

**EFFECT OF BEHAVIORAL FINANCE FACTORS ON INVESTMENT DECISIONS OF  
INDIVIDUAL INVESTORS AT THE NAIROBI SECURITIES EXCHANGE IN  
NAIROBI COUNTY.**

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## DECLARATION

I declare that this dissertation is my original work and has not been previously published or submitted elsewhere for award of a degree. I also declare that this contains no material written or published by other people except where due reference is made and author duly acknowledged.

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This research dissertation has been presented for defense with my approval as KCA University supervisor.

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**Dr. Christine Nanjala**

## ABSTRACT

Recent studies on individual investors' behaviour have shown that people tend to react to and interpret the same information differently, creating psychological biases which are categorized as Behavioural Finance. These behavioural biases were categorized into four broad behavioural factors: Heuristics, prospect, herd and Market factors. The objective of the study was to determine the effect of heuristic, prospect, herd and market factors on the investment decisions of individual investors at the Nairobi Securities Exchange in Nairobi County. The study incorporated cross sectional non-experimental descriptive research design. The target population was the individual investors at the Nairobi Securities Exchange, sampled from 385 individual investors in Nairobi County. Close-ended questionnaires were used to collect data whereas snowballing sampling technique was used to sample respondents from our field survey. The data was coded and analyzed using STATA, and analyzed using multiple linear regression method. The findings of the study reveal that heuristic factors, prospect factors, herd factors and market factors had a joint effect of 16.01% on the investment decision of individual investors at the NSE controlled by the year of schooling, income, gender, type of investor, type of security and age variables, while the remaining percentage was influenced by other factors excluded from the model. Heuristic, herd and market factors had a positive significant effect on investment decisions whereas prospect factor had a negative significant effect on investment decision. A multinomial logistic regression was also fitted to measure the same variables but the findings reveal that the overall p-value  $>0.05$ , making it insignificant. From the multiple linear regression models, the findings reveal that individual investors have little information or the technical knowhow of how to trade at the NSE. Individual investors should spend more time in school since this is evident from the study. The Nairobi Securities Exchange should step up its efforts to increase Investor education awareness since it key to overcoming unfavorable investment outcomes caused by behavioral biases.

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## **ACRONYMS AND ABBREVIATIONS**

EMH - Efficient Market Hypothesis

NSE - Nairobi Securities Exchange

VIFs - Variance Inflation Factors

## **DEFINITION OF TERMS**

Behavioral finance factors— these are psychological factors that influence financial decision making process.

Heuristics - The rules of thumb, which makes decision making easier, especially in complex and uncertain environments.

Prospect – This is the certainty effect factor which focuses on subjective decision-making influenced by the investors' value system. It describes some states of mind affecting an individual's decision-making processes.

Herding- The tendency of investors' behaviour to follow the other investor's actions.

Investment behaviour - How the investor judge, predict, analyze and review the decision making procedures.

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the Study

The field of finance has been evolving around the concept of “efficient markets” for a very long time now, defining the unbiased and rational nature of investors when predicting about the future (Nofsinger, 2002). This concept of Efficient Market Hypothesis (EMH) states that at any given moment in time, the price of any and all assets and securities being traded is correct and reflects all available information. Investors, according to this random walk theory, are thought of as a rational lot that make cautious, economically-weighted decisions every single time. However, behavioral economists oppose this concept of perfect rationality, arguing out that the irrationality of an investor can occur as a result of wrong judgements, different interpretations of scenarios and distortion in perception, which affect their day to day investment decisions depending on emotions, reason, habit and social interaction (Jhandir and Elahi, 2014).

Investors react to and interpret the same information differently, leading to different perceptions of the market signals being relayed, resulting to differentiated behaviours. This investor’s response to natural psychological factors brought in a new concept in finance called Behavioural Finance, which according to Thaler (2005), tries to supplement the traditional finance theories by merging it with cognitive psychology in an attempt to incorporate human behaviour and establish emotional reasoning in the process of decision making (Ricciardi and Simon, 2000). It also tries to explain the stock market anomalies and the issues relating to what, why, and how to construct financial and investment processes from a human perspective (Statman et al., 2008).

One concept that the behavioural finance has been particularly successful and has outwitted the Efficient Market Hypothesis (EMH) is the tech bubble in stock markets, which Shiller (1998) used the foundations of behavioral finance to predict a large collapse in stock prices. The use of Dividend/Price and Price/Earnings ratios critiqued the argument of the Efficient Market Hypothesis, that valuation ratios cannot predict future changes in prices. This anomaly prompted Vasiliou et al (2008) to research on how behavioural finance can be applied in predicting future prices, by analyzing the returns on the Athens Stock Exchange in Greece from 1995-2005 of large cap stocks. Upon experimenting whether a combination of technical analysis and behavioural finance would create profitable trading strategies, they came to a conclusion that technical analysis can assist an investor to make profits because the stock market trends will behave in the future as it has in the past. This kind of strategy blends quite nicely to behavioural finance theory around feedback theory and momentum observations.

Nyamute et al (2015) posits that Behavioral Finance recognises that emotions, herd instincts and social influences play a critical role in influencing investment decisions, leading to discrepancies between market and fundamental value. Singh (2010) explains how this concept is built upon the limits to arbitrage and cognitive psychology. Arbitrage is limited by the fact that whenever there is a price deviation from the fundamental value caused by the irrational traders, the rational traders will correct the price to be consistent with the efficient market. Cognitive psychology on the other hand subject human decision processes to several cognitive illusions, which can be grouped into two classifications: illusions attributable to heuristic decision processes and illusions caused by the adoption of mental frames, which are conveniently grouped in the prospect theory. These two categories form the basis of the behavioral theories (Waweru, 2008).

### **1.1.1 Behavioral Finance Factors**

The emergence of Behavioural Finance identifies various concepts that make human beings behave irrationally, under uncertain circumstances, leading to sub optimal decisions. According to Kisaka (2015), behavioral finance helps us understand why investors buy, hold or sell their securities without carrying out fundamental analysis since asset values may shift from their fundamental value, which makes the theory of market efficiency to suffer. Every investor has his own investment objectives and risk-tolerance levels which he uses to design his investment portfolios. These forecasted decision making processes and the knowledge emerging from market participants are becoming more unrealistic in the global financial markets of today (Athur, 2014).

When individual investors make certain investment decisions, most of them fail to comply with the standard procedure for designing an optimum investment strategy, which results in behavioural biases. Pompian (2012) describes these behavioral biases as decision making tendencies that result in irrational financial decisions, and is caused by faulty cognitive reasoning influenced by emotions. Foreign scientists Berber & Odean (1999); Huberman (2001); Pompian (2008) and Shefrin (2011) have also found out that human psychological bias affect their investment decisions making. The irrational decisions that exist in such situations will determine inefficient investments or uprising losses, which per se reduces the ranks of people willing to invest. Elan (2010) argues out that individual investors tend to fall into predictable patterns of destructive behavior and make the same mistakes repeatedly, which end up damaging the portfolios of many investors by under diversifying; following the herd; trading frequently; favouring the familiar; selling winning positions and holding onto losing one (disposition effect); and overconfidence (self-attribution bias).

A number of recent studies have been carried out on the various behavioural finance factors which have influenced investment decisions. Kimeu et al (2016) ultimately categorized the behavioral biases in four broad factors; heuristic factors (anchoring, overconfidence and available bias), prospect factors (loss aversion, regret aversion and mental accounting), herd factors (Volume of stock traded, choice of stock and speed of herding) and market factors (price changes, market information and customer preferences). Ritter (2003) also reiterated that these behavioural factors, which include: heuristic, prospective, herding and rationality factors ease decision making, especially in complex, uncertain environments and in particular, when time is limited.

In regards to heuristics, investors are not good intuitive statisticians especially under difficult conditions, because they don't calculate odds properly when coming up with decisions, resulting in consistent errors. Individuals therefore adopt rules of thumbs or shortcuts known as heuristic factors, which are simplified strategies for managing large amounts of information. Sinyard (2013) posits that in order to process the significant amount of information available, individuals utilize cognitive heuristics to aid in simplifying the problem, which leads to biases in decision making. The behavioral biases classified in heuristic factor include: anchoring, overconfidence and availability biases.

Prospect factor can be elaborated as a distinct irregularity in the behaviour of human beings when they tend to place more weight on certain outcomes rather than on probable circumstances. This brings about the certainty effect, which was introduced by (Kahneman and Tversky, 1979) to bring out the aspect of investors making decisions based on the expected value of gains and losses rather than the final result. The behavioral biases classified under prospect factor include: Loss aversion, regret aversion and mental accounting biases.

Regarding herding, Baddeley (2009) opines that it is a phenomenon of individuals deciding to follow others and imitating group behaviours rather than deciding independently basing on their own private information. Human beings are deeply social dependent on each other when they make decisions, especially when they are engulfed with the feeling of uncertainty or threat. This will cause them in most cases to imitate the actions of others. When things go haywire and money is lost by the investors, they tend to develop a sense of comfort knowing that others are in the same predicament (Hirschey & Nofsinger, 2008). This portrays that individual investors are more inclined to adopting herding behavior than are institutional investors (Lee et al, 2004). The behavioral biases classified as herd factors include: volume of securities traded, choice of security and speed of herding.

Rational decision making is also a behavioral finance factor affecting decision making, where individuals respond to market opportunities and threats, analysing critically various market situations present and sticking to a certain course of action (Aktinoye, 2006). It is based on the logical consistency across decisions instead of presentation of choices. Anderson & Eriksson (2013) brings out rationality in economics that an individual investor chooses his most advantageous option, given his preferences in their perceived opportunity set such that all perceived costs-benefit analysis is taken into account in particular information, decision making and transaction costs. Rational choice model under uncertainty or certainty claims that preference influences the individual's decision of alternatives (Jhandir and Elahi, 2014).the behavioral biases classified as market factors include: Price changes, market information and customer preferences.

### **1.1.2 Investment Decision Making**

Alfredo and Vicente (2010) defines investment behaviour as “how the investors judge, predict, analyze and review the procedures for decision making, which includes investment psychology, information gathering, defining and understanding, research and analysis”. Behavioral finance focuses on this investor’s market behaviour and how they interpret the decisions to buy, sell or hold securities. This market behaviour of investors depends on a number of factors like investment horizons, trends and behaviours of other market participants, presence of market volatility and the performance of benchmarks (Chang et al, 2009). Basically, the majority of investors desire to become rich overnight by investing in high return investment securities. With the different alternatives that they have, they can buy on the basis of fundamental information of their company or from investment advisors. Investors normally invest on the basis of their available capital, time dimensions, and their financial goals set (Muhammad & Abdullah, 2009).

