:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon$$

In the model, $X_1 \dots X_n$ were predictor variables representing various behavioral biases with Y being the dependent variable indicating the investors investment choices. The

coefficients $\beta_1 \dots \beta_n$ represent the proportional strengths of relationship that different behavioral biases (independent variables) have on investment choices (the dependent variable), These observations were made at a 5% significance level.

Table 4.9 gives the regression coefficients obtained from the multiple regression analysis of the variables of study.

Table 4.9 Regression Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.570	1.238		.460	.648
Overconfidence Bias	.068	.141	.078	.484	.631
Anchoring Bias	.096	.171	.107	.563	.576
Representativeness Bias	.319	.159	.313	2.013	.050
Loss Aversion Bias	-.053	.231	-.060	-.229	.820
Mental Accounting Bias	.129	.230	.139	.561	.578

a. Dependent Variable: Investment choices

Source: Research data (2016)

These findings gave the following regression equation:

$$Y = 0.57 + 0.068X_1 + 0.096X_2 + 0.319X_3 - 0.053X_4 + 0.129X_5$$

Where: X_1 represents: Overconfidence Bias,

X_2 represents: Anchoring Bias,

X_3 represents: Representativeness Bias,

X_4 represents: Loss Aversion Bias, and

X_5 represents: Mental Accounting Bias

From the regression model obtained, all coefficients were positive except that for loss aversion bias. This suggested a positive relationship between individual investment choices with Overconfidence, Anchoring, Representativeness and Mental Accounting biases. Loss aversion had a weak negative relationship with individual investors due to fear of making losses exhibited by the investors. However this could not be generalized since most coefficients had their significance levels being above 0.05. Representativeness bias (with a significance level of 0.05) and mental accounting were the most influential factors that informed investors' investment choices.

4.5 Summary and interpretation of the study findings

In summary, the study found out that a majority of the active participants in the securities market were male investors at who were 67.3%. This was affirmed with the fact that makes were more overconfident in their analysis and decisions regarding the operations of the NSE. The study also found out lower age brackets below 40 years accounting to 80% of all individual investors. This would be pegged to the reason that younger generation are more industrious and active in saving than those who were above 40years of age.

A majority of the respondents sampled, 67.3%, in this study had university education. This indicates that they had appropriate levels of education and could give reliable responses regarding their investment behavior. The study also found out that an aggregate of 84.6% of the respondents decided to invest at the NSE either as a result of their own personal initiative or introduction by experienced friends. Only 15.4% were involved in

issues of the NSE driven by mere curiosity. Impliedly, the majority of the investors were certain about their decisions to invest at the securities market.

Further, the study found out that 78.8% of the investors had traded at the NSE for more than 5 years. This implies that a majority of the investors were well knowledgeable about operations of the securities market could be relied on in studying investors' behavioral biases.

From several dimensions, the findings indicate that investors are not entirely rational and some behavioral biases intercept their thought process when it comes to investment decision making. The regression model showed that 9.1% of the investors' decision could be explained by behavioral biases. Representativeness bias and mental accounting were the most predominant biases. Most investors tend to follow the general market opinion in making their investment choices. Moreover, investors build mental frames of their investments and their expected returns thereof consistent to the mental accounting bias.

Other biases that gave a positive relationship with investment choices were anchoring and overconfidence. 50% of the investors sampled were in agreement with the fact that they consider recent and previous trends in stock prices when making their investment choices. 63.5% of the respondents positively indicated the belief that they were confident that their own independent analysis would result into favorable investment choices.

Lastly, loss aversion bias was found to have had a negative relationship to investors' choices. Respondents would prefer avoiding shares whose value is reducing but they would hastily sell shares whose value is increasing. This is affirmed by the negative regression coefficient as per the regression model obtained from the study.

CHAPTER FIVE : SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Introduction

This chapter summarizes the details of the research conducted. It also summarizes the findings of the study their conclusions as detailed in the previous chapter. It then gives limitations of the study and finally gives a recommendations and suggestions for further research

5.2 Summary of the study

The background study captured the theoretical anchorage, the conceptual and contextual discussions of the study. This was followed by the research problem and the research objective which aimed at establishing the effect of behavioral biases on individual investment choices for made by investors at the NSE by Kisumu County investors. The study thus based the research on a sample of 60 out of the 1,340 individual investors in Kisumu County based on their CDS accounts. From the 60 respondents, the study collected data by the use of structured questionnaires that were administered by the researcher via triangulation.

