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BEHAVIOURAL BIASES AND INVESTMENT DECISIONS AT THE NAIROBI SECURITIES EXCHANGE

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ABSTRACT

This research offered a comprehensive analysis of behavioral biases and their impact on investment decision making using the context of NSE and provides a much-needed understanding of the psychological aspects of financial markets in an emerging economy in Africa. The research thus deviated from the neoclassical finance frameworks that assume rational investors to analyze four behavioral biases, including overconfidence, anchoring, cognitive dissonance, and herding that negatively influence investment decisions and cause inefficiencies in the market. The study used both quantitative survey data gathered from 385 retail investors with 72% response rate and 277 usable responses, and qualitative assessment of behavioral patterns discerned from past market occurrences. The sample target was fairly young, with 44% of the sample being between 29-39 years old and 56% of the sample having a bachelor's degree, which was indicative of an educated investor base that might exhibit behavioral biases typical of emerging markets. Statistical analysis incorporates descriptive metrics, correlation testing, and multiple regression modeling to quantify bias impacts while controlling for demographic variables. From the study findings, cognitive dissonance stood out as the most significant bias (mean = 4.16) showing investors' inclination to justify their actions instead of adjusting their decisions. Consequently, anchoring effects revealed positive effects (ß = 0.299, p<0.01), implying that reference points can be useful in uncertain markets. On the other hand, overconfidence and herding presented significant negative effects (ß = -0.152, p<0.05; ß = -0.175, p<0.01) that led to excessive risk-taking and momentum trading that are detrimental to portfolio performance. The predictor variables accounted for 99.1% of the decision variation (R^2 = 0.991), further supporting the importance of behavioral factors over rational choice theories. This paper found that some biases provide short-term decision consistency, whereas others worsen investment performance. It suggested that financial literacy, choice architecture, and policy interventions can effectively address bias-driven distortions in the NSE. Future research should therefore examine how susceptibility to bias varies across different demographic groups and the long-term impact on the market.

Key Words: *Overconfidence, Anchoring, Cognitive Dissonance, Herding*

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INTRODUCTION

Investing in financial markets involves decision making within an environment of risk and uncertainty. However, theories like the Efficient Market Hypothesis (EMH) and the Modern Portfolio Theory (MPT) presuppose that investors act rationally and incorporate all available information to the best of their abilities to maximize utility (Ooi, 2024). This is quite a rational outlook, which does not take into account that investors are not always completely rational due to various cognitive and affective biases. In these models, markets are efficient, that is, the prices of financial securities reflect all available information at any one time, thus making it virtually impossible for any investor to outperform the market. However, the real behavior of investors and markets differs in many ways from the assumptions underlying the efficient market hypothesis. Research on the global financial markets has revealed that investors' psychological and emotional characteristics significantly influence their behavior and actions, which in turn lead to irrationality, high volatility, bubbles, and crashes (Akin & Akin, 2024). These deviations have led to the emergence of behavioral finance that aims to explain the existing gap between the classical finance theory and actual market behavior by undertaking psychological analysis.

Behavioral finance has contributed in explaining some of the major financial crises that have occurred within the last two decades including the dot-com bubble of the late 1990s and the 2008 global financial crises. Both crises were characterized by behavioral biases such as overconfidence, anchoring, and herding behavior (Woo et al., 2020; Putri et al., 2020). These examples clearly show how the traditional models are not adequate and stress the need to include cognitive and affective factors into the financial decision-making process. Behavioral biases are not only prevalent in developed markets but also more so in emerging markets because of low financial literacy, limited access to reliable information, information gap, and poor regulation. Overconfidence, herding and anchoring biases prevalent in the global markets have further been evidenced to cause mispricing of assets, excessive trading and poor diversification leading to increased market inefficiencies as evidenced from studies from countries such as India and China (Parashar, Sharma, Sandhya & Joshi, 2024; Fei & Zhang, 2023).

In Kenya, NSE is an important component of the financial system as it provides companies with an opportunity to finance their projects while investors seek to expand their wealth. Nevertheless, it is evident that the investment behavior at the NSE is also driven by behavioral biases especially among the retail investors. These investors often act on impulse, or on the basis of feelings, or because of what others are doing. Some examples include the Safaricom IPO that took place in 2008 where investors overran the market in a record oversubscription frenzy, a move that was occasioned by overconfidence and herding behavior due to media influence and peer pressure, despite the lack of proper research on the sound financial performance of the actual company (Okumu, Olweny, & Muturi, 2021). Likewise, the KenGen and Eveready IPOs investors experienced anchoring and cognitive dissonance of holding on to a loss-making stock so as not to admit to having made a bad decision, thus incurring more losses as the share prices underperformed the expected rates (Murithi, 2020).