When profiling investment clients, Pompian and Longo (2004) asserted that it should take into consideration the different types of individual investors since they behave differently from one another. Suggestions were made that every investment policy statement be based on the investor profile so that the individual behavioral biases will be managed effectively. Pompian (2008) later divided individual investor into two main types’ passive and active investors. Passive investors can be described the investors who inherited property whereas active investors collect wealth by taking risks using their own capital.

The current study is focused on individual investors (both active and passive investors) since the individual investors tend to react to and interpret similar information differently which causes behavioral biases, as opposed to the institutional investors who depend on fundamental analysis and are less subjected to behavioural biases (Chou & Wang, 2011).



### **1.1.3 Nairobi Securities Exchange**

The Nairobi Securities Exchange (NSE) is a leading African Exchange, based in Kenya. It was founded in 1954 and prides itself with a six decade heritage in listing equity and debt securities. It is one of the fastest growing market economies in Sub-Saharan Africa and it offers a world class trading facility for local and international investors looking to gain exposure to Kenya and Africa's economic growth. It operates under the jurisdiction of the Capital Markets Authority of Kenya. It is an affiliate of the World Federation of Exchange, a founder member of the African Securities Exchanges Association (ASEA) and the East African Securities Exchanges Association ([www.nse.co.ke](http://www.nse.co.ke)).

### **1.2 Statement of the Problem**

Financial investment decisions are an integral part of any household's financial management practice. Individuals in many countries have a personal responsibility to take care of their financial affairs as the cost implication of not making good financial decision significantly affects individuals and society as a whole (Dolan et al, 2012). This brings out a concern among policy makers, questioning what can be done extra to improve the population-wide financial capability. Recently, the investment environment has become so dynamic and competitive, following increased globalization and advances in information technology. To stay competitive in today's financial market, and to take advantage of the risen investment opportunities, a continuous stream of skills and knowledge is needed if the investors are to maximize their investment returns.

Jagongo and Mutswenje (2014) posits that individual investors do rely more on newspapers, media and market noises when making their investment decisions, unlike the professional investors who follows the fundamental and technical analysis to the letter. This

generally exposes all stock market participants to a seemingly constant flow of information, ranging from quantitative financial data to financial news in the media (Dimitrios, 2007). However, processing all this information is a daunting task particularly to those less savvy stock market investors, more so the individual investors, resulting to them making investment decision based on less sophisticated information. Lin (2012) concludes that investors commit behavioural biases due to lack of technical expertise and confidence on their abilities in better decision making about investments. This ideology weighs in on the behavioural finance proponents that indeed these factors have an influence on stock market investment decisions (Dimitrios, 2007).

The number of psychological biases that affect investor behaviour and subsequently decision making has been brought about in several studies across the globe (Chandra, 2009). Luong' & Ha (2011) in their study assessed the behavioral factors affecting the investment decisions of investors at the Ho Chi Minh stock exchange in China, and incorporated factor analysis and structural equation model. Vishnoi (2015) also studied about the impact of behavioural biases on investment decision, with reference to Gwalior City, where factor analysis method was used in data analysis. Kimeu et al (2016) summarized all the behavioral biases in finance into four broad factors which are heuristic, prospect, herd and rationality, and studied how these behavioral factors influenced investment decisions among individual investors in the Nairobi Securities Exchange using correlation and regression analysis. Jhandir and Elahi (2014) also researched about behavioral biases in investment decision making and introduced a moderating variable of investor type in the Karachi Stock Exchange and employed multiple regression and two-stage least square method to examine the moderating effect of investor's type on the relationship between behavioral biases and financial decision making. In addition to the

type of investor criteria, Kudryavtsev, Cohen & Hon-Snir (2013) reported that active investors show more behavioral biases than passive investors.

The current study endeavours to establish the effect of behavioral finance factors on investment decisions of individual investors (active and passive) at the Nairobi Securities Exchange by using multiple linear regression and also to some extent, to determine how the four behavioral factors have an effect towards the buy, sell and hold options of investment decisions using multinomial logit models which have not been explored before in this study in Kenya.

### **1.3 Research Objectives**

#### **1.3.1 General Objective**

The general objective of the study is to establish the effects of behavioural finance factors on investment decisions of individual investors at the Nairobi Securities Exchange in Nairobi County.

#### **1.3.2 Specific objectives**

- (i) To determine the effect of heuristic factor on investment decisions among individual investors at the Nairobi Securities Exchange in Nairobi County.
- (ii) To establish the effect of prospect factor on investment decisions among individual investors at the Nairobi Securities Exchange in Nairobi County.
- (iii) To find out the effect of herd factor on investment decisions among individual investors at the Nairobi Securities Exchange in Nairobi County.
- (iv) To establish the effect of market factor on investment decisions among individual investors at the Nairobi Securities Exchange in Nairobi County.

#### **1.4 Research Questions**

- (i) What is the effect of heuristic factor on investment decisions among individual investors at the Nairobi Securities Exchange in Nairobi County?
- (ii) What is the effect of prospect factor on investment decisions among individual investors at the Nairobi Securities Exchange in Nairobi County?
- (iii) What is the effect of herd factor on investment decisions among individual investors at the Nairobi Securities Exchange in Nairobi County?
- (iv) What is the effect of market factor on investment decisions among individual investors at the Nairobi Securities Exchange in Nairobi County?

#### **1.5 Significance of the study**

The findings of this research will aid financial advisors to identify the different types of behavioral biases and their possible effects on investment decision making among individual investors. The financial advisors will also be able to know which biases affect the investor type, that is, the active and the passive investors in the Nairobi Securities Exchange. The study findings will also be of great benefit to the individual investor since he will be able to understand the different psychological biases that are there, and which of them is affiliated with them, and the ripple effect of how it influences their decision making about stock investments.

This study will also help regulatory authorities in strengthening their financial policies to avoid these biases and making policies to avoid these biases. The quality of an investment decision has a huge effect on investment success. Poor investment decision making will have severe social consequences. Investor psychology can aid in reducing individual investor's mistakes and can improve possible investment outcomes. Behavioral finance takes help from

psychology and these psychological aspects of finance aid individual investors to understand financial markets more clearly and are able to relate to it.

The study will also contribute to the general body of knowledge by enriching the existing literature in the field of finance. Researchers and future scholars will use the research as a future reference material when advancing their knowledge in behavioural finance. The researcher has highlighted areas that require further investigation at the end of the study. This will form the foundation for future scholars and researchers to formulate their research problems.

### **1.6 Scope of the Study**

The study will focus on the effect of behavioral finance factors on the investment decisions of individual investors at the Nairobi Securities Exchange (NSE) in Nairobi County. The target population will be the individual investors who trade at the NSE and are located in various institutions and workplaces/companies within Nairobi.

### **1.7 Limitation of the study**

Some of the individual investors within institutions and workplaces will be difficult to deal with, and they may not fully co-operate in offering the required responses regarding the variables under study. To counter this, the researcher intends to start collecting data in good time and inform respondents about the merits of this research, which will instil confidence and interest among the various respondents.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

The purpose of this chapter is to review the work that other scholars and researchers have done on behavioural finance. Theoretical and empirical reviews will be done, culminating into the conceptual framework which will guide the study. The chapter begins with a review of theories that underpin the concept of behavioural finance. An empirical review of the different behavioral factors and how they affect the investment decisions of individual investors will then be tackled. Finally the research gap will be identified and a conceptual framework that this study adopted will be discussed.

#### **2.2 Theoretical Review**

Behavioral finance is the newest chapter in the history of portfolio theory. Finance scholars have for a long time now, considered that market behavior is influenced greatly by psychology. This paradigm has improved understanding and knowledge regarding behavior of investors, trickling down to decision making in stock market (Kim & Nofsinger, 2008). According to Waweru (2008), behavioral theories are categorized into: illusions due to heuristic decision processes and illusions caused by the adoption of mental frames, which constitute the prospect theory.

##### **2.2.1 Heuristic Theory**

Behavioral economists recognize that, in order to navigate through an increasingly complex world, we utilize heuristics in our decision process. Gigerenzer and Wolfgang (2011) defines heuristics as a strategy that ignores part of the information, with the goal of making decisions more quickly, frugally and accurately than more complex methods. These simple, efficient rules

of thumb thrive most in situations where uncertainty increases, the time to make a decision becomes constrained, and when information quality declines than that of a more complex data-driven approach. They do not attempt to find the optimal solution but one that best suits the context of the individual investor, given the trade-off between time available to make a decision, uncertainty, and the cost of getting better information (Howard et al, 2012). This trade off was formalized by Simon (1957) with the term “bounded rationality,” which stipulates that the constrained ability to make an optimal decision depends on the quantity and quality of information available and the time set aside to make the decision.

Heuristics have evolved over thousands of years and can be thought of as mental shortcuts, derived from our past experience, that get us where we need to go quickly, but at the cost of sending us in the wrong direction (Ricciardi and Simon, 2001) or introducing biases that result in over or underestimating the actual outcome. When the wrong rule-of-thumb is used to solve a problem, mental mistakes usually occur as a result of the bias. Today's stock prices are based on the market's expectations about the future. If the market has biased expectations, then stocks may ultimately be mispriced (Fuller, 2000).

The heuristic theory is appropriate for this study as it explains in details how heuristic factors such as anchoring bias, overconfidence bias and availability bias affect the investment decisions in Nairobi securities exchange (Kimeu et al, 2016).

#### **2.2.1.1 Anchoring Bias**

When investors need to make a decision, they often fail to do enough research because there is just too much data to collect and analyze. Instead they proceed based on a single figure or fact while ignoring the important information (Chandran, 2008). This irrational behavior is called anchoring. This concept of anchoring can be explained by the tendency to attach or "anchor"

ones thoughts to a reference point, which is a piece of information even though it may have no logical relevance to the decision at hand. When presented with new information, the investors tend to be slow to change or the value scale is fixed or anchored by recent observations (Del Missier, 2007). These expectations by the individual investor that the earning trend is to remain historical, may lead to possible under reactions to trend changes. Mental anchoring can have an effect on how people evaluate certain decisions. For example, some investors tend to believe that stocks which have fallen considerably over a short period now can be bought at a discount. This wrong assumption is due to the fact that the individual investor has mentally anchored a high price for that specific stock, setting the type of base price as a reference point. Disregarding the reason for that stock's evident drop, the mentally anchored price is considered its “rightful” price. The stock is therefore believed to bounce back over a certain time (Del Missier, 2007).

