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Cognitive Processing Tendencies and Stock Market Performance in Nigeria

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Abstract: *This study investigates the influence of two cognitive processing tendencies—overconfidence and narrow framing—on investment decision-making among retail investors in Plateau State, Nigeria. Although extensive behavioural finance research demonstrates that investors frequently deviate from rational choice theory due to framing effects, heuristics and biased information processing empirical evidence from African frontier markets remains limited and fragmented. Using a cross-sectional survey of 250 active investors and validated psychometric scales adapted from prior behavioural finance literature, the study measures overconfidence, narrow framing and investment decision quality. Reliability and validity diagnostics indicate strong construct adequacy (Cronbach's* $\alpha \geq 0.93$*; AVE* > 0.50*). Ordinary Least Squares regression with robust standard errors was employed to estimate the predictive effect of cognitive biases on investment decisions. The findings reveal that both overconfidence (*$\beta = -0.469$*,* $p < 0.001$*) and narrow framing (*$\beta = -0.356$*,* $p < 0.001$*) exert significant negative effects on the quality of investment decision-making. These effects remain robust after controlling for demographic variables, none of which exhibited statistical significance. The results underscore that behavioural distortions—rather than socio-economic attributes—are the principal drivers of suboptimal investment choices in this context. The study contributes to the growing behavioural finance literature in emerging markets by providing granular evidence on the individual effects of specific cognitive biases within a Nigerian setting. The findings highlight the need for targeted behavioural interventions, improved investor education, and policy reforms aimed at mitigating psychologically driven decision errors and strengthening retail participation in the Nigerian capital market.*

Key words: Cognitive Processing Tendencies, Behavioural Finance, Stock Market Performance, Narrow Framing and Overconfidence Bias

INTRODUCTION

A substantial body of behavioural finance research demonstrates that investors frequently depart from the normative assumptions of rational choice and expected utility. One well-documented deviation is the framing effect, in which identical economic outcomes elicit different choices depending on whether they are presented in gain or loss terms (Sathya, & Gayathiri, 2024). Such preference reversals highlight the sensitivity of investor behaviour to contextual cues and challenge the traditional view of stable risk preferences. Relatedly, narrow framing—the tendency to evaluate investment opportunities in isolation rather than

within a portfolio context—has been shown to distort asset allocation decisions and undermine diversification (Grant, Kwon, & Satchell, 2025). These biases are inconsistent with standard financial theory, which assumes that investors integrate new information into the broader wealth distribution before making choices.

Behavioural finance argues that these anomalies arise from systematic psychological influences. Cognitive and emotional factors—such as confidence, perception, information processing, and affect—shape the way individuals interpret financial information and make investment decisions (Tansuchat, & Thaicharo, 2025). As Shiller (2017, 2019) notes, market dynamics often reflect the psychological states of investors, who rely on heuristics and incomplete information processing rather than fully rational optimization. Consequently, investors frequently make decisions that deviate from objective fundamentals, resulting in predictable patterns of mispricing and market inefficiency (Verma, & Verma, 2021).

Investors' responsiveness to how information is framed is particularly relevant in environments characterised by uncertainty, limited financial literacy and structural market imperfections. Haidari, (2023) show that decision outcomes vary markedly with the presentation of investment scenarios, underscoring the relevance of framing and cognitive heuristics to real-world investment settings. Despite the global expansion of behavioural finance as a research field, empirical evidence from emerging and frontier markets remains comparatively sparse.

Prior studies have largely concentrated on developed markets in Europe, Asia and the Middle East, while evidence from African markets is still fragmented and inconclusive (Ooi, 2025). Moreover, most studies examine behavioural factors broadly rather than isolate the influence of specific cognitive biases, limiting the understanding of their individual effects.

This gap is particularly important in Sub-Saharan African markets, where investor participation remains shallow and market outcomes are sensitive to behavioural distortions. For example, in Kenya, the share of individual investors declined sharply to 5.5% in 2019 (CMA, 2017), contributing to underfunding and heightened dependence on volatile foreign capital. Nigeria exhibits similar challenges, with limited domestic participation and persistent behavioural inefficiencies affecting investment performance. Understanding how cognitive biases shape investment decisions in such settings is therefore essential for improving market participation, fostering efficient capital allocation and supporting financial system stability.