These case studies support the argument of irrational investment behavior in the NSE and suggest that there is need for further research on the behavioral aspects of investment. Market investors are always vulnerable to loss aversion where they stick to bad investments in the hope of recovering their money, or they are influenced to invest in a given market without having to assess their decision on the market conditions (Almansour et al., 2023). This is compounded by information gap, low financial literacy and lack of professional investment advisory services in Kenya that put many investors in a vulnerable position of making unfair decisions. Although some prior scholarly

works have focused on the effects of some specific behavioral biases at NSE such as overconfidence (Omoruyi, 2019) and herding (Ludenyo, 2021), no study has looked at the collective influence of multiple behavioral biases in investment decisions and market efficiency.

This research, therefore, aims at examining the impact of behavioral biases on investment decisions in NSE with specific focus on overconfidence bias, anchoring bias, cognitive dissonance and herding behavior. The NSE, as one of the most developed emerging markets in Africa, provides a suitable context for exploring the role of psychological factors in investors' decision-making process especially in the context of low financial literacy, limited information availability and changing market conditions. With regards to the above-mentioned behavioral biases, the research seeks to produce empirical evidence on how investors in this developing capital market make decisions that may not conform to the predictions of the efficient market hypothesis. They are intended to help investors, financial advisors, and policymakers on how to avoid biases and make better investment decisions while increasing efficiency in the financial market (Almansour, Elkrghli, & Almansour, 2023). Finally, the study will contribute to the creation of more specific educational initiatives, better counseling, and policy changes needed to promote a more reasonable and stable environment for investing at the NSE and other similar markets in the region.

Statement of the Problem

Even though behavioral finance has made significant advances in explaining the behavior of investors, the research on behavioral biases in the Nairobi securities exchange (NSE) is still limited in range and depth. Previous research identifies biases like overconfidence or herding independently while overlooking the combined effect of these biases on the investing activity. For instance, Omoruyi (2019) studied overconfidence while Ludenyo (2021) studied herding but neither established the combined effects of these biases on key investment decisions like IPO investments, portfolio diversification, and frequency of trading. This approach has made it hard to come up with a coherent behavioral framework that captures the dynamics of the NSE.

Emerging research reveals that behavioral biases have a strong influence on the dynamics of the market. Aqham, Eny Endaryati, Subroto, and Kusumajaya (2024) pointed out that during volatile periods, investors herding behavior, results in large discrepancies between price levels. Bao and Li (2020) also found that overconfidence leads to over trading which increases market fluctuations. Similarly, research has observed that anchoring bias distorts stock valuation and leads to inefficient investment allocation; this is according to Khalid Ul Islam et al. (2024). These findings collectively affirm that cognitive and emotional factors can undermine rational investment behavior and contribute to inefficiencies in financial markets. However, the literature is not unanimous. Ricciardi and Simon (2000) asserted that while behavioral biases do occur, their influence might have been overstated especially given the presence of rational arbitrage mechanisms. De Bondt and Thaler (1995) argued that market overreactions are self-correcting over time and thus, there is less evidence of continued influence of the behavioral biases Siganporia and Ntuli (2021) supported this by noting that demographic and macroeconomic variables obscure the behavioral impact and require context-level analysis.

Anecdotal and event-based evidence in the NSE shows that much of investor behavior is driven by speculation, social pressure, and cognitive distortions rather than fundamental analysis. Bett, Langat, and Kingori (2024) showed that the oversubscription of the Safaricom IPO was more driven by overconfidence and herd mentality than financial metrics. Owiye, Ombok, and Obura (2019) also demonstrated that during the KenGen and Eveready IPOs, speculative enthusiasm created temporary demand surges, which were followed by steep price corrections when fundamentals did not

warrant valuations. However, these studies are limited to focused studies of discrete IPO events, and provide no systemic analysis of behavioral biases across different market scenarios.