Anchoring can also be interrelated with representativeness as it also reflects that people often focus on recent experience and when market rises, they become more optimistic and their pessimistic nature prevails when the market falls (Waweru et al, 2008).

#### **2.2.1.2 Overconfidence Bias**

Overconfidence is the behavioral phenomenon where investors tend to overestimate their own capabilities and they perceive themselves as skilful. Ritter (2003) opines that overconfidence manifests itself when there is little diversification because of the tendency to invest too much in what one is familiar with. Selecting common stocks when there's a noisy feedback and predictability is low outperforms the market. Odean (1998) developed models in which overconfident investors overestimate the precision of their knowledge about the value of a financial security and he observed that they overestimated the probability that their personal assessments of the security's value were more accurate than the assessments of others. In the



model of Daniel, Hirshleifer and Subrahmanyam (2001), individual investors who are overconfident overrate signal precision and overreact to private signals about payoffs of economic factors causing mispricing, which occurs from investors' misinterpretation of information about factor cash flow and reflects overreaction to cash flow news about fundamental factors.

According to Shefrin (2000), there are two main implications of investor overconfidence. First and foremost, investors take bad bets because they fail to realize that they are at an informational disadvantage. Secondly, they trade more frequently than is recommended, leading to excessive trading volume. Overconfidence increases expected trading volume, triggering an increase in the market depth and a decrease in the expected utility of overconfident traders. Markets can under-react to the information relayed by the rational traders because of these overconfident traders. If their confidence is corrected over time, then overreactions to private signals become relevant, correcting the situation in the long-run.

### **2.2.1.3 Availability Bias**

According to Pompian (2012), this is a bias in which people take a heuristic (also known as a rule of thumb or a mental shortcut) approach to estimating the probability of an outcome based on how easily the outcomes come to mind. Easily recalled outcomes are often perceived as being more likely than those that are harder to recall or understand. Thus recent events are much more easily remembered and available. Qawi (2010) explains that the more current and significant an event is, the higher the likelihood of it influencing decision making. Therefore, an individual investor may choose an investment based on advertising rather than on a thorough analysis of the options.

In the bullish stock markets, there is only positive news; and in bear markets it is only negative news. The “recency” aspect of availability heuristic is closely connected to another well-known psychological effect – the effect of priming, which is an unconscious remembering process, which occurs when a certain stimulus influences the response of another stimulus, affecting information processing hence influencing decision making.

### **2.2.2 Prospect Theory**

The seminal work by Kahneman and Tversky (1979) advocated a new theory under conditions of risk-taking behaviour and uncertainty known as prospect theory, which focused on subjective decision-making influencing investors’ value system (Filbeck and Horvath, 2005). This is because people tend to under-weigh probable outcomes compared with certain ones, subjecting people to respond differently to the similar situations presented on the context of losses or gains (Kahneman and Perttunen, 2004). In essence, the theory elaborates why human beings are inconsistently risk-averse, tending to become risk-averse in gains and risk-takers in losses. This also explains why individual investors will assign more significance to avoiding a loss than achieving a gain.

Olsen (1997) argued out that prospect theory “gives weight to the cognitive limitations of human decision makers,” meaning that an individual investor departs from the notion of rationality as elaborated by the classical decision theory (the standard finance perspective), and makes decisions on the basis of bounded rationality advocated by behavioural decision theory (the behavioural finance viewpoint). Ritter (2003) also argued out that prospect theory is a descriptive theory under uncertainty that focuses on changes in wealth. According to Kahneman & Tversky (1979), an important implication of prospect theory is that the way economic agents subjectively frame an outcome or transaction in their mind, affects their level of satisfaction

derived from the returns. Prospect theory separates the decision choice process into two stages; in the first stage the menu of available choices is framed and edited in accordance with the decision maker's prior perceptions; in the second stage these prospects are evaluated in relation to the decision maker's subjective assessment of their likelihood of occurrence. People are risk lovers for losses, explained by the utility function, which is concave for gains meaning that people feel good when they gain, but twice the gain does not make them feel twice as good. The utility function is convex for loss meaning that people experience pain when they lose, but twice the loss does not mean twice the pain. An investor is likely to choose a sure gain whenever he is subjected to choose between a sure gain and a gamble which would increase or decrease the sure gain. The investor will otherwise choose a gamble given a choice between sure loss and a gamble (Jordan & Miller, 2008). Prospect theory appraises three emotional biases that impact on investors' decision making processes including loss aversion, regret aversion and mental accounting (Kengatharan, 2014).

#### **2.2.2.1 Loss Aversion Bias**

Loss aversion is a feature of Kahneman and Tversky (1979) descriptive model of decision making under uncertainty, which uses experimental evidence to argue that people get utility from gains and losses in wealth, rather than from absolute levels (Barberis & Huang, 2001). People are get distressed at the prospect of losses than they are pleased by equivalent gains (Barberis and Thaler, 2003). Moreover, a loss that an individual investor experiences after prior gain is proved less painful than usual whereas a loss arriving after a loss seems to be more painful to him than usual (Barberis & Huang, 2001). An individual investor can accept a bargain with an uncertain payoff as opposed to another bargain with more certain, but with a possibly lower, expected payoff. A risk-averse investor might have an option of putting his or her money into a bank

account and subjecting it to a low but guaranteed interest rate, rather than put money into a stock that may have high returns, but also involves a probability of losing the value (Barberis and Huang, 2001).

Loss aversion causes investors to do away with investment strategies that have a projected long-term success because their short term projects are never profitable. They fail to adjust the estimated value of their investments as a result of new information, causing them to sell winners too early or losers too late, and at the end result, forces them to change the risk-reward profile of their portfolios for the worse (Thaler, 1995). Even though risk aversion is known to be one of the common investor behaviours, it may result in bad decision affecting investor's wealth at the end of it all (Ritter, 2003).

#### **2.2.2.2 Regret Aversion Bias**

Regret is the emotion, the feeling experienced by people for not taking the right decision. It is an emotion that occurs after people make mistakes According to Shefrin (2002), it is more than the pain of a loss; the pain is associated with feeling, responsible for the loss. Regret can easily affect the decisions that people make. Someone who feels intense regret, does not have a strong preference for variety, always thinks ahead, and may follow the same route to work every day in order to minimize a possible future regret.

Regret theory can apparently help explain the fact that investors often give in to the urge to sell stocks that have lost value and accelerate the sale of shares that have gained value. The regret bias can be interpreted as the reason why investors avoid selling stocks that have dropped in price, in order to not finalize the mistake they committed and to not feel the pain of regret. They sell the stocks that have risen so they do not feel regret for failing to do so, before the stocks drop afterwards. Investors usually avoid regret by refusing to sell decreasing shares and

willing to sell increasing ones. However, investors tend to be more regretful about holding losing stocks too long than selling winning ones too soon (Forgel and Berry, 2006). Regret has been found by psychologist to be one of the strongest motivations to make a change in something. To avoid the pain of regret, one may alter one's behaviour in ways that are sometimes irrational.

### **2.2.2.3 Mental Accounting**

Mental accounting refers to the process by which people think about and evaluate their financial transactions (Barberis & Huang, 2001). It starts with mental coding of the prospects (gains and losses), passes through framing the prospects, then "mental accounting", and finally, ends with the decision choice (Thaler, 1985; 1999). It includes mental budgeting over different categories of accounts of the incomes, the expenditures, and the wealth. According to Ritter (2003), people sometimes separate decisions which in principle should be combined. For example, many people have a household budget for food and another one for entertainment. At home, for example, with the household budget, one does not eat lobster because it would be more expensive than fish. However, in a restaurant, one orders a lobster even if it turns out to be more expensive than a simple fish dish. If one does not assess the problem separately, one could realize that it would be cheaper to eat the lobster at home than in a restaurant.

Numerous experimental studies have the opinion that people engage in narrow framing whenever they perform their mental accounting, which explains why investors often appear to pay attention to narrowly defined gains and losses (Barberis & Huang, 2001). If one of the securities of the individual investor performs poorly, he may experience a sense of regret over the specific decision to buy that stock since he takes into consideration the individual stock gains and losses into account when making decisions (Barberis & Huang, 2001).

### **2.2.3 Herd Factor**

Herd behaviour is a form of heuristics where individuals are led to conform to the majority of individuals present in the decision-making environment, by following their decisions. It is referred to as the “follow the leader” mentality. According to Gounaris & Prout (2009), humans are deeply social beings, dependent on each other for survival. When they make decisions especially when they feel unsure or threatened, they watch what others do and then copy them. Shiller (2000) asserts that in everyday life we have learned that when a large group of people is unanimous in its judgments they are certainly right.

Another fundamental observation about the human society is that people who communicate regularly with one another think similarly (Johnson et al, 2002). Across situations and cultures, psychologists have found that humans employ such social comparisons to inform their beliefs and decisions even when it contradicts facts or their better judgment (Gounaris & Prout, 2009). Practitioners in the financial market usually consider carefully the herd existence since investors heavily rely on collective information more than private information, thereby prising the security price further away from the fundamental value.

According to Luong & Thu Ha (2011), the herding individual in the security market will base his investment decision on the crowd actions of buying and selling, creating speculative bubbles phenomenon, hence making the stock market to be inefficient. However following the herd is almost always wrong since the investors usually act in a similar way to the pre-historic men who had a little information of the surrounding environment, contributing to excess volatility in the market (Caparelli et al, 2004). When the investors put a large amount of capital into their investment, they tend to follow the others’ actions to reduce the risks, at least in the way they feel.

In the perspective of behaviour, investors may prefer following the herd if they believe they can get reliable and useful information. Allsopp & Hey (2000) opined that herding bias can also exist due to fact that some investors follow others and ignore their own information for decision making. Chen (2013) also claimed that the investors herd more as a response to bad news as compared to good news. This can drive stock trading and create the momentum for stock trading. However, the impact of herding can ceases to be felt when it reaches a certain level because the cost to follow the herd may increase to get the increasing abnormal returns (Waweru et al, 2008).

#### **2.2.4 Market Factor**

Market factors are the external factors which influence the behaviour of sentimental and rational investors in different ways. The study on behavioural factors may not be adequate, if the market factors are not included in the study. Rational decision-making of investors is based on the logical consistency across decisions instead of presentation of choices (Jhandir and Elahi, 2014). Theories of decision making have introduced logical process in guiding behaviour of choices by people although emotion and intuition still plays a major role in human decision-making.