The study employed a descriptive research design coupled with a correlation design so as to obtain the relationships between the variables concerned using SPSS and the findings obtained were presented in the form of frequencies, percentages, tables, charts and graphs

The study findings indicated that investors were not fully rational in making their investment choices but indeed influenced by their preferences and beliefs that represent behavioral biases. Mental accounting, anchoring, representativeness and overconfidence biases positively affected investors' choices whereas loss aversion indicated a negative relationship with investment choices.

5.3 Conclusion

Individual investors do not make fully rational decisions, a characteristic described by behavioral biases. The research found out that the investors were not homogeneous with regard to processing of investment information for purposes of utility maximization.

Several behavioral biases were at play affecting the individual investors in Kisumu County. Representativeness bias was the most pronounced bias that positively affected investment choices followed by mental accounting bias. Other biases were overconfidence and anchoring that had a moderate positive influence in investors' choices. For fear of incurring losses, investors were found to be quick to sell winners but hold on to losers with the hope that their prices would rise a later time.

5.4 Recommendations

Investors should be educated to be cognizant of making suboptimal investment choices that may be informed by their behavioral biases. Such information can be passed during annual general meetings and investors should be informed or trained on how to overcome their cognitive errors.

Investors should be advised to make use of financial advisors and possibly take heed of their stock brokers' advice in making decisions to buy or sell shares. Consequently, investors should not perceive investment advisors as agents who aim at obtaining commission from executing share transactions but view them as investment partners who work for the common good of the investors.

5.5 Limitations of the Study

The study was faced with some limitations as outlined hereunder.

First, some investors felt uneasy in disclosing their investment details which they regarded as private. This resulted in 8 out of 60 respondents identified declining to complete and return the questionnaires. As a result, the study had a response rate of 87% since the declined responses were not factored in in the analysis.

The study used only 60 respondents which were viewed as representative. A bigger sample would have increased the reliability of the study. This would have required more financial resources which were limited to the researcher.

Finally, the study had restricted timing. This could not allow the researcher to possibly increase the study sample or obtain a replacement for the respondents who declined to participate in the study.

However, it worth noting that based on the concept of normal distribution of the respondents, the limitations indicated above did not affect the findings of the study.

5.6 Suggestions for Further Research

Institutions and regulators not limited by cost and time can carry out such a similar study and compare their findings with those obtained from this study.

Most previous studies in this area were confined to samples obtained from Nairobi based investors only. Similar studies could be conducted in other areas out of Nairobi to enhance adequate examination in investors' behavioral biases.

A majority of existing studies examine behavioral biases for investors engaged in securities markets. Additional studies should be conducted to study how behavioral biases affect investment choices in other sectors of the economy.

REFERENCES

- Aduda, J., Oduor, E.O., & Onwonga, M. (2012). The Behavior 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
- Agrawal, K. (2012). A Conceptual Framework of Behavioural Biases in Finance. *The IUP Journal of Behavioural Finance*, IX (1), 7-18
- Anil, S. (2013). Understanding behavioral finance through biases and traits of trader vis-à-vis investor. *Journal of Finance, Accounting and Management*, 4(2), 11-25.
- Baker M. and Wurgler J. (2013). Behavioral Corporate Finance: An Updated Survey. *Handbook of the Economics of Finance*
- Barber, B. and Terrance Odean, T. (2000). "Trading Is Hazardous to Your Wealth: The Stock Investment Performance of Individual Investors," *Journal of Finance* 55, 773–806.
- Barber, B. and Terrance Odean, T. (2001). "Boys Will Be Boys: Gender, Overconfidence, and Common Stock Investment," *Quarterly Journal of Economics* (6) 262–92
- Barberis N. and Thaler R. (2003). A Survey of Behavioral Finance, *Handbook of the Economics of Finance*
- Bodie Z., Kane A. and Marcus A. (2009). *Investments 8th ed*, McGraw-Hill/Irwin, New York.