While previous studies like Abdulrasool and Othman's (2022) have linked biases like overconfidence, anchoring, and cognitive dissonance to market inefficiencies, the actual forms of these biases, and their effects on the NSE marketplace, are not well studied Industry-specific characteristics, including low financial literacy, lack of reliable information, and a high proportion of the small investors, might amplify or modify the manifestation of these biases. Despite this, little empirical evidence exists to address these contextual nuances, impairing financial educators, policymakers, and market participants with the insights required to create behaviorally informed interventions. This study, therefore, aims to empirically investigate the impact of overconfidence, anchoring, cognitive dissonance and herding behavior on investment decision at the NSE. Hence, the study seeks to understand how these biases affect trading behaviors, risk perception, stock price forecast, and portfolio decisions so as to provide a better comprehension of the psychological aspect of the investors. These insights will help create sound policy interventions, informative education campaigns, and marketing intiatives that could prevent behavioral biases and foster higher welfare in capital markets.

Objectives of the Study

The study determined the effects of behavioral biases on investment decisions at the Nairobi Securities Exchange. The study was guided by the following specific objectives;

- To determine the effect of overconfidence bias on investment decisions at the Nairobi Securities Exchange.
- To assess the influence of anchoring bias on investment decisions at the Nairobi Securities Exchange.
- To determine the effect of cognitive dissonance on investment decisions at the Nairobi Securities Exchange
- To evaluate the effect of herding on investment decisions at the Nairobi Securities Exchange.

LITERATURE REVIEW

Behavioral Biases and Investment Decisions

Overconfidence and Investment Decisions: Overconfidence can be described as an exaggerated self-estimation of the investor's knowledge or skill level which invariably leads to over trading and increased risk taking (Zhang, 2024). This bias is especially common during phases of euphoria or a bull market when factors such as increasing share prices or favorable interest rates support the irrational feeling of an individual investor that they can beat the market. Parveen, Satti, Subhan and Jamil (2020) pointed out that overconfident investors then underestimate losses and it is not only costly for their portfolio and to the market. For instance, overconfidence is significantly higher in emerging markets where information asymmetry is the norm and investors draw highly risky investment puzzles from either scarce or misleading information. For instance, excessive speculation due to overconfidence has been seen In the Indian and the Chinese markets where investors partake in risky practices and exacerbate market volatility (Das & Panja, 2022). Overconfidence combined with the external factors like economic fluctuations or varying interests' rates create the problem with the market and prevent investors from making the rational decisions.

Anchoring and Investment Decisions: Anchoring refers to the inclination of investors to make decisions based on one piece of information or parameter, such as past price or previous appraisal. This positivist bias can impair investors' ability to correct their information when conditions are continually changing in dynamic markets (Shah & Khursheed Ahmad Butt, 2024). For instance, investors continually use outdated arbitrary

benchmarks or price levels when the market is disrupted due to geopolitical factors or an economic shock. Bibi and Malik (2023) points out that this leads to the phenomenon of mispricing of securities, whereby investors may fail to revise for new information. It may be especially so in low-transparency and low-efficiency markets, where investors do not possess the tools to update their framework with new information. The quality and timeliness of the market information are thus central in correcting this bias, but when the information is either lacking or wrongly interpreted, the anchoring tend to cost the investor his/her capital and/or an opportunity of making more better returns on investment.

Cognitive Dissonance and Investment Decisions: Cognitive dissonance refers to a psychological state characterized by inconsistency within the beliefs or attitudes of investors. This leads to strategies that enable them to discount or explain away information that they find inconsistent with the content of their beliefs (Bosone, Chevrier, & Zenasni, 2022). According to Blake (2022), investors may fail to sell their poorly performing stocks because this will be a sign of failure during downturns or when they have losses. This is commonly referred to as the disposition effect whereby investors tend to hold on to their losing stocks even after information that they should sell them. In places with weak consumer protection laws or low financial literacy, for instance in many emerging economies, external factors like economic risk or high market risk increases the effect of LD on consumers' cognitive dissonance. It was established that investors might not be as rational as assumed; and are more likely to: Retain insensitive investment related beliefs that are no longer valid when the market becomes more volatile; and act on impulse especially during volatile markets. It distorts the perception that investors have towards securities in that their decisions are affected by something other than the actual fundamentals of the market thus making markets inefficient and financially unstable (Katnic, Katnic, Orlandic, Radunovic, & Mugosa, 2024).