DeBondt & Thaler (1995) explains this further that financial markets can be affected by investors' behaviours in the way of behavioural finance. The market factors identified to have an impact on investors' decision making include: Price changes, market information and customer preference. Normally, changes in market information, fundamentals of the underlying stock and stock price can cause over/under-reaction to the price change. These changes are empirically proved to have the high influence on decision-making behaviour of investors as over-reaction (DeBondt & Thaler, 1985) or under-reaction (Lai, 2001) to news may result in different strategies adopted by investors. Waweru et al (2008) concluded that market information has very

great impact on investor decision, making the investor to shift his focus to attention-grabbing events or popular stocks tied to the stock market information, and making sure that technical analysis is done before making an investment decision.

Behavioural investors prefer selling their past winners to postpone the regret related to a loss that they can meet for their stock trading decisions (Waweru et al., 2008). This indicates that price change of stocks has impact on their investment behaviour at some level and also that investors may revise incorrectly estimates of stock returns to deal with the price changes so that this affects their investment decision-making. Odean (1999) states that: investors prefer buying to selling stocks that experience higher price changes during the past two years. Change in stock price in this context can be considered as an attention-grabbing occurrence in the market by investors.

## **2.3 Empirical Review**

This empirical review highlights the various behavioural factors and their effects on individual investor decisions based on previous research and literature.

### **2.3.1 Heuristic Factor and Investment Decision**

Agrawal (2012) maintains that many a times, individuals behave irrationally and their decisions are biased. They tend to use shortcuts in arriving at decisions due to time and capacity constraints in processing of information. When faced with complicated judgments or decisions, they simplify the task by relying on heuristics or general rules of thumb. Qawi (2010) notes that investment related decisions are often complex and the information associated with the various stocks, funds or other vehicles could be overwhelming for the average investor.



Kengatharan and Kengatharan (2014) examined the influence of behavioural factors on investment decision and performance in Colombo securities exchange. The study hypothesized that heuristic factors, prospect factors, market factors and herding factors has significant influence on investment decisions in Colombo, Sri Lanka. Cross sectional data was collected through the use of questionnaires and the study adopted descriptive survey and co-relational design. Data was analyzed through use of descriptive statistics, exploratory factor analysis and regression analysis. Results of the study showed that heuristic factors have a significant influence in investment decision. Regression analysis showed an inverse significant relationship between overconfidence and investment decision while anchoring had a positive significant relationship.

Ojwang (2015) analyzed behavioural factors and investment decisions by traders in Kibuye market, Kisumu town, where he employed a descriptive survey design approach in his study. Stratified random sampling technique and Purposive sampling were used to come up with the sample size and to identify the different respondents respectively. Data was collected using questionnaires and was analyzed using descriptive statistics and factor analysis, and the results show that investment decisions of traders in Kibuye market is significantly influenced by: overconfidence and market information (at mean of 4.01 each), availability/ anchoring bias (mean of 3.72), loss-aversion and mental accounting (mean of 3.60), representativeness bias (3.37), risk-aversion (3.06) and herd behaviour (3.00) in that order.

Ranjbar et al (2014) analyzed the effect of behavioural factors on investor's performance in Tehran Stock Exchange, where a sample of 148 investors was selected as sample and questionnaires were employed. Structural equation modelling was used to analyze the research data. The results of this study show that availability and anchoring are the main effective heuristic methods on the investor's performance. Hayat (2016) analyzes the impact of

behavioural biases on investment decision, with a moderating role of financial literacy in Pakistan, where a sample size of 220 was used, and 158 questionnaires were collected from for the study. Non-probabilistic sampling technique was used. The results of the study shows that over confidence has a negative impact on investment decisions in Karachi and Islamabad Stock Exchange because when investor shows overconfidence about picking the stock, mostly he does wrong decision. Financial Literacy has also statistically insignificant relation with investment decision since most investors in Pakistan are financially illiterate. It also has positive moderating role of overconfidence bias in investment decision. Results conclude that active investors show more overconfidence bias while passive investors show more herding bias.

### **2.3.2 Prospect Factor and Investment Decision.**

Prospect factor can be explained as the apparent irregularity in human behaviour when assessing risk under uncertainty. The human beings are not consistently risk-averse; rather they are risk-averse in gains but risk-takers in losses. Ranjbar et al (2014) analyzed the effect of behavioural factors on investor's performance in Tehran Stock Exchange, where a sample of 148 investors was selected as sample and questionnaires were employed. Structural equation modelling was used to analyze the research data. The results of this study show that loss version and mental accounting are the main effective biases of prospect factors that influence the investors' performance negatively.

Mohammad et al (2014) conducted a study to analyze the effective behavioural factors on the investors' performance in Tehran Stock Exchange, which concluded that there are three effective factors on the investors' investment decision and performance: herding behaviours, heuristic methods, and prospect variables. The results revealed that heuristic methods and herding behaviour influences the investors' performance positively whereas prospect variable

influences investors' investment performance negatively. Luu (2014) studied the behaviour pattern of individual investors in stock market at the securities' companies in Ho Chi Minh City, Vietnam. The author reported that there are five behavioural factors of individual investors at the Ho Chi Minh Stock Exchange: Herding, Market, Prospect, Overconfidence, gambler's fallacy, and Anchoring-availability bias. The author further documented that among heuristic variables, overconfidence and anchoring have moderate impact on individual investment decision, whereas mental accounting ranks as the variable having the highest impact on the decision making of the investors, followed by loss aversion and regret aversion with respective impact of moderate levels at the Ho Chi Minh Stock Exchange.

### **2.3.3 Herd Factor and Investment Decision**

Herding behaviour is a form of heuristics where individuals conform to majority of individuals present in the decision making environment, by replicating their decisions. Individuals are more than often pressurized by their environment and are obligated to conform to it (Kimeu et al, 2016). Hayat (2016) analyzes the impact of behavioural biases on investment decision, with a moderating role of financial literacy in Pakistan, where a sample size of 220 was used, and 158 questionnaires were collected from for the study. Non-probabilistic sampling technique was used. The results of the study shows that herding bias exist in Karachi and Islamabad Stock Exchange. Financial literacy also has a negative moderating role in herding bias. Ranjbar et al (2014) analyzed the effect of behavioural factors on investor's performance in Tehran Stock Exchange, where a sample of 148 investors was selected as sample and questionnaires were employed. Structural equation modelling was used to analyze the research data. The results revealed that herding behaviour is a very effective factor on the investors' performance.

Economou, Kostakis and Philippas (2010) examined herd behaviour in extreme market conditions using daily data from the Greek, Italian, Portuguese and Spanish stock markets for the years 1998- 2008 i.e. the existence of asymmetric herding behaviour associated with market returns, trading volume, and return volatility. Along with this, they also investigated the presence of herd behaviour during the global financial crisis of 2008. The results of the study showed that Herding is found to be stronger during periods of rising markets in these stock markets. Herding is present in the Portuguese stock market during periods of down returns and there is no evidence of Herding in the Spanish stock market (Subash, 2012). Aduda et al (2012) did a study on the behaviour and financial performance of individual investors in the trading shares of listed companies in the Nairobi Stock Exchange, and concluded that influence from friends; where most investors relied on advice from friends and colleagues and market information, were clear indication of herding behaviour existing in NSE. There were varied behaviours and financial performance of individual investors in Kenya with some investors exhibiting rational behaviour while making investment decisions.

#### **2.3.4 Market Factor and Investment Decision**

Aktinoye (2006) describes rational decision making as a process by which individuals respond to opportunities and threats that confront them by analysing the options and making decisions about specific goals and course of action. Luu (2014) examined the behaviour patterns of individual investors in Ho Chi Minh stock market. It was found that overconfidence anchoring, herding, loss aversion and regret aversion have moderate impacts on the investor's while market factors have the highest impact among all on the investors' decision making. Houglas (2012) conducted a study to examine the determinants of individual investors' behaviour in the Nairobi Securities

Exchange. The author observed that the variability of security prices, market information and past trend of securities are the market variables that impact on the individuals' investment decision at the Nairobi Securities Exchange. Individual investors at the NSE have a relatively very high market impact which implies that investors consider carefully the price changes of securities that they invest in, past trends of securities and market fundamentals.

Kengatharan (2014) carried out a study on the influence of behavioural factors in making investment decisions and performance of Investors in Colombo Stock Exchange, Sri Lanka and found that there are four behavioural factors that impact the investment decisions of individual investors at the Colombo Stock Exchange: Herding, Heuristics, Prospect and Market, where herding, prospect and market factors have moderate impacts on individual investors decision making at Colombo Stock Exchange.

## **2.4 Summary of Literature**

The literature has reviewed both the theoretical and empirical aspects, where heuristic (anchoring, overconfidence and availability bias), prospect (loss aversion, regret aversion and mental accounting), herd (volume of securities traded, choice of security and speed of herding) and market (price changes, market information and customer preferences) factors have an effect on the investment decision of the individual investor.

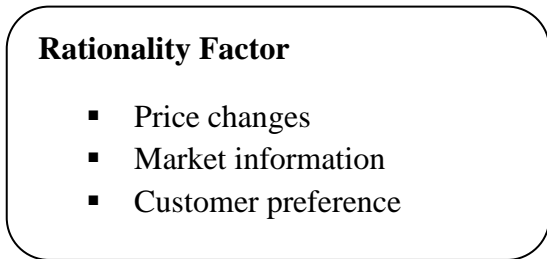
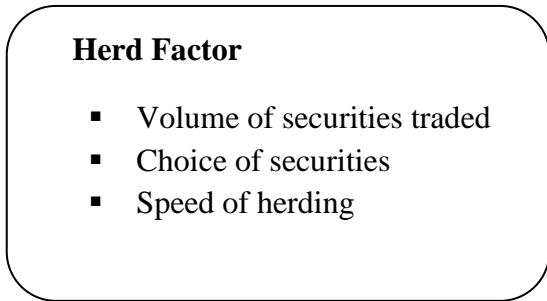
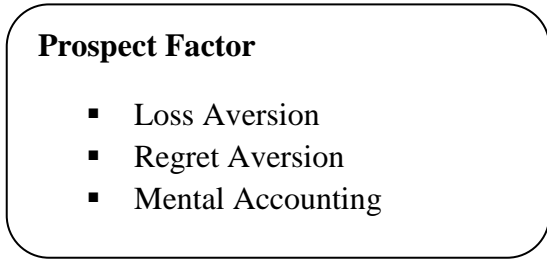
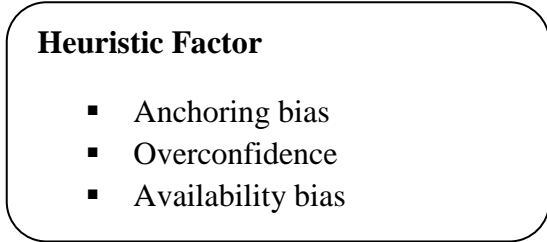
Individuals behave irrationally and their decisions are biased. They tend to use shortcuts in arriving at decisions due to time and capacity constraints in processing of information. When faced with complicated judgments or decisions, they simplify the task by relying on heuristics or general rules of thumb. Individual investors also tend to under-weigh probable outcomes compared with certain ones, thus responding differently to the similar situations depending on the context of losses or gains in which they are presented. Practitioners in the financial market,

mostly the individual investors, usually consider carefully the existence of herding due to the fact that they rely on collective information more than private information which may move the security price away from the fundamental value. Over reaction or under reaction to information released in the market may also result into individual investors choosing different investment strategies.