- Brunel J. (2003). “Revisiting the Asset Allocation Challenge Through a Behavioral Finance Lens,” *The Journal of Wealth Management*, Fall 2003, p. 10.
- Chopra N., Lakonishok, J. and Ritter J. (1992). “Measuring Abnormal Performance: Do Stocks Overreact?” *Journal of Financial Economics* 31, pp. 235–68.
- CMA. (2016). *Quarterly statistical bulletin, Quarter ended June 2016*. Issue 27/2016. Nairobi.
- De Bondt W. (1998). ‘A Portrait of the Individual Investor,’ *European Economic Review*.
- Decourt R. F., Accorsi A, Neto S. M.,(2005). *Behavioral Finance and Investment making process in the Brazilian Financial Market*. Universidade Federal do Rio Grande do Sul, Brazil.
- Johnson, M., Lindblom, H., Platan, P. (2002). *Behavioral Finance: And the change of investor behavior during and after the speculation bubble at the end of the 1990s*. Master’s Thesis in Finance, Lund University.
- Kahneman D. and Tversky A. (1979) ‘Prospect Theory: An analysis of decision making under risk’ *Econometrica* 47:2, pp. 263-291.
- Keynes, J. M. (1936), reprinted in 1967. *The General Theory of Employment, Interest, and Money*. London: McMillan.
- Kimani, W. (2011). *A survey of behavioral factors influencing individual investors’ choices of securities at the Nairobi Securities Exchange*. Unpublished MBA project, University of Nairobi.

- Knez, P., Smith, V. and Williams A. W. (1985) "Individual Rationality, Market Rationality, and Value Estimation," *American Economic Review*, 75, 397-402.
- Mbithi, J. A. (2014). Determining the optimal portfolio size on the Nairobi securities exchange. Unpublished MBA project, University of Nairobi.
- Mwaka, S. W. (2013). *The effect of demographic characteristics on investor behavior at the Nairobi Securities Exchange*. Unpublished MBA project, University of Nairobi.
- Mugenda, M. O., Mugenda, G.A. (1999). *Research methods: quantitative and Qualitative approaches*. African Centre for Technology Studies.
- Nagy, R.A. and Obenberger, R.W. (1994), 'Factors influencing Individual Investor Behaviour', *Financial Analysts Journal*, 50(4): 63-68.
- Olsen, R.A. (1998). Behavioral Finance and its Implications for Stock-Price Volatility, *Financial Analyst Journal* 54, (2).
- Ojwang', P. O. (2015). *Behavioral factors and investment decisions by traders in Kibuye market, Kisumu, Kenya*. Unpublished MBA project, University of Nairobi.
- Omullo, B. N. (2013) *The effect of behavioral biases on the mutual fund choices by investors in Kenya*. Unpublished MBA project, University of Nairobi.
- Onsomu, Z. N. (2014). The impact of behavioral biases on investor decisions in Kenya: Male vs Female, *International Journal of Research in Humanities, Arts and Literature* 2(6): 87-92.

- Pudha, E. O. (2009). *A survey of the factors that motivate local individual investors to invest in shares at NSE*. Unpublished MBA project; University of Nairobi.
- Raines, J.P., Leathers, C.G. (2011). Behavioral Finance and Post Keynesian-Institutional Theories of Financial Markets, *Journal of Post Keynesian Economics*.
- Ritter J. (2003). Behavioral Finance. *Pacific-Basin Finance Journal* Vol. 11, No. 4, pp. 429-437
- Samuelson W. and Zeckhauser R. (1988). Status Quo Bias in Decision Making, *Journal of Risk and Uncertainty*, vol 1, 7 – 59.
- Sawady, E. and Tescher, T. (2008). *Financial decision making processes of low-income individuals*. Joint Center for Housing Studies; Harvard University.
- Shalini K, S., Ashok P, A. & Dhameja N. (2013). An Exploratory Inquiry into the Psychological Biases in Financial Investment Behavior, *Journal of Behavioral Finance*, 14:2, 94-103,
- Shefrin, H. (2000). *Beyond greed and fear: Understanding behaviorial finance and the psychology of investing*. Oxford University Press. New York.
- Shikuku, R. M. (2012). *The effects of behavioural factors on investment decision making by unit trust companies in Kenya*. Unpublished MBA project; University of Nairobi.
- Shiller, R.J. (1997). *Human Behavior and the Efficiency of the Financial System*. Princeton University Press.