Herding Behavior and Investment Decisions: Herding is a behavior in which investors follow the actions of other large investors without carrying out their own analysis or exercising personal judgment (Bintang Sibarani, 2024). This bias is most acute during IPOs or when a market is clearly overheated due to individuals' tendencies to follow the crowd in their decisions. Rajesh (2025) argues that investors tend to follow the crowd to gain their approval instead of using their information or making a rational assessment. Especially in periods of increased expectations, media releases and changes in economic indicators or interest rates can reinforce herding behavior. For instance, *when IPO was launched in Kenya, many investors invested in Safaricom in arithmetic of sentiment analysis but not on fundamentals (Kimani, Karanjah, & Kihara, 2024). Consequently, in relatively inefficient markets, where information is scarce or dispersed, herding/coordinated behavior undeniably leads to serious mispricing of assets and instability in the markets. Market conditions coupled with social influence exacerbate this bias, making the market move in large oscillations and consequently, returns on investments are dismal.*

Theoretical Framework

Efficient Market Hypothesis (EMH)

The Efficient Market Hypothesis, set out by Brown (2020), asserts that all available information is included in prices of the assets. In this theory, it is argued that it is not possible to make above average returns because arbitrage works by correcting price divergences. EMH postulates that both price and functional value of an object are determined by rational behavior of investors who rely on calculations rather than their prejudice. Nevertheless, behavioral finance disproves this assumption by focusing on the psychological and emotional behavior of investors that happens in real markets. For example, Bouattour and Martinez (2019) noted that market inefficiency such as bubbles and crashes are inconsistent with the EMH

proposition because they stem from psychological factors and feelings. Thus, although EMH has significant value as a model that describes efficient markets by design, it leaves out the full picture of how markets work, especially where irrationality is the order of the day.

Modern Portfolio Theory (MPT)

Modern Portfolio Theory (MPT) proposed by Alcide, is based on the diversification of risk. Alcide (2024) defined investment portfolio as an efficient combination of assets which allows the investor to achieve the maximum return per given amount of risk. As an extension of the modern portfolio theory the purpose of MPT is to maximize the expected return for a given level of risk or to maximize utility for a given level of risk – this implies that investors are rational and risk adverse. But according to Abideen, Ahmed, Qiu and Zhao (2023), it is possible to conclude that behavioral biases like overconfidence and herding behaviors negatively impact the formation of efficient portfolios. For instance, overconfidence may lead investors to under estimate risk and consequently over invest in specific stocks hence losses when the market turns bad. In conclusion, despite its abilities to offer a coherent approach to portfolio management, MPT has some serious flaws linked to the concept of rational behavior of investors, which could be especially unapplicable in emergent markets.

Capital Asset Pricing Model (CAPM)

CAPM, as defined by Chen (2021) is an extension of MPT and explains the link between risk and expected return. It also defines another broader category of risk known as systematic risk or beta, which is an index that defines how an asset changes in response to market changes. According to CAPM, investors are assumed rational and demand premium only for systematic risk because unsystematic risk can be diversified out. Nonetheless, Zik-Rullahi, Jide and Onuh (2023) pointed out that anchoring bias and cognitive dissonance are likely to cause mispricing of assets. For instance, investors may overemphasize historical prices or valuation multiples, resulting to unsuitable investment choices. Thus, while CAPM is highly popular in financial analysis, it is not entirely accurate because it assumes that investors act rationally, which does not apply to real-world markets in case of high reliance on psychological factors.

Behavioral Finance Theories

Traditional finance offers an economic perspective on the stock market which is criticized by behavioral finance which relies on psychology theories. Leković (2020) pointed out that investors make decisions that are not rational because they are guided by cognitive biases and emotions. Behavioral finance tries to account for such patterns, like bubbles and crashes, by analyzing the psychological influence on behavior. Qasim, Hussain, Mehboob and Arshad (2019) assert that herding and overconfidence efflux, common to emerging markets, are heightened due to information imbalance and poor investor education. As a result, there is a greater justification for the applicability of behavioral finance in explaining the behavior of the investors as traditional models do not factor in the human being that is involved in the decision-making process in less efficient markets.

Prospect Theory

Prospect Theory developed by Kahneman and Tverksy describes how individuals make decisions under risks. Biggs and Pettijohn (2019) found that individuals have different preferences for gains and losses, which creates an irrational increase in risky decision-making. These entail the loss aversion (the inclination to avoid losing money than gaining it) and the framing effect (the manner in which information is presented influences the decision making). According to Barberis, Jin and Wang (2019), Prospect Theory helps relate firmly on the ability that investors exhibit in negative shocks and periods of elevated volatility. For instance, loss aversion results in a phenomenon known as the disposition effect, where investors refuse to sell their losing stocks since they do not want to acknowledge their losses. Thus, Prospect Theory is quite helpful in explaining the psychological

characteristics that motivate investors and their decisions, particularly during the periods of market fluctuations.