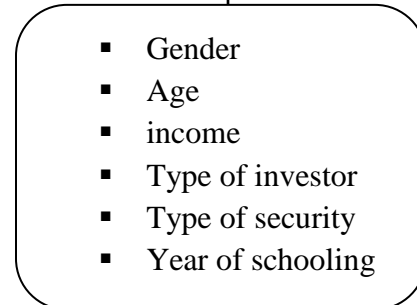
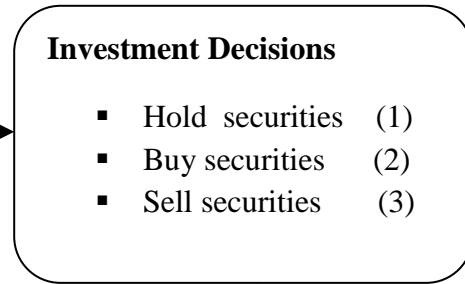
Generally, Individual investors do rely more on newspapers or media and noise in the market when making their investment decisions, while professional investors rely more on fundamental and technical analysis and less on portfolio analysis. The problem comes in when individual investors experience difficulties in processing all this information either through uncertainty, illiteracy or bounded rationality, resulting to them making investment decision based on less sophisticated information. Therefore this research sought to fill this gap by studying the effects of behavioural finance factors on the investment decisions of individual investors at the Nairobi Securities Exchange in Nairobi County by using multiple linear regression method. The study also wanted to find out how the behavioral finance factors would affect the buy, sell and hold options in investment decisions using multinomial logistic regression method in data analysis.

## 2.5 Conceptual Framework

### Independent Variables



### Dependent Variables



### Control variables

## 2.6 Operationalization` of Variables

<b>Behavioral Finance Factors</b>	<b>Definition</b>	<b>Measurement</b>	<b>Part in the Questionnaire</b>
Heuristics	Heuristics are defined as the rules of thumb, which makes decision making easier, especially in complex and uncertain environments.	Anchoring bias Overconfidence Availability bias	Section B
Prospect	Prospect theory focuses on subjective decision-making influenced by the investors' value system. Prospect theory describes some states of mind affecting an individual's decision-making processes.	Regret aversion Loss aversion Mental accounting	Section B
Herd	Herding effect in financial market is identified as tendency of investors' behaviours to follow the others' actions.	Volume of securities traded Choice of security Speed of herding	Section B



<p>Market</p>	<p>Financial markets can be affected by investors' behaviours in the way of behavioral finance.</p>	<p>Price changes Market information Customer preferences</p>	<p>Section B</p>
<p>Investment Decisions</p>	<p>Investment behaviour can be described as how the investor judge, predict, analyze and review the decision making procedures.</p>	<p>Hold securities Buy securities Sell securities</p>	<p>Section C</p>

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1 Introduction**

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

#### **3.2 Research design**

Ghuri & Gronhaug (2010) opines that research design provides a framework for data collection and analysis. It can also be referred to as a scheme, plan or outline that is used to generate solutions to research problems (Kamau, 2012). This research problem employed the use of a descriptive research design, which is non-experimental, meaning that it dealt with the relationships existing between non-manipulated variables in a natural, rather than artificial setting. In order to understand the common behaviours of individual investors, a cross-sectional design was deemed suitable since data from more than one case at one single time was collected, analysed and a relative large sample was present (Le Phuoc & Doan, 2011).

The cross-sectional design involved using different research strategies, and was beneficial for the study because it allowed the collection of both quantitative and quantifiable qualitative data, which was suitable for this descriptive method. Survey research was then used to collect the quantitative data from individual investors in Nairobi County by asking them about their opinion, attitudes, behaviour or values (Mugenda and Mugenda, 1999). Field survey is known to be the most widely used data gathering tool as it is able to reveal attitudes and opinions yielding relations that serve as a guiding hypothesis for further follow up research (Neumann, 2006).

### 3.3 Target Population

This study involved surveying individual investors who trade at the NSE in Nairobi County. As at 31<sup>st</sup> March 2017, there are about 1,259,859 at the NSE, with 1,196,995 being the total number of individual investors countrywide. This represents 95% of the total investors present in the NSE investor profile (CMA Quarterly Statistical Bulletin, 2017).

### 3.4 Sampling and Sampling Procedure

The sampling plan describes the sampling unit, sampling frame, sampling procedures and the sample size for the study. Cooper & Schindler (2003) describes the sampling frame as a list of all population units from which the sample is selected. The individual investors were sampled from various institutions and work places in Nairobi County. Using a 5% error margin and 95% confidence interval, the required sample size of the study upon calculations was 385 (Rose et al, 2015). Snowball data sampling technique was then used to collect the survey responses from the respondents, where the first respondents were from work places at Nairobi's Industrial area, and were later requested to recommend colleague/individuals who are investors and so on, until a convenient sample was reached.

The formula used to calculate the required sample size was as follows:

$$n_r = \frac{(Z\text{-score})^2 p q}{d^2} = \frac{(1.96)^2 \times 0.5 \times 0.5}{0.05^2} = 385.$$

Where:

$n_r$  is the required sample size.

Z-score is 1.96.

P is the proportion of population is unknown, which is assumed to be 0.5.

$q = 1 - p$ .

d is the margin of error.

### **3.5 Research Instrument**

The main tool for primary data collection in this study was a structured close-ended questionnaire. This method was appropriate since it collected information that is not directly observable as they inquire about feelings, motivations, attitudes, accomplishments as well as experiences of individuals (Athur, 2014).

The questionnaire was divided into three sections: section A entailed the background information of the individual investor, highlighted as the control variables in the study, which included age , gender, income, the type of investor, type of security and the years of schooling. Section B covered in detail the behavioural finance factors, where behavioural biases were discussed and the effect they had on the decision making on individual investors. Section C entailed investment decisions (buy, sell or hold) that the individual investors made on the securities traded at the NSE with regards to the behavioral finance factors. Respondents were asked to indicate their degree of how they were influenced by each of the items on five-point - Likert scale.

### **3.6 Validity and Reliability of the instrument**

#### **3.6.1 Pilot Study**

A pilot study was carried out among 10 individual investors from various workplaces and institutions, and identified some of the short comings experienced during the actual data collection (Kisaka, 2015). The internal consistency of the sample of respondents across a set of questions was measured by Cronbach's alpha, which was the procedure of choice by using the Likert-type scale (Walsh & Betz, 1995). The coefficient was found to be 0.7 which illustrates that the reliability is acceptable. Cronbach's alpha is usually used in social and behavioural researches as an indicator of reliability (Liu, Wu & Zumbo, 2010).

### **3.7 Data collection procedure**

Primary data was collected by using close-ended questionnaires. According to Franker (2006), questionnaires have the added advantage of being less costly and using less time as instruments of data collection. Quantitative data is usually associated with studying behaviours rather than meanings, which is in line with the topic of behavioural finance. This type of research is most suitable when variables can be quantified and measured, where hypotheses can be created and tested, and when inferences and generalizations can be drawn from samples of a population (Gay & Diehl, 1992).

### **3.8 Data Processing and analysis**

The data was cleaned by removing the questionnaires with bias ratings and too many missing values. The completed questionnaires were scrutinized for completeness and consistency. Descriptive Statistics (frequency and percentile) was used to describe respondents' background information (age, gender, type of investor, type of security, income and year of schooling). The responses from the questionnaire were then coded and the average sum of the behavioral biases computed per respondent to give the value of the behavioral finance factors. The coded data was then entered into STATA and analyzed the data using multiple linear regression method. This provided the generalization of the findings on the effect of behavioural finance factors on investment decisions of individual investors at the NSE in Nairobi County.

The multiple linear regression equation for this research study was given as follows:

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \text{Control Variables} + \varepsilon.$$

Where the variables were identified as follows:

**Y** – The dependent variable represents the decision of the individual investor on whether to buy, hold or sell a security.

**X1** – Heuristic factor

**X2** – Prospect factor

**X3** – Herding factor

**X4**– Market factor

**Control variables**-(Age, Gender, Type of Investor, Income, Investor type and year of schooling)

**ε**– Error term

## CHAPTER FOUR

### DATA ANALYSIS, FINDINGS AND DISCUSSION

#### 4.1 Introduction

The objective of this research study was to determine the effect of behavioral finance factors on investment decisions of individual investors at the Nairobi Securities Exchange in Nairobi County. This chapter covers data presentation and analysis of the findings of the implementations of methodology outlined in chapter three.

#### 4.2 Response rate

The internal consistency of the sample of respondents across a set of questions was measured by Cronbach's alpha, which was found to be 0.7, illustrating that the reliability and validity of the questionnaire is acceptable as illustrated in figure 4.1 below.

##### **Figure 4.1 Scale Reliability Co-efficient**

. alpha investementdecision prospect heuristic herd market

Test scale = mean(unstandardized items)

Reversed item: market

Average interitem covariance: .0727303

Number of items in the scale: 5

Scale reliability coefficient: 0.6815

From the study, 369 out of 385 respondents filled in and returned the questionnaires, constituting 95.84% response rate which conforms to the assertion made by Garg & Kothari (2014) that a response rate greater than 70% is excellent. The response rate of the questionnaires is illustrated in table 4.1 below.