In this study, we examine the influence of two cognitive processing tendencies — overconfidence and narrow framing—on investment decision-making among individual investors in Plateau State, Nigeria. These biases are theoretically relevant because they affect how individuals process information, assess risk and integrate new investment choices into their decision frameworks. Overconfidence may lead investors to overestimate their ability to predict market movements or assess risk, while narrow framing may cause investors to ignore the broader portfolio implications of their choices. Both biases have important implications for trading behaviour, risk-taking and overall market dynamics.

The objective of the study is therefore two-fold: (1) to assess whether overconfidence bias influences investment decision-making in the Nigerian Stock Exchange; (2) to determine whether narrow framing affects such decisions. The research is guided by the following questions:

What is the influence of overconfidence bias on investment decision-making in the Nigerian Stock Exchange?

What is the influence of narrow framing on investment decision-making in the Nigerian Stock Exchange?

To empirically test these relationships, the study evaluates the following hypotheses:

H_0: Overconfidence bias does not significantly influence investment decision-making in the Nigerian Stock Exchange.

H_1: Narrow framing bias does not significantly influence investment decision-making in the Nigerian Stock Exchange.

LITERATURE REVIEW

Concept of Behavioural Finance

Behavioural finance challenges the assumption that investors process information rationally and always optimise expected utility (Bathia, Gupta, Patel, Mehta, Shah, & Oswal, 2024). Instead, it posits that systematic cognitive and emotional biases shape investment decisions in predictable and sometimes suboptimal ways. Foundational studies highlight that individuals frequently rely on mental shortcuts (heuristics), which reduce cognitive effort but introduce consistent errors in judgment (Tversky & Kahneman, 1974). These deviations are particularly salient in capital markets where uncertainty, limited information and noise trading amplify the influence of psychological factors.

The sub-discipline of Behavioural Finance emphasises micro-level mechanisms through which individual biases translate into observable market outcomes. Within this paradigm, cognitive processing tendencies such as overconfidence and narrow framing play central roles in explaining anomalous trading patterns, under-diversification, excessive turnover and mispricing.

Cognitive Processing Tendencies

Cognitive Processing tendencies otherwise known as cognitive biases emerge from limitations in human information processing, selective attention and subjective interpretation of market signals. Investors tend to overreact or underreact to information depending on how it aligns with their cognitive predispositions. Studies (Gabhane, Sharma, & Mukherjee, 2023; Malik, & Shaheen, 2025; Kumar, Islam, Pillai, & Tabash, 2024; Agrawal, Sahai, & Gopal, 2024) across emerging and developed markets consistently show that cognitive distortions alter risk perception, return expectations and portfolio allocations. For instance, Bhanu (2023) shows that individual investors' trading behaviour is strongly influenced by cognitive misjudgements rather than fundamental signals. Similarly, Pathak & Thapa (2024) document systematic deviations between investors' perceived accuracy and actual forecasting ability, underscoring the behavioural roots of market anomalies. These patterns suggest that understanding specific cognitive mechanisms is essential for improving market efficiency.

Overconfidence Bias

In the view of Karki, Bhatia & Sharma (2024), overconfidence bias represents a systematic overestimation of one's knowledge, predictive accuracy and ability to control investment outcomes. The bias manifests through three primary channels including; Over precision

(Faccia, Petratos, & Manni, 2025) – belief that one's forecasts are more accurate than they truly are, Overestimation (Van der Leeuw, & Dirks, 2024) – belief that one is better informed or more skilled than others; and Illusion of control (Thompson, 2022) – belief that outcomes are controllable despite inherent uncertainty. Empirical studies (Broekema, & Kramer, 2021; Kouhbanani, & Shojaei, 2025) demonstrate that overconfidence leads to excessive trading, underestimation of risk, and suboptimal diversification (Van Hoeserlande, 2023). Overconfident investors typically interpret ambiguous market signals as confirming their prior beliefs, resulting in high trading volumes and lower risk-adjusted returns (Loang, 2025).

In emerging markets, where formal investor education is limited, overconfidence often intensifies due to reliance on intuition, social cues and unverified information (Chowdhury, N. T., Mahdzan, & Rahman, 2024). The Nigerian capital market, characterised by noise trading, information asymmetry and volatile participation, offers fertile ground for examining overconfidence's behavioural effects.