Empirical Review

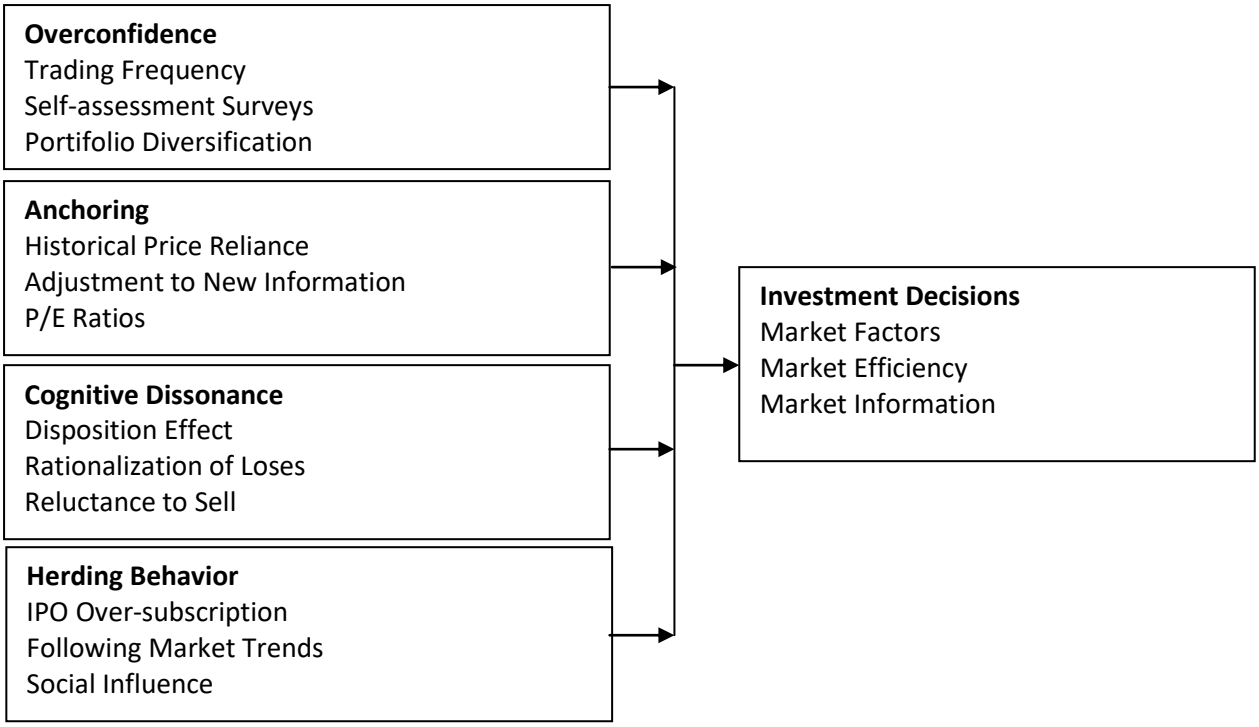
In more recent years, the effect of the behavioral biases on investment decisions has been explored in many empirical studies pausing a challenge to the validity of the EMH, the MPT and the CAPM. These studies highlight how psychological factors like overconfidence, loss aversion, herding, and anchoring can lead to market inefficiencies and mispricing of assets, which traditional models often fail to explain.

Kovarsky (2019) provides an influential critique of EMH by showing how investor sentiment and psychological factors lead to bubble formation and collapse. According to Shiller's empirical findings, events like the dot-com bubble as well as the housing market collapse cannot be solely rationalized by the application of available information. They emanate from the effects of overconfidence, herding and over optimism resulting in over trading and subsequent overselling of securities with consequential sharp downsides. This makes it hard for EMH to explain real world market behavior especially when irrationality is evident into given market. Barakat and Barakat (2024) also support this critique of EMH in their study on investor overreaction. They provide empirical evidence that proves that investors are prone to herd behavior when responding to good and bad news, which leads to price fluctuations incongruent with the true value of securities. They find that stocks with large movements experience mean reversion in the subsequent periods and this leads to market mispricing. These behaviors are contrary to the EMH view that markets will always respond to new information rationally and reflect the availability of biases in investors.