**Table 4.1 Response Rate**

<b>Response rate</b>	<b>Distribution</b>	
	<b>Frequency</b>	<b>Percentage</b>
Responded	369	95.84%
Did not respond	16	4.16%
Total	385	100%

### **4.3 Demographic Information**

The study also examined the various background information variables with regards to the respondents in order to help ascertain the reliability and validity of the information they provided. These demographic variables included: gender, age, type of investor, type of securities, income and the years of schooling.

#### **4.3.1 Respondents by Gender**

The distribution of respondents by gender is shown in table 4.2 below. The table shows that male respondents accounted for 64.77% of the respondents whereas 35.23 % of the respondents were female. It can therefore be deduced that male investors were the most dominant gender at the Nairobi Securities Exchange.



**Table 4.2 Distribution of respondents by gender**

Gender	Distribution	
	Frequency	Percentage
Male	239	64.77%
Female	130	35.23%
Total	369	100%

#### **4.3.2 Respondents by Age**

The study findings show that the oldest individual investor was 55 years of age whereas the youngest investor was 21 years of age. The mean age of the respondents is about 33 years whereas the standard deviation is 7.6 as illustrated in table 4.3 below.

**Table 4.3 Distribution of Respondents by Age**

Variable	Respondents	Mean	Std. Dev.	Min	Max
Age	369	32.79946	7.586308	21	55

#### **4.3.3 Respondents by Type of investor**

The distribution of the respondents using investor type is shown in table 4.4 below. The study revealed that 73.17% of the respondents were actively engaged in the trading of securities at the NSE whereas 26.83% of the respondents were passive investors.

**Table 4.4 Distribution of respondents by type of investor**

Type of investor	Distribution	
	Frequency	Percentage
Active	270	73.17%
Passive	99	26.83%
Total	369	100%

#### **4.3.4 Respondents by Type of Security**

The study findings as shown in table 4.5 below deduced that 95.84% of the respondents prefer trading with shares as opposed to 4.16% of the respondents who preferred bonds.

**Table 4.5 Distribution of respondents by type of security**

Type of security	Distribution	
	Frequency	Percentage
Shares	307	95.84%
Bonds	62	4.16%
Total	369	100%

#### **4.3.5 Respondents by Income**

The distribution of the respondents by income is shown in table 4.6. The findings of the study revealed that 86.99% of the respondents earned below Ksh 100,000 whereas 13.01% of the respondents earned a salary of over Ksh 100,000 per month.

**Table 4.6 Distribution of respondents by income**

Income	Distribution	
	Frequency	Percentage
Under Ksh 100,000	321	86.99%
Over Ksh 100,000	48	13.01%
Total	369	100%

**4.3.6 Respondents by Years of Schooling**

The study findings in table 4.7 below shows that majority of the respondents (57.72%) were undergraduates and had spent a total of 16 years in school as opposed to 20.87% of the respondents who spent 12 years in school (secondary). 18.16% of the respondents spent 14 years in school (college) whereas 2.98% of the respondents spent 18 years in school. 0.27% of the respondents ultimately spent 22 years in school (Doctorate).

**Table 4.7 Distribution of respondents by years of schooling**

Level of Education	Distribution	
	Frequency	Percentage
Primary (8 years of schooling)	0	0
Secondary (12 years of schooling)	77	20.87%
College (14 years of schooling)	67	18.16%
Undergraduate (16 years of schooling)	213	57.72%
Masters (18 years of schooling)	11	2.98%
Doctorate (22 years of schooling)	1	0.27%
Total	369	100%

#### 4.4 Criteria for Mean Values Range of Factor Variable Acceptance

With the use of a 5- point Likert scale, the effect of behavioral finance factors on the investment decisions was identified by calculating the mean value range of all the variables in each behavioral factor and determining the frequency of the respondents in order to determine the influence it had on the investment decision making based on the following criteria:

**Table 4.8 Mean Values Range of Factor Variables and their Interpretation**

Mean values range	Interpretations
Mean < 2	Very Low Variable effect
2 < Mean < 3	Low Variable effect
3 < Mean < 4	Moderate Variable effect
4 < Mean < 5	High Variable effect
Mean = 5	Very High Variable effect

##### 4.4.1 Mean Value Range for Heuristic Factor

The research sought to determine whether heuristic factor has an effect on investment decision of individual investors at the NSE. The study findings established that the standard deviation and the mean value deduced by heuristic factor was 0.48 and 3.5 respectively, illustrating that the heuristic variable had a moderate effect on investment decision as shown below in table 4.9.

**Table 4.9 Mean value of Heuristic Factor**

Variable	Respondents	Mean	Std. Dev.	Min	Max
Heuristic	369	3.522873	.4777499	2.17	4.5

#### 4.4.2 Mean Value Range for Prospect Factor

The research sought to establish whether prospect factor has an effect on investment decision of individual investors at the NSE. The study established that the standard deviation and the mean value denoted by prospect factor was 0.35 and 3.4 respectively, illustrating that the prospect factor had a moderate effect on the investment decision as shown in table 4.10 below.

**Table 4.10 Mean Value Range for Prospect Factor**

Variable	Respondents	Mean	Std. Dev.	Min	Max
Prospect	369	3.436314	0.3516413	2.5	4.33

#### 4.4.3 Mean Value Range for Herd Factor

The research sought to establish whether herd factor has an effect on investment decision of individual investors at the NSE. The study established that the standard deviation and the mean value denoted by herd factor was 0.47 and 3.7 respectively, illustrating that the herd factor also had a moderate effect on the investment decision as shown in table 4.11 below

**Table 4.11 Mean Value of Range of Herd Factor**

Variable	Respondents	Mean	Std. Dev.	Min	Max
Herd	369	3.675881	0.4686502	2.67	4.67

#### 4.4.4 Mean Value Range for Market Factor

The research sought to determine whether market factor has an effect on investment decision of individual investors at the NSE. The study established that the standard deviation and the mean

value denoted by 0.43 and 3.2 was respectively, illustrating that the market factor also had a moderate effect on the investment decision as shown in table 4.12 below.

**Table 4.12 Mean Value of Range of Market Factor**

Variable	Respondents	Mean	Std. Dev.	Min	Max
Market	369	3.236233	0.4323566	2.33	3.67

#### **4.4.5 Mean Value of Range and the Distribution for Investment Decision.**

The research study was carried out to determine how well the investment decision at the NSE responds to the heuristic, prospect, herd and market factors. The study established that the standard deviation and the mean value denoted by 0.48 and 3.8 respectively, illustrating that the investment decision also has a moderate effect on all its independent variables (heuristic, prospect, herd and market factors) as shown in table 4.13 below. Upon determining the buy, sell or hold decision the findings

**Table 4.13 Mean Value of Range of Investment Decision**

Variable	Respondents	Mean	Std. Dev.	Min	Max
Investment decision	369	3.788374	.4822418	2.67	4.67

From the table 4.14 below, the study finds out that 58.54% of the individual investors hold their securities as opposed to 37.4% of the individual investors who usually exercise the buy option when trading. The remainder of the individual investor (4.07%) exercise the sell option when trading with securities at the NSE.

**Table 4.14 Distribution of the investment decision option**

Option	Distribution	
	Frequency	Percentage
Hold	216	58.54
Buy	138	37.40
Sell	15	4.07
Total	369	100

#### **4.5 Checking for correlation analysis**

Correlation analysis was carried out and the results of the analysis are summarized in figure 4.2 below. The findings are that heuristic factor has a positive and a significant relationship with the investment decisions ( $\rho=0.2412$ ,  $p\text{-value}< 0.05$ ), prospect factor has a negative and significant relationship with the investment decisions ( $\rho=-0.1038$   $p\text{-value} <0.05$ ), herd factor has a positive and significant relationship with the investment decisions ( $\rho= 0.3195$ ,  $p\text{-value} <0.05$ ) whereas market factor has a positive but an insignificant relationship on the investment decision( $\rho=0.0124$ ,  $p\text{-value}>0.05$ ) but has a significant relationship with herd factor ( $p\text{-value}<0.05$ ) and prospect factor( $p\text{-value} <0.05$ ). Years of schooling variable is the only control variable which has a significant relationship with investment decisions. On the other hand: gender, type of investor, income, age and type of security have insignificant relationship with the investment decisions with  $p\text{-values}$  greater than 0.5.

**Figure 4.2 Checking for Correlation**

```
. pwcorr investementdecision heuristic prospect herd market gender investortype security age income y
> earsofschooling, sig star(0.05)
```

	invest~n	heuris~c	prospect	herd	market	gender	invest~e
investemen~n	1.0000						
heuristic	0.2412* 0.0000	1.0000					
prospect	-0.1038* 0.0463	0.2591* 0.0000	1.0000				
herd	0.3195* 0.0000	0.5049* 0.0000	0.1340* 0.0100	1.0000			
market	0.0124 0.8119	0.0490 0.3476	0.1029* 0.0482	0.1054* 0.0431	1.0000		
gender	0.0914 0.0794	0.0278 0.5948	-0.0897 0.0854	0.0060 0.9085	-0.1030* 0.0481	1.0000	
investortype	-0.0222 0.6706	-0.0321 0.5388	-0.1077* 0.0386	0.0053 0.9187	-0.0923 0.0765	0.1680* 0.0012	1.0000
security	-0.0637 0.2225	0.0289 0.5805	-0.0601 0.2495	-0.0035 0.9469	-0.0457 0.3815	0.1086* 0.0370	0.2677* 0.0000
age	-0.0288 0.5811	0.0190 0.7164	0.0285 0.5854	-0.0168 0.7471	0.0000 0.9996	-0.1999* 0.0001	-0.1140* 0.0286
income	-0.0029 0.9561	-0.0051 0.9229	-0.0528 0.3114	-0.0247 0.6369	-0.0079 0.8800	-0.0491 0.3471	0.0022 0.9661
yearsofsch~g	0.1900* 0.0002	0.3969* 0.0000	0.1220* 0.0191	0.2792* 0.0000	0.0350 0.5027	0.1316* 0.0114	0.0164 0.7539
		security	age	income	yearso~g		
security		1.0000					
age		0.0770 0.1401	1.0000				
income		0.2356* 0.0000	0.4037* 0.0000	1.0000			
yearsofsch~g		0.0350 0.5030	0.0220 0.6735	0.0164 0.7529	1.0000		