- Shiller R. J. (2003). From efficient markets theory to behavioral finance. *The Journal of Economic Perspectives*, Vol. 17, No. 1. 83-104..
- Statman M. (2008). What Is Behavioral Finance? *Handbook of Finance, vol. II, chapter 9*, 79–84.
- Thaler, R. H. (1980). Towards a Positive Theory of Consumer Choice. *Journal of Economic Behaviour and Organization* , 1, 39-60.
- Werah, A.O. (2006). *A survey of the influence of behavioural factors on investor activities at the Nairobi Stock Exchange*. Unpublished MBA project; University of Nairobi.
- Winchester, D.D., Huston, S.J., Finke, M.S. (2011). Investor Prudence and the Role of Financial Advice. *Journal of Financial Service Professionals*.

APPENDICES

Appendix I: Letter of Introduction

I am an MBA student at the University of Nairobi. I am conducting a study on manifestations of behavioral biases on investment choices made by individual investors.

This is to kindly request you to volunteer and complete the attached study questionnaire.

Please note that the information sought is for educational purposes only and would be treated with confidence. You are not required to give any form of personal identification.

A copy of the final report can be made available to you upon request.

Your kind assistance will contribute to the success of this study. Thank you in advance.

Appendix II: Questionnaire

Part 1: Background information

1. Age

Below 30 years []

31 – 40 years []

Above 40 years []

2. Gender

Male []

Female []

3. What is your level of education

Secondary Education and below []

Tertiary college []

University graduate []

4. What is your employment status? (If both are applicable, tick both choices).

Formal employment []

Self-employment (Other business practices) []

5. For how long have you been an investor at NSE?

Less than 5 years []

Between 5 and 10 years []

Over 10 years

6. Which is the major company listed at the NSE have you bought or sold its' shares over the last 3 months?

Company	Number of shares
.....

7. What informed your decision to invest at the securities market?

Personal initiative

Desire to know the operation of the stock market

Introduction by friends or financial advisor

Briefly explain your choice

.....

Part 2 Decision to buy or sell share at NSE

Consider the following factors and indicate your degree of agreement on how they inform your decision to buy/sell shares at NSE. Please tick as appropriate using a scale of 1 to 5 where:

1= Strongly Disagree 2= Disagree 3=Neutral 4= Agree 5= Strongly Agree

		1	2	3	4	5
8.	Do you tend to treat each class of shares held separately when making the decision to buy or sell?					
9.	I am more likely to sell more shares when the market price of the shares I own is above the original purchase price than when					

	it falls below it.					
10.	I consider recent previous trend in stock prices to decide my investment options.					
11.	I consider general market opinion about perception of market performance					
12.	I seek investment advice from investment advisors about past prices to buy or sell shares at the securities exchange.					
13.	I make my own analysis without reliance of any other influence to make my personal investment decisions.					

Part 3: General investment decisions

14. What is the approximate proportion of investment in shares compared to your total investment in other sectors?

Less than 20% []

Between 20% and 40% []

Between 40% and 60% []

More than 60% []

15. When the securities market performs better, I may consider liquidating part of my investment in other sectors and invest in the stock market.

Very unlikely []

Unlikely []

Neutral []

Likely []

Very likely []

16. How many times have you transacted at the stock market over the last 3 months?

Less than 5 times []

Between 5 and 10 times []

Over 10 times []

17. What is your general perception about unpredictability of market prices at the NSE
in making investment decisions?

.....
.....
.....

Appendix III: List of stock market participants in Kisumu County

- | | |
|--------------------------------------|--|
| 1. Equity Investment Bank Limited | www.equitybankgroup.com |
| 2. KCB Capital | investmentbanking@kcb.co.ke |
| 3. Old Mutual Securities Limited | info.oms@oldmutuakenya.com |
| 4. Rapid P. Investments (K) Limited* | info.rapidpia@gmail.com |

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