The impact of overconfidence in investment behavior has also been explored widely. Bouteska, Harasheh and Abedin (2023) discussed how investor hubris impairs actual performance through overconfidence in the ability to predict movements in stock prices, which leads to frequent trading and increased transaction costs. His research indicates that shareholders with high levels of overconfidence trade more often leading to lower returns because the costs of these trades are high. This overconfidence bias contributes to the rejection of predictions by models that rely on what economists consider rational behavior, illustrating that psychological factors are at least as important in investment decisions. Besides overconfidence, loss aversion which is one of the major constituents of Prospect Theory has also been seen to play a major role in investor decision making. While analyzing the effects of loss aversion, Wang (2024) noted that in many cases people overemphasize loss to the equivalent gain; hence they make wrong choices in regard to risk taking. Building on this theory, Jain and Bikrant Kesari (2022) point out that as a result of loss aversion, investors are likely to sell their winning stocks and hold their losing stocks in anticipation of a bounce-back, a phenomenon referred to as the disposition effect. They also discovered that investors are usually quick to sell stocks which are experiencing positive performance in order to take profits while they are hesitant to sell stocks which are in the negative territory, therefore skewing the construction of the portfolio and creating inefficiency within the market.

Another valuable bias found in the literature is herding. Pollock, Mori, and Wu (2024) further showcased how people mimic the actions of other people especially if operating under conditions of uncertainty of when the bubble is either growing or collapsing. According to their findings, herding behavior amplifies the market trend, resulting in the formation of bubbles or crashes. The argument is that self-interested investors with rational expectations follow the actions of others in an environment that leads to over-optimism in the buy-side or over-pessimism on the sell-side of markets.

Conceptual Framework



Independent Variables **Dependent Variable**

Figure 1: Conceptual Framework

METHODOLOGY

This research adopted a descriptive research design to uncover the key aspects of this phenomenon and provide insights into investment behaviors. Descriptive research was chosen as it helps in systematically characterizing and describing the relationship between variables without necessarily identifying causal links.

The sample frame focused on the individual investors who trade at the NSE, as per the Capital Markets Authority (CMA) Quarterly Statistical Bulletin (Q2-2018), there were about 1,597,269 individual investors. To achieve this, a sample of 385 investors was calculated using the Cochran formula for the determination of the sample size. The target population was self-selected investors who had experience in trading on the stock market and were expected to have come across different behavioral biases. This approach allowed only the most appropriate participants to be chosen to respond in a way that would be useful in achieving the goals of the research.

This study adopted primary data in order to assess the impact of behavioral biases; overconfidence, anchoring, cognitive dissonance, and herding on investment decisions at the NSE.

Primary data was collected by administering structured questionnaires to individual investors. The questionnaires were well structured into demographic data, behavioral bias and investment choices. Every behavioral bias under study overconfidence, anchoring, cognitive dissonance, and herding was captured by two questions each on a 5 Likert scale with the response options ranging from “Strongly Disagree” to “Strongly Agree”.

This paper employed a regression analysis to test the effect of the following behavioral biases; overconfidence, anchoring, cognitive dissonance and herding on investment decisions of companies listed in NSE. In analyzing the qualitative data, the

research employed thematic analysis in order to identify factors that affect investment behavior. On the other hand, the quantitative data were analyzed using descriptive statistics such as mean and mode in order to determine the prevalence of behavioral biases among investors. Therefore, inferential statistics and multiple regression analysis were used to determine the effects of the independent variables (behavioral biases) on the dependent variable (investment decisions). Descriptive statistics was used to summarize the data and regression analysis to make the results more generalizable to the investor population as recommended by Ongeta and Nasution (2021).

To analyze the effect of behavioral biases (overconfidence, anchoring, cognitive dissonance, and herding) on investment decisions at the NSE, we used the multiple linear regression model with the help of SPSS and estimated with OLS. The model used to test the hypothesis formed by the research questions established the following multiple regression model:

$$Y=\beta 0+\beta 1X1+\beta 2X2+\beta 3X3+\beta 4X4+\epsilon$$

Where:

- Y= Investment decisions (dependent variable)
- β0 = Constant term
- β1, β2, β3, β4= Regression coefficients for each behavioral bias (independent variables)
- X1, X2, X3, X4= Overconfidence, Anchoring, Cognitive Dissonance, Herding Behavior, respectively
- ϵ = Error term

FINDINGS

Response rate

A total of 385 semi-structured questionnaires were administered to individual investors who traded at the Nairobi Securities Exchange, and the researcher managed to receive 277 properly filled questionnaires, resulting in a response rate of 72% and a non-response rate of 28%. The researcher considered this an adequate representation of the target population, since Wright, Pagliaro, Page and Diminic (2023) recommend a response rate of at least 60% for meaningful generalizations in survey-based research.