## 4.6 Fitting a Multi Linear Regression Model

**Figure 4.3 Fitting a Regression Model**

```
. reg investementdecision heuristic prospect herd market yearsofschooling security investortype gender age income
```

Source	SS	df	MS	Number of obs =	369
Model	13.6979898	10	1.36979898	F( 10, 358) =	6.82
Residual	71.8830312	358	.20079059	Prob > F =	0.0000
				R-squared =	0.1601
				Adj R-squared =	0.1366
Total	85.5810209	368	.232557122	Root MSE =	.4481

investementdec~n	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
heuristic	.1258363	.0611427	2.06	0.040	.0055924	.2460802
prospect	-.2480886	.069805	-3.55	0.000	-.3853681	-.1108091
herd	.2648763	.05837	4.54	0.000	.150085	.3796675
market	-.0049423	.0546794	-0.09	0.928	-.1124754	.1025909
years of schooling	.0239324	.0150772	1.59	0.113	-.0057187	.0535835
security	-.1076942	.0671174	-1.60	0.109	-.2396881	.0242997
investortype	-.0350907	.0559564	-0.63	0.531	-.1451352	.0749538
gender	.0715965	.0514953	1.39	0.165	-.0296749	.1728678
age	-.0010033	.0034566	-0.29	0.772	-.0078011	.0057946
income	.0325473	.0779296	0.42	0.676	-.1207101	.1858047
_cons	2.955223	.3827993	7.72	0.000	2.202405	3.708041

From the figure 4.3 above, we establish that Heuristic factor, Prospect factor, Herd factor, Market factor, age, gender, type of security, income, type of investor and Year of Schooling variable work together to explain up to 16.01% of the investment decision. The rest of the 83.99% is explained by other extraneous factors. Heuristic factor is significant since p-value is 0.040 and the confidence interval does not include zero. Prospect factor is significant since the p-value is 0.000 and the confidence interval does not include zero. The findings from herd factor posit that it's also significant since p-value is 0.000 and that the confidence interval does not include zero. However, market factor is insignificant for the study since its p-value is greater

than 0.05( $p=0.928$ ). Its confidence interval has also included zero. The overall model fits well in the data since the probability is 0.000 which is less than 0.05.

## 4.7 Diagnostic Tests

### 4.7.1 Checking for Heteroscedasticity

#### Figure 4.4 Heteroscedasticity check

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
Ho: Constant variance
Variables: fitted values of investementdecision

chi2(1)      =      6.25
Prob > chi2  =      0.0124
```

From the above figure 4.4, we establish that the  $\text{prob} > \text{chi}2$  is 0.0124 which is less than the p-value (0.05). This means that we should reject null hypothesis since it is heteroscedastic. To treat the heteroscedastic condition, robust standard errors were introduced. The control variables also had p-values more than 0.05 as denoted by figure 4.5

```
. reg investementdecision heuristic prospect herd market yearsofschooling security investortype gender age income, robust
```

Linear regression

Number of obs =	369
F( 10, 358) =	7.79
Prob > F =	0.0000
R-squared =	0.1601
Root MSE =	.4481

investementdec~n	Robust		t	P> t	[95% Conf. Interval]	
	Coef.	Std. Err.				
heuristic	.1258363	.063053	2.00	0.047	.0018355	.2498371
prospect	-.2480886	.0644954	-3.85	0.000	-.3749261	-.1212512
herd	.2648763	.0552406	4.79	0.000	.1562395	.373513
market	-.0049423	.0515431	-0.10	0.924	-.1063075	.096423
yearsofschooling	.0239324	.0152027	1.57	0.116	-.0059654	.0538303
security	-.1076942	.0746128	-1.44	0.150	-.2544287	.0390403
investortype	-.0350907	.0600364	-0.58	0.559	-.153159	.0829776
gender	.0715965	.0512499	1.40	0.163	-.0291922	.1723851
age	-.0010033	.003591	-0.28	0.780	-.0080654	.0060588
income	.0325473	.0732673	0.44	0.657	-.1115412	.1766357
_cons	2.955223	.3793621	7.79	0.000	2.209164	3.701281

### 4.7.2 Checking for multicollinearity

The test of multicollinearity was performed and it was found that the mean variance inflation factor was 1.22, which is proof of no multicollinearity since the minimum threshold for multicollinearity is 5. This is illustrated by figure 4.6 below.

**Figure 4.6 checking for multi collinearity**

Variable	VIF	1/VIF
heuristic	1.56	0.642565
herd	1.37	0.729152
income	1.26	0.791805
age	1.26	0.793469
yearsofsch~g	1.23	0.815921
security	1.16	0.864111
investortype	1.13	0.885262
gender	1.11	0.899276
prospect	1.10	0.905571
market	1.04	0.965184
Mean VIF	1.22	

### 4.7.3 Checking for Omitted Variables

**Figure 4.7 Omitted variable Tests**

```
. ovtest
```

```
Ramsey RESET test using powers of the fitted values of investementdecision
```

```
Ho: model has no omitted variables
```

```
F(3, 355) = 0.68
```

```
Prob > F = 0.5624
```

From the figure 4.7 above, the prob>F is greater than the p-value, that is  $0.5624 > 0.05$ , meaning that the model is well specified since it has no omitted variables.

Thus the Multiple Linear Regression model is denoted as follows:

$$\text{Investment Decisions} = 2.955 + 0.126\text{Heuristic} - 0.248\text{Prospect} + 0.265\text{Herd} - 0.0049\text{Market} + 0.024 \text{ Yr of schooling} - 0.011\text{Security type} - 0.035 \text{ Investor type} + 0.072 \text{ Gender} - 0.001\text{Age} + 0.033 \text{ Income}$$

#### 4.8. Checking out effects of behavioral finance factors when assessing the buy, sell and hold options of investment decisions

```
. mlogit option heuristic prospect herd market yearsofschooling gender age investortype security inco
> me
```

```
Iteration 0:  log likelihood = -299.44206
Iteration 1:  log likelihood = -292.0351
Iteration 2:  log likelihood = -291.57352
Iteration 3:  log likelihood = -291.57195
Iteration 4:  log likelihood = -291.57195
```