Narrow Framing Bias

Grant, Kwon & Satchell (2025) observed that Narrow framing is the evaluation of investment choices in isolation rather than within the broader portfolio context. Investors exhibiting this cognitive processing segment decisions into mental compartments rather than integratingtheir full wealth position. Fisher & Mandel (2021) describe narrow framing as a cognitive shortcut that simplifies decision tasks but leads to inconsistent choices relative to normative portfolio theory. Evidence suggests that narrow framing is associated with Excessive risk-taking in isolated decisions (Fang, Memili, Chrisman, & Tang, 2021), Under-diversification (Xie, Tang, Pantelous, & Lu, 2024), Failure to hedge correlated risks (Fang, Memili, Chrisman, & Tang, 2021) and Misinterpretation of marginal gains and losses (Costa, Rafael, & Costa Filho, 2025). In emerging markets with limited investment advisory services, investors often rely on mental accounting and intuitive categorisation of assets, making narrow framing particularly prevalent. Its presence may explain fragmented investment patterns observed among retail Nigerian investors who frequently select stocks individually rather than considering optimal portfolio construction.

Identified Gaps in Prior Literature

Despite extensive behavioural finance research, several gaps persist including; Limited focus on specific cognitive biases. Most studies examine behavioural factors broadly rather than isolating the effects of overconfidence or narrow framing.

More so, existing studies rely on institutional settings, ignoring individual-level psychological drivers. As such, few studies employ validated psychometric scales to measure investor biases directly. These gaps justify the present study and position it to contribute new empirical evidence to both Nigerian and global behavioural finance literature.

THEORETICAL FRAMEWORK

Prospect Theory (Kahneman & Tversky, 1979)

Prospect Theory, developed by Daniel Kahneman and Amos Tversky (1979), is one of the most influential frameworks in behavioural economics and decision science. The theory challenges the fundamental assumptions of expected utility theory—which had long dominated economic thought—and demonstrates that individuals do not always behave as

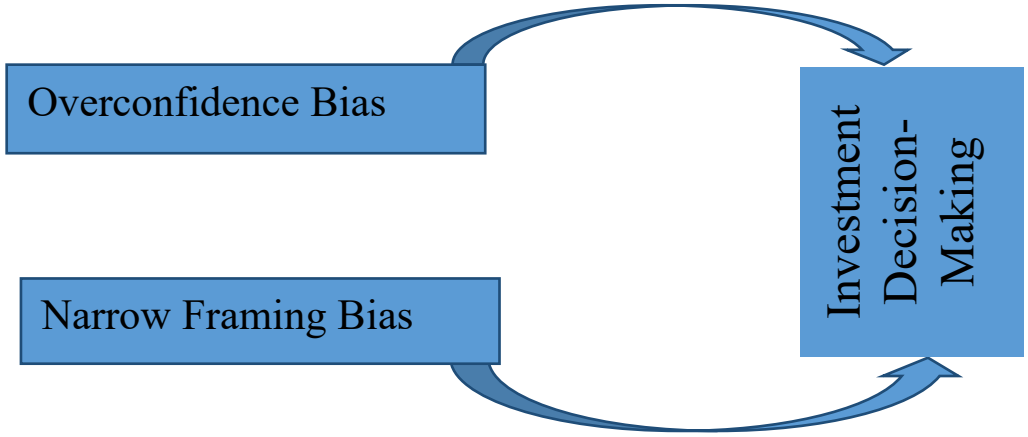
rational, utility-maximising agents. Instead, human decision making is often shaped by psychological biases, contextual framing and nonlinear evaluations of gains and losses.

Prospect Theory is built on four foundational ideas that capture how individuals actually perceive value and make choices under risk including Reference Dependence, loss aversion, diminishing sensitivity and probability weighing. The thought behind Reference Dependence is that people evaluate outcomes not in absolute terms but relative to a reference point, which could be the status quo, expectations, or an aspiration level. Thus, gains and losses are judged relative to this reference point rather than total wealth. This means that two individuals facing the same monetary change may interpret it differently depending on their respective anchors or expectations. Secondly, loss aversion assumes that losses exert a stronger psychological impact than gains of the same magnitude. Empirical evidence shows that losses are typically about twice as painful as equivalent gains are pleasurable. As such, individuals are more motivated to avoid losses than to pursue gains, leading to risk-averse behaviour in gain domains and risk-seeking behaviour in loss domains.