Descriptive statistics

Behavioral Factors Influencing Investment Decisions

The study sought to establish the extent to which overconfidence bias, Anchoring Bias, Cognitive Dissonance bias, and herding bias influence investment choices. The following scale was used while interpreting the mean scores:

- – 1.49: Not at all
- 1.50 – 2.49: To a small extent
- 2.50 – 3.49: To a moderate extent
- 3.50 – 4.49: To a large extent
- 4.50 – 5.00: To a very large extent

Table 1: Behavioral Factors

Overconfidence Bias	Mean	Std. Deviation
I believe I outperform other investors	3.81	1.197
I underestimate investment risks	3.72	0.826
I rarely seek investment advice.	2.44	1.291
I trust my judgment over experts	3.33	1.235
Mean	**3.32**	**1.105**

Anchoring Bias	Mean	Std. Deviation
I base my investment decisions on the initial price of the stock	4.12	0.804
I often compare current prices with previous highs or lows before investing	3.78	1.221
I tend to stick with my first judgment even when presented with better alternatives	3.68	1.454
Mean	**3.86**	**1.160**

Cognitive Dissonance	Mean	Std. Deviation
I avoid information that may prove my past investment decisions wrong	4.42	0.585
I justify my losses by blaming external factors instead of reviewing my decisions	4.04	0.863
I selectively focus on news or reports that support my prior investment choices	4.02	0.877
Mean	**4.16**	**0.775**

Herding Bias	Mean	Std. Deviation
I follow the investment trends popular among other investors	4.08	0.768
I often make investment decisions based on group behavior	3.66	1.328
I feel more confident when I invest in stocks others are also buying	3.41	1.422
Mean	**3.62**	**1.188**

The study found that overconfidence bias moderately influenced investment decisions at the NSE, with a mean of 3.32. Investors believed they outperformed others (3.81) and underestimated risks (3.72), though fewer avoided investment advice (2.44). In contrast, cognitive dissonance had a greater impact, with a higher mean of 4.16. Many investors ignored contradicting information (4.42), blamed external factors for losses (4.04), and focused on supporting views (4.02), indicating strong bias in decision-making.

Investment Decision

Participants were also asked to express the level of their agreement concerning various investment decision factors. The mean scores were analyzed using the following interpretation scale:

- 1.00 – 1.49: Strongly Disagree
- 1.50 – 2.49: Disagree to Some Extent
- 2.50 – 3.49: Neutral or Slightly Agree
- 3.50 – 4.49: Agree
- 4.50 – 5.00: Strongly Agree

The results are tabulated in the table below:

Table 2: Individual Investment Decision

Investment Decision	Mean	Std. Deviation
I consistently evaluate the outcomes of my previous investment choices, identifying what worked well and what didn't to refine my future strategies.	4.14	0.729
I establish specific financial goals, such as profit targets and acceptable loss limits, which guide my decisions on when to buy, hold, or sell a stock.	3.68	1.057
Aggregate Mean	**3.91**	**0.893**

The findings indicate that investment decisions among investors at the Nairobi Securities Exchange are strongly influenced by reflective and goal-oriented behaviors. Most investors reported consistently evaluating the outcomes of their previous investment choices to improve future strategies, with a high mean score of 4.14, suggesting this practice is widely adopted. Additionally, setting specific financial goals such as profit targets and acceptable loss limits also played a significant role in guiding buy, hold, or sell decisions, as reflected by a mean of 3.68. The aggregate mean of 3.91 indicates that, overall, investors demonstrate a great extent of thoughtful and structured decision-making in managing their investments.

Regression analysis

Regression analysis was conducted to assess the effects of behavioral biases on individual investment decisions at the Nairobi Securities Exchange and the results are as below:

Model summary

Investment decisions at the Nairobi Securities Exchange were regressed against various behavioral biases. The model summary results, provide insights into the strength and explanatory power of these biases in influencing investment decisions at the NSE.

Table 3: Model summary

Model Summary									
					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.995[a]	.991	.988	852.70394	.991	334.357	6	19	.000

a. Predictors: (Constant), Overconfidence Bias, Anchoring Bias, Cognitive Dissonance, Herding Bias

The model summary results indicate a very strong relationship between the behavioral biases and investment decisions at the Nairobi Securities Exchange. With an R-value of 0.995, the model suggests that the behavioral biases account for 99.5% of the variation in the investment decisions of individual investors. The Adjusted R-Square value of 0.988 further supports this finding, indicating that even after adjusting for the number of predictors, these biases still explain 98.8% of the variance in investment decisions. The very high R-Square and Adjusted R-Square values highlight that the model fits the data exceptionally well, making it a reliable model for explaining how behavioral biases impact investment decisions.