```
Multinomial logistic regression          Number of obs   =          369
                                         LR chi2(20)      =          15.74
                                         Prob > chi2      =          0.7326
Log likelihood = -291.57195              Pseudo R2       =          0.0263
```

option	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
1	(base outcome)					
2						
heuristic	.5549887	.2891934	1.92	0.055	-.01182	1.121797
prospect	-.1390634	.3276873	-0.42	0.671	-.7813187	.5031919
herd	-.431408	.279191	-1.55	0.122	-.9786122	.1157963
market	-.1776676	.2565248	-0.69	0.489	-.680447	.3251118
yearsofschooling	.0297572	.0713665	0.42	0.677	-.1101186	.169633
gender	-.0398802	.2425873	-0.16	0.869	-.5153425	.4355822
age	.0069421	.0161806	0.43	0.668	-.0247713	.0386554
investortype	.1601771	.2628336	0.61	0.542	-.3549673	.6753214
security	.2505647	.3107164	0.81	0.420	-.3584282	.8595576
income	-.2180836	.3729471	-0.58	0.559	-.9490465	.5128792
_cons	-.6362429	1.801981	-0.35	0.724	-4.16806	2.895574
3						
heuristic	.200484	.7281859	0.28	0.783	-1.226734	1.627702
prospect	-.2529092	.8297389	-0.30	0.761	-1.879168	1.373349
herd	-.7867069	.7151443	-1.10	0.271	-2.188364	.6149501
market	-.1487536	.6513151	-0.23	0.819	-1.425308	1.127801
yearsofschooling	.3977814	.2045647	1.94	0.052	-.003158	.7987207
gender	-.8113082	.6491962	-1.25	0.211	-2.083709	.461093
age	-.0608314	.0453495	-1.34	0.180	-.1497147	.028052
investortype	.5087918	.6291706	0.81	0.419	-.7243599	1.741944
security	-.5197051	.8558423	-0.61	0.544	-2.197125	1.157715
income	1.05706	.8164249	1.29	0.195	-.5431032	2.657224
_cons	-3.445701	4.732379	-0.73	0.467	-12.72099	5.829591

.

In the figure 4.8 above, the variables which were fitted in the multiple linear regression models earlier, were also fitted in the multinomial logit regression to check whether the same output of the variables will be achieved. The model however from the multinomial logit regression is not significant since the overall probability is greater than the p-value (0.05). Other findings from the multinomial logit regression are explained below to explain why we won't use it.

#### **4.8.1 Buying option of securities**

##### **4.8.1.1 Heuristics**

If a subject were to increase the heuristic factor by one point, the multinomial log-odds for preferring to buy of securities as opposed to holding them would be expected to increase by 0.55 units while holding all other variables in the model constant.

##### **4.8.1.2. Prospect Factor**

If a subject were to increase the prospect factor by one point, the multinomial log-odds for preferring buy of securities to holding them would be expected to decrease by 0.14 units while holding all other variables in the model constant.

##### **4.8.1.3 Herd Factor**

If a subject were to increase the herd factor by one point, the multinomial log-odds for preferring buy of securities to holding them would be expected to decrease by 0.43 units while holding all other variables in the model constant.

##### **4.8.1.4 Market Factor**

If a subject were to increase the market factor by one point, the multinomial log-odds for preferring to buy securities to as opposed to holding them would be expected to decrease by 0.18 units while holding all other variables in the model constant.

## **4.8.2 Selling of securities option**

### **4.8.2.1 Heuristics**

If a subject were to increase the heuristic factor by one point, the multinomial log-odds for preferring selling of securities to holding them would be expected to increase by 0.2 units while holding all other variables in the model constant.

### **4.8.2.2. Prospect Factor**

If a subject were to increase the prospect factor by one point, the multinomial log-odds for preferring selling of securities to holding them would be expected to decrease by 0.25 units while holding all other variables in the model constant.

### **4.8.2.3 Herd Factor**

If a subject were to increase the herd factor by one point, the multinomial log-odds for preferring selling of securities to holding them would be expected to decrease by 0.78 units while holding all other variables in the model constant.

### **4.8.2.4 Market Factor**

If a subject were to increase the market factor by one point, the multinomial log-odds for preference of selling securities to holding them would be expected to decrease by 0.14 units while holding all other variables in the model constant.

## CHAPTER FIVE

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Introduction

This chapter gives briefing on the results and findings in the previous chapter. The chapter then draws detailed conclusions based on the previous chapter findings and makes policy recommendations for further research.

#### 5.2 Summary of the Findings

The study aimed at analysing the effect of behavioural finance factors on investment decision of individual investors at the Nairobi Securities Exchange in Nairobi County. The specific objectives of the study were to establish whether heuristic, prospect, herd and market factors affect the investment decisions of individual investors at the Nairobi Securities Exchange. A non-experimental descriptive research design was applied in this study on a target population of 1,196,995 individual investors who trade at the Nairobi Securities Exchange. A sample of 385 individual investors was taken from the population and snowballing sampling technique was used to collect primary data by use of close-ended questionnaires. Data was then coded and analyzed using STATA and correlation analysis and analyzed the data using multiple linear regression method. This provided the generalization of the findings on the effect of behavioural finance factors on investment decisions of individual investors at the NSE in Nairobi County.

The study revealed that men are dominant in trading at the Nairobi securities Exchange with 64.77% as opposed to women who have 35.23%. Most of the individual investors who trade at the Nairobi Securities Exchange have a mean of about 33 years. It was also established that 73.17% of the individual investors are actively engaged at the Nairobi Securities Exchange as

opposed to 26.83% who are passively engaged. Majority of the NSE traders prefer shares (95.84%) to bonds (4.16%). The study also revealed that 87% of the NSE traders earn below Ksh 100,000 as opposed to 13% who earn above Ksh 100,000. The study has also revealed that majority of the traders at the Nairobi Securities Exchange have spent 16 years in school, meaning they are at the undergraduate level of education(57.72%).

### **5.2.1 Effect of Heuristic factor on Investment Decisions**

The first objective of the study sought to determine the effect of heuristic factors on investment decisions. To achieve this, the respondents were required to rate how often their investment decision was influenced by heuristic factors on a five point Likert scale. The findings established that with a mean of 3.5, heuristic factors had a moderate effect on the investment decisions. These findings are similar to Luu (2014) who studied the behaviour pattern of individual investors in stock market at the securities' companies in Ho Chi Minh City, Vietnam. Upon fitting the multiple linear regression equation, it was established that the heuristic factor has a significant effect on the investment decisions of individual investors. The findings are also similar to Kengatharan and Kengatharan (2014) and Mohammed et al (2014) where heuristic factor has a significant influence on investor performances.

### **5.2.2 Effect of Prospect Factor on Investment Decisions**

The second objective of the study sought to establish the influence of prospect factors on investment decision. A five point Likert scale was used to rate the influence of prospect factors on investment decision. The findings established that prospect factor has a moderate effect on the investment decisions with a mean of 3.4. These findings are similar to Luu (2014) who studied the behaviour pattern of individual investors in stock market at the securities' companies in Ho



Chi Minh City, Vietnam. Upon fitting the multiple linear regression equation, it was established that the prospect factor has a significant but a negative effect on the investment decisions of individual investors. This finding is similar to Mohammed et al (2014) who analyzed the effective behavioral factors on the investor's performance in Tehran Stock Exchange.

### **5.2.3 Effect of Herd Factor on Investment Decisions**

The third objective of the study sought to find out the influence of herding factors on investment decision. To achieve this, the respondents were requested to indicate how herding factors influences there investment decision making. Descriptive statistics was used to summarize. It was noted that the mean was 3.7 which defines the herd factor as having a moderate effect on investment decisions. Upon fitting the multiple linear regression equation, it was established that the herd factor has a significant effect on the investment decisions of individual investors. This finding agrees with a study by Weber and Weber (2006), where the results provided an evidence of herding by German fund managers and also Aduda et al (2012) posited that herding exists in trading shares of listed companies at the NSE. It however disagrees with Shikuku (2012) who concluded that herd behaviour was not common among Unit trust in Kenya.

### **5.2.4 Effect of Market Factor on Investment Decisions**

The fourth objective of the study sought to determine the effect of market factor on investment decision. To achieve this, the respondents were required to indicate the influence of rationality on a five point Likert scale. The findings concluded that the market factor has a moderate effect on investment decisions with a mean of 3.2. The study findings are similar to Kengatharan and Kengatharan (2014) who studied the influence of behavioral factors in making investment decisions and performance of investors in Colombo Stock Exchange, Sri Lanka. The study agrees with the findings of Jains and Dashora (2010) who conducted a study on the impact of

decision factors which are influenced by price movements, customer preferences, perceptions adopted in the Indian Stock Market. Upon fitting the multiple linear regression equation, it was established that the market factor has an insignificant effect on the investment decisions of individual investors. This finding is relatively different from Luu (2014) who studied the behavioral patterns of individual investors in stock market at the securities' companies in Ho Chi Minh City, Vietnam. Even though it has an insignificant effect on investment decision, it has positive significant relationships with prospect and herd factors.

### **5.3 Conclusions**

It can be concluded that heuristic factors, prospect factors, herd factors and market factors had a joint effect of 16.01% on the investment decision of individual investors at the NSE, controlled by the year of schooling, age, gender, type of investor, type of security and income variables while the remaining percentage was influenced by other factors excluded from the model. Heuristic factor has a positive significant effect on investment decisions, prospect factor has a negative significant effect on investment decision, and herd factor has a positive significant effect on investment whereas market factor has a positive but insignificant effect on the investment decision of individual investors. Generally, individual investors at the NSE have a wait and see attitude as this is portrayed by how most of them from the study chose the hold option of investment decision-making.

What is evident is that individual investors have little information or the technical knowhow of how to trade at the NSE. Individual investors should spend more time in school since this is evident from the study since the more time you spend in school, the more you gain and acquire the accounting and financial skills and thus improves decision making of individual investors to

impart the individual investors of all walks of life. This is evident by the year of schooling being the only control variable which has a significant relationship with investment decisions

#### **5.4 Recommendations**

The Nairobi Securities Exchange should step up its efforts to increase Investor education awareness since it key to overcoming unfavorable investment outcomes caused by behavioural biases. There is need to hold accounting and financial seminars which are geared towards improve accounting skills which will ultimately improve the evaluation skills prior to acquisition and purchase of securities.

#### **5.5 Recommendations for future research**

Further studies should be carried out on the effect of behavioral finance factors on investment decision of individual investors at the Nairobi Securities Exchange and should focus on other counties all over the country to compare the findings, and probably use a larger sample size for more precision and whether the multinomial logistic regression method will be significant in their study.

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**APPENDICES**

**APPENDIX A: Letter of Introduction**

**MARTIN MUROKI**

**REG: KCA/08/02263**

**P.O.BOX 6724-00200**

**NAIROBI.**

**RE: RESEARCH ASSISTANCE.**

I am a final year student at KCA University studying Masters of Science in Commerce (Finance and Investment) and I am carrying out an academic research study on the **Effect of Behavioural Finance Factors on the Investment Decision of Individual Investors at the Nairobi Securities Exchange in Nairobi County.**

I request for your generous participation in filling the attached questionnaires. The information obtained will be strictly used for the purpose of academic research. The respondents are guaranteed that the information provided will be treated as private and confidential.

Yours Sincerely

Martin Muroki

Sign.....

## Appendix B: Research Questionnaire

I am a student at KCA University and I am writing my MSC (Finance and Investment) research project on **the effect of behavioral finance factors on investment decision making of individual investors at the NSE in Nairobi county**. Kindly respond to all questions by answering where necessary and putting a tick (✓) in the box matching your answer. The information provided here will only be used for the purposes of academic study and will be treated with utmost confidentiality. You are not required to indicate your names on the questionnaire to ensure anonymity. Your cooperation will greatly contribute to the success of this study.

### SECTION A: BACKGROUND INFORMATION

1. Gender

MALE ( ) FEMALE ( )

2. A) In which year were you born? \_\_\_\_\_

B) How old are you now? \_\_\_\_\_

3. Are you an active investor? YES ( ) NO ( )

4. In which securities do you prefer investing in?

SHARES ( ) BONDS ( )

5. What is your average net income (Ksh) per month?

0 to Ksh 25,000 ( ) 76,000 to 100,000 ( )

26,000 to 50,000 ( ) Over 100,000 ( )

51,000 to 75,000 ( )

6. What is your level of education?

Primary ( ) College ( ) Masters ( )

Secondary ( ) Under graduate ( ) Doctorate ( )

**SECTION B: BEHAVIORAL FINANCE FACTORS AFFECTING INVESTMENT DECISION MAKING.**

Please evaluate and indicate the degree of your agreement with the following behavioral factors affecting your investment decisions by using the following five Likert scales:

*(1=Strongly Disagree; 2=Disagree; 3=Neutral; 4= Agree and 5= Strongly Agree)*

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Heuristic factor</b>					
1. You rely on your previous experiences in the market for your next investment					
2. You can forecast the change in security prices in the future based on the recent stock prices					
3. You believe that your skills and knowledge of the securities market can help you outperform the market.					
4. You are normally able to anticipate the end of good or poor market returns.					
5. You tend to concentrate more on securities which are frequently advertised and make your judgement based on the information easily remembered.					

6. You tend to rely more on recent information that you get and consider it as reliable reference in your investment decisions.					
<b>Prospect factor</b>					
1. After a prior gain, you become more of a risk taker than usual.					
2. After a prior loss, you become more of a risk averse than before.					
3. You avoid selling shares that have decreased in value and readily sell shares that have increased in value.					
4. You feel more sorrow about holding losing securities too long than about selling winning securities too soon.					
5. You tend to treat each element of your investment portfolio separately.					
6. You tend to ignore the connection between different investment possibilities.					
<b>Herd factor</b>					

<p>1. Other investment decisions of the volume of stock traded have an impact on your investment decision.</p>					
<p>2. You consider the information from your close friends and relatives as the reliable reference of choosing the type of securities to invest in.</p>					
<p>3. You usually react quickly to change your investment decision basing on another investment decision.</p>					
<p><b>Market factor</b></p>					
<p>1. You consider past trends of securities and its prices when making your own investment decision.</p>					
<p>2. Market information is important for your stock investment</p>					
<p>3. You analyze a company's customer preference before investing in their securities.</p>					
<p><b>SECTION C: INVESTMENT DECISIONS</b></p>					

1. You are more of a risk averse person for your investment decision outcome.					
2. You feel satisfied with your investment decisions in the last year including selling, buying and holding of securities.					
3. Investors act the same ways and rely on information gathered in groups to support each other.					

4. Having filled the questions above, which investment decision regarding securities will you partake?

A. Buy ( )

B. Sell ( )

C. Hold ( )

**Thank you for your participation.**