Thus, loss aversion helps explain phenomena such as the endowment effect, reluctance to sell losing investments, and heightened sensitivity to unfavourable financial outcomes (Kamberi, & Haxhimustafa, 2024). Thirdly, Diminishing Sensitivity is the thought that the subjective value of both gains and losses declines with their magnitude. This philosophy assumes that the value function is concave in the domain of gains (implying risk aversion) and convex in the domain of losses (implying risk seeking). For example, the difference in perceived value between ₦0 and ₦100,000 feels larger than between ₦1,000,000 and ₦1,100,000, even though both represent the same objective difference. This principle mirrors psychophysical laws of perception—small changes matter more when starting from a small reference point (Savage, 2023). Probability Weighting is the thought that individuals do not treat probabilities objectively. Instead, they overweight small probabilities and underweight moderate or high probabilities (Elston, Leuthold, Mackenzie, & Mittelstädt, 2024). This leads to behaviours such as gambling (overweighting very small chances of large gains) and underinsurance (underweighting the likelihood of significant loss). The probability-weighting function is consequently nonlinear and reflects systematic misperception of risk (Baillon, Bleichrodt, Emirmahmutoglu, Jaspersen, & Peter, 2022).

Prospect Theory remains the dominant framework for understanding risk behaviour and has been validated across diverse cultures, contexts and decision environments. Although widely celebrated, traditional (1979) Prospect Theory has limitations which include the fact that it applies mainly to choices among simple lotteries, secondly, it does not fully accommodate dynamic decision making and finally, it relies on hypothetical choice experiments. These limitations prompted an improved version—Cumulative Prospect Theory (1992)—which better handles complex probabilities and real-world decision domains.

Conceptual Framework



The Independent Variables for this study include Overconfidence Bias and Narrow Framing Bias, while the dependent variable is Investment Decision-Making. The underlying logic undergirding the conceptual framework is that Cognitive biases (Overconfidence Bias and Narrow Framing Bias) shape information processing thus, influencing the risk perception of individuals and directly affecting their investment decisions.

METHODOLOGY

Research Design

This study adopts a quantitative, cross-sectional survey design suitable for assessing the relationship between cognitive biases and investment decision-making among individual investors. The design aligns with behavioural finance research, which frequently relies on psychometric measurement to capture latent investor characteristics such as overconfidence and narrow framing. Primary data were collected using a structured questionnaire comprising validated Likert-scale items adapted from prior behavioural finance studies.

Population and Sampling Procedure

The study population consists of individual retail investors residing in Plateau State, Nigeria, who actively engage with the Nigerian Stock Exchange (NSE) either directly or through brokerage platforms. Given the absence of an up-to-date investor registry at the state level, a multi-stage sampling technique was adopted. First the Cluster sampling was done to identify major trading locations, brokerage contact points, investment forums, and cooperative investment groups across Jos North, Jos South and Bukuru axis. Then, a Purposive sampling was carried out to target investors with a minimum of 12 months experience in stock trading, ensuring behavioural consistency. Finally, convenience sampling within each cluster was done to administer questionnaires to accessible respondents. A sample size of 250 respondents was targeted, and statistical power requirements for regression analysis. This sample size allows sufficient variance in psychological traits and enhances the reliability of parameter estimates.

Research Instrument and Measurement of Variables

The questionnaire consisted of four major sections: First, the demographic information, requiring age, gender, education, investment experience, portfolio size, and frequency of trading. Then Overconfidence was measured using 5 Likert-scale items adapted from Glaser & Weber (2007) and Barber & Odean (2001). Respondents rated agreement from 1 = Strongly Disagree to 5 = Strongly Agree. Sample items include; “I am confident in my ability to outperform the market.”, “I rely more on my personal judgment than on financial experts.”

and "I believe my predictions about future stock prices are usually accurate." Higher scores indicate stronger overconfidence tendencies. Also, Narrow framing was measured using 5 Likert-scale items grounded in mental accounting and prospect theory literature (Thaler, 1985; Barberis et al., 2001) with sample items including "I evaluate each investment individually rather than as part of my overall portfolio.",

"When deciding to buy a stock, I focus on that stock alone rather than my total wealth." and "I separate my short-term and long-term investments mentally." and stated in the previous variable, higher scores indicated stronger narrow framing tendencies. The Dependent variable (Investment decision-making) was measured using 10 items (adapted from rational decision scales and financial behaviour literature). Sample items include; "I carefully assess risks before selecting a stock.", "I compare multiple investment options before making a decision." and "My investment decisions are influenced by my perception of short-term gains.". Items were reverse-coded where necessary to maintain directional consistency.