Analysis of variance (ANOVA)

The ability of each individual independent variable to predict the dependent variable is addressed in the table below where each of the individual variables are listed.

Table 4: Analysis of variance (ANOVA)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	20.200	4	5.050	5.501	.000[b]
	Residual	278.236	272	0.918		
	Total	308.436	268			

a. Dependent Variable: Investment Decision

b. Predictors: (Constant), Overconfidence Bias, Anchoring Bias, Cognitive Dissonance, Herding Bias

The ANOVA table shows that the regression model significantly predicts investment decisions, with an F-value of 5.501 and a p-value of 0.000. This indicates that the independent variables collectively explain a significant portion of the variation in investment decisions. The residual sum of squares (278.236) represents the unexplained variation.

Coefficient Analysis

The regression co-efficient were computed at 95% confidence interval with a p-value 0.05 being used as the indicator of significance. Below table summarizes the results

Table 5: Regression Coefficients

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	T	Sig.
1	(Constant)	2.320	.439		5.287	.000
	Overconfidence Bias	-.152	.062	-.104	-2.452	.014
	Anchoring Bias	.299	.087	.159	3.437	.001
	Cognitive Dissonance	.195	.046	.141	4.239	.000
	Herding Bias	-.175	.045	-.126	-3.889	.000

a. Dependent Variable: Investment Decision

The coefficient analysis highlights the extent to which each behavioral bias influences individual investment decisions at the Nairobi Securities Exchange. The regression results indicate that anchoring bias (B = 0.299, p = 0.001) and cognitive dissonance (B = 0.195, p = 0.000) have a statistically significant positive impact on investment decisions, implying that investors who exhibit these biases are more likely to make decisions influenced by them. In contrast, overconfidence bias (B = -0.152, p = 0.014) and herding bias (B = -0.175, p = 0.000) show a significant negative effect, suggesting that these biases may lead to suboptimal or irrational investment behaviors. The derived regression model is expressed as:

$$Y = 2.320 - 0.152X_1 + 0.299X_2 + 0.195X_3 - 0.175X_4$$

Where,

Y –Investment Decision (Dependent variable)

X_1 - Herding Bias

X_2- Anchoring Bias

X_3- Cognitive Dissonance

X_4 - Herding Bias

The constant in the regression equation is 2.320, which represents the baseline level of investment decision-making when all behavioral biases (X_1 to X_4) are equal to zero. In simpler terms, if an investor is not influenced by any of the studied biases their expected investment decision score would be 2.320. This serves as a reference point for assessing how each bias contributes to changes in decision outcomes.

CONCLUSIONS AND RECOMMENDATIONS

The study concludes that behavioral biases have an impact on investors' decisions at the Nairobi Securities Exchange. The two common biases are cognitive dissonance and anchoring bias whereby investors tend to stick to their previous decisions or use certain reference points when investing. However, the study also reveals that these biases can help provide better short-term results but they can cause decisions that are not optimal in the long run because they do not allow investors to update their information. On the same note, biases such as overconfidence and herding have adverse effects on investment since they lead to rash decisions or following the bandwagon. It is noteworthy that most of the investors at the NSE are educated and financially sophisticated, with many of them being aged between 18 and 39 years. These characteristics imply that the potential investors are relatively young and active, even though it may also indicate that many of them may not be experienced enough to make fully rational investment decisions. Consequently, behavioral biases are always present and determine how these investors operate in the market, calling for the need to increase awareness of such biases in order to reduce their impact on decision making.

The following recommendations are made based on study conclusions:

Financial Education and Training: Investors should be educated on behavioral biases and their effects on investment decisions on an ongoing basis. This could assist people to identify when they are likely to make decisions based on overconfidence, cognitive dissonance, or any other bias that is most likely to lead to the wrong decision.

Encourage Rational Decision-Making: Investors should be able to challenge their own perceptions and not make decisions based on emotions or trends such as bandwagonism. Some workshops and seminars that may be informative are those that teach people how to identify bias and how to avoid or minimize it.

Behavioral Interventions: It is possible for financial institutions and investment firms to employ interventions that would assist the investor in overcoming the biases, for example, by providing a pop-up message which offers to remind the investor to reconsider his or her options, or by using an application that exposes the investor to other perspectives that contradict the biases.

Future research directions include understanding the propensity of different ages and income levels towards these biases and whether there are specific biases that are more likely to be held by certain age or income groups. Further, more longitudinal studies could shed light on when and how behavioral biases develop and to what extent they impact investment outcomes.

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