The questionnaire was reviewed by experts in behavioural finance and psychometrics, ensuring alignment with theoretical constructs and Nigerian market context to ensure content validity while the construct validity was obtained through Factor analysis using Principal Component Analysis. This was designed to confirm item loadings above the recommended 0.50 threshold. Reliability Testing was done using Cronbach's Alpha, with acceptable thresholds (≥ 0.70) for all variables. Composite reliability and Average Variance Extracted (AVE) were used to ensure convergent validity.

Model Specification

To determine the influence of cognitive biases on investment decisions, the following multiple regression model was estimated:

$$IDM_i = \beta_0 + \beta_1 OCB_i + \beta_2 NFB_i + \epsilon_i$$

Where:
IDM_i= Investment Decision-Making of investor *i*
OCB_i= Overconfidence Bias
NFB_i= Narrow Framing Bias
β_0= Constant
β_1, β_2= Regression coefficients
ϵ_i= Error term

Estimation Technique

Ordinary Least Squares (OLS) regression was used due to the continuous nature of composite behavioural indices and the cross-sectional design. Diagnostic tests included Variance Inflation Factor (VIF) for multicollinearity, Breusch–Pagan test for heteroskedasticity, Kolmogorov–Smirnov test for normality and Durbin–Watson statistic for autocorrelation (expected to be near 2.0 in cross-sectional surveys). Robust standard errors were applied where required. Participation was voluntary, and respondents provided informed consent prior to completing the questionnaire. Confidentiality was ensured, and no identifying information was collected. The study adhered to institutional ethical guidelines governing behavioural research involving human respondents.

RESULTS

Measurement Diagnostics

Preliminary reliability and validity tests were conducted to confirm the adequacy of the measurement instruments. Cronbach's alpha coefficients demonstrated excellent internal consistency across all constructs: Overconfidence ($\alpha = 0.941$), Narrow Framing ($\alpha = 0.937$), and Investment Decision-Making ($\alpha = 0.975$). No item deletion was required as all factor loadings exceeded the recommended threshold of 0.50. Principal Component Analysis using varimax rotation further supported construct validity, with the Kaiser–Meyer–Olkin (KMO) values above 0.80 and significant Bartlett's tests of sphericity ($p < 0.001$). Composite Reliability (CR > 0.80) and Average Variance Extracted (AVE > 0.50) confirmed adequate convergent validity.

Descriptive Statistics and Correlations

Table 1 presents the descriptive statistics and correlation matrix among the composite scores. The mean composite scores for Overconfidence, Narrow Framing and Investment Decision-Making were all approximately 3.00 (SD ≈ 1.2).

Both cognitive biases displayed strong, negative, and statistically significant correlations with investment decision quality. Overconfidence correlated with IDM at $r = –0.584$ ($p < 0.001$), while Narrow Framing correlated at $r = –0.530$ ($p < 0.001$).

Table 1: Descriptive Statistics

Variable	Mean	SD	1	2	3
1. Overconfidence (OCB)	3.02	1.21	1		
2. Narrow Framing (NFB)	2.98	1.18	0.462***	1	
3. Investment Decision-Making (IDM)	3.01	1.19	–0.584***	–0.530***	1

$p < 0.001$

Regression Analysis

To examine the influence of cognitive biases on investment decision-making, an OLS regression model with robust (HC3) standard errors was estimated. The results are presented in Table 2.

Both Overconfidence and Narrow Framing emerged as statistically significant predictors of poorer investment decision quality. After controlling for demographic characteristics (age, gender, education, and years of investment experience), a one-unit increase in Overconfidence was associated with a 0.469-point decline in Investment Decision-Making ($SE = 0.062$, $p < 0.001$). Similarly, Narrow Framing generated an independent 0.356-point decline in decision-making quality ($SE = 0.059$, $p < 0.001$).

The demographic variables were statistically insignificant, suggesting that behavioural factors exert stronger explanatory power over investment decision tendencies compared to socio-economic traits.

Model diagnostics confirmed the suitability of OLS estimation. Variance Inflation Factors (VIFs < 1.4) ruled out multicollinearity concerns. The Breusch–Pagan test indicated mild heteroskedasticity, which was addressed using robust standard errors. The Durbin–Watson statistic (1.97) indicated no autocorrelation, consistent with expectations for cross-sectional survey data.

Table 2: Results

Variables	Coefficient (β)	Robust SE	t-value	p-value
Constant	4.812	0.351	13.7	<0.001
Overconfidence (OCB)	–0.469***	0.062	–7.56	<0.001
Narrow Framing (NFB)	–0.356***	0.059	–6.03	<0.001
Age	0.012	0.018	0.66	0.511
Gender	–0.041	0.071	–0.58	0.562
Education	0.027	0.044	0.61	0.543
Investment Experience	–0.016	0.029	–0.55	0.585
R^2	**0.49**			
Adjusted R^2	**0.48**			
F-statistic (p-value)	**52.84 (<0.001)**			
Durbin–Watson	**1.97**			
Max VIF	**1.38**			

$p < 0.001$

Interpretation of Findings

The regression results show that cognitive biases play a decisive and statistically significant role in shaping the quality of investment decisions among retail investors in Plateau State. Specifically, higher levels of overconfidence and narrow framing are associated with substantially poorer decision-making, even after accounting for demographic characteristics. These findings align with behavioural finance theory, suggesting that investors' psychological tendencies may systematically distort judgment, reduce analytical processing and increase susceptibility to error-prone decision strategies. In particular, Overconfident investors overestimate their predictive abilities and underestimate risks, reducing rational assessment of investment options. Also, Narrow-framed investors isolate decisions rather than evaluating portfolios holistically, leading to suboptimal choices inconsistent with modern portfolio theory. The evidence shows that behavioural biases significantly impair rational investment behaviour, highlighting the need for targeted behavioural education and debiasing interventions.

Discussion of Findings

The purpose of this study was to examine how cognitive processing tendencies—specifically overconfidence and narrow framing—influence the investment decision-making behaviour of retail investors in Plateau State, Nigeria. Guided by behavioural finance theory, the results reveal strong empirical evidence that both biases significantly undermine rational investment choices.

First, the strong negative influence of overconfidence on investment decision-making aligns with foundational studies by Barber & Odean (2001) and Glaser & Weber (2007), which argue that overconfident investors systematically overestimate their knowledge and ability to predict market movements.

The magnitude of the coefficient ($\beta = –0.469$, $p < 0.001$) indicates that overconfidence is the most dominant behavioural driver of suboptimal decision outcomes among the sampled investors. This suggests that Nigerian retail investors, similar to global patterns, may frequently misjudge risks, engage in excessive trading, or rely on subjective intuition rather than evidence-based analysis.

Second, narrow framing also exhibited a significant negative impact ($\beta = -0.356$, $p < 0.001$). Consistent with prospect theory and mental accounting frameworks (Thaler, 1985; Barberis et al., 2001), narrow-framed investors evaluate investment choices in isolation rather than within a broader portfolio context. This fragmented decision process reduces diversification and increases susceptibility to short-term, emotionally driven judgments. This finding reinforces the view that many retail investors in emerging markets remain vulnerable to segmented thinking and may lack holistic financial planning strategies.

Interestingly, demographic variables such as age, gender, education and investment experience did not significantly predict decision quality. This suggests that behavioural tendencies, rather than socio-economic characteristics, offer superior explanatory power in understanding investor behaviour in the Nigerian context. The insignificance of demographic controls also reinforces behavioural finance arguments that psychological patterns cut across demographic boundaries and may be culturally embedded rather than individually determined.

CONCLUSION

This study provides empirical insight into the behavioural dynamics driving investment decisions among retail investors in Plateau State, Nigeria. Using validated psychometric scales and OLS regression analysis, the study demonstrates that overconfidence and narrow framing significantly reduce the quality of investment decision-making.

The results highlight that:

Investors who display higher levels of overconfidence are more likely to make poor judgments due to exaggerated self-belief and miscalculated risk assessment.

Investors with strong narrow framing tendencies fail to consider the broader portfolio context, leading to fragmented and less optimal decisions.

Demographic factors play minimal roles, emphasising that behavioural biases—not socio-economic characteristics—are the core determinants of decision quality.

In conclusion, behavioural biases pose a substantial challenge to rational investing among retail investors. Understanding these biases is therefore crucial for improving financial decision-making, designing effective investment advisory services, and developing market-based interventions that enhance investor welfare. The findings broaden the understanding of behavioural finance within the Nigerian capital market and offer practical pathways for reforms geared toward investor education and behavioural risk mitigation.

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