Heuristic Biases and Investment Decision-Making: The Mediating Role of Risk Attitude in an Emerging Market Context

HASANKA, N.W.A.D.

Department of Financial Management

University of Jaffna

THARSHIGA, P.*

Department of Financial Management

University of Jaffna

Abstract

An individual's decision-making is not solely based on rational evaluation but is strongly influenced by psychological and behavioural factors. Heuristic biases, such as anchoring, availability, and representativeness, are central to shaping how individuals perceive financial opportunities and risks. While these prejudices have been extensively studied in developed economies, there is a lack of empirical evidence within emerging market contexts, particularly at the regional level in Sri Lanka. The present study, therefore, examines the influences of heuristic biases on investment decision-making, with special attention given to the mediating role of risk attitude among individual investors in the Anuradhapura District. The study adopted a quantitative research design, drawing on data collected through a structured questionnaire administered to individual investors. A proportionate sampling approach ensured fair representation across divisions. Data was analyzed using Partial Least Squares Structural Equation Modelling techniques that allowed both the measurement model and the structural relationships to be tested. The analysis confirmed that the constructs were reliable and valid, and the overall model was suitable for further interpretation. The study's findings reveal that anchoring bias plays a significant role in directly shaping investment decisions. In contrast, availability and representativeness biases did not show a significant direct influence on investment decisions. However, all three heuristic biases affect risk attitude, which emerges as a strong predictor of investment decision-making. Mediation analysis further highlights that risk attitude acts as a full mediator for availability and representativeness, and as a partial mediator for anchoring. These results demonstrate that the psychological orientation of investors toward risk is a critical pathway through which cognitive shortcuts influence financial behaviour. In conclusion, this study demonstrates that the interplay of heuristic biases and psychological factors shapes investment decisions in emerging markets. By highlighting the central role of risk attitude, it underscores the need to integrate behavioural perspectives into academic research and practical approaches to financial decision-making.

Keywords: Anchoring bias, availability bias, heuristic biases, representativeness bias, investment decision making

*Corresponding Author: tharshiga@univ.jfn.ac.lk

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Introduction

A study on heuristic bias, specifically representativeness, anchoring, and availability, with risk attitude as a mediator, has arisen as an important area due to its deep impact on investment decision-making and financial market efficiency. Behavioural finance, which challenges the traditional hypothesis of investor rationality, has grown significantly since the initial works of Kahneman and Tversky (1979), highlighting how cognitive shortcuts influence financial product choices (Todd, 2001; Javed et al., 2017). The increasing involvement of individual investors in evolving markets, such as India, Pakistan, and Sri Lanka, highlights the practical importance of understanding investment biases, as they influence not only individuals' wealth but also broader financial market dynamics (Siraji, 2019; Kengatharan & Kengatharan, 2014). Prior studies indicate that heuristic biases lead to suboptimal investment incomes, with risk attitudes playing a pivotal role in shaping these effects (Kasoga, 2021; Sudirman et al., 2023). Despite extensive research studies on heuristics and individual investment decision-making, a specific knowledge gap remains regarding the role of risk attitude in this relationship. While numerous studies confirm that representativeness, anchoring, and availability biases directly influence the selection of investment avenues, the mechanisms through which risk tolerance controls the effect of the relationship remain underexplored (Ahmed et al., 2023; Malik et al., 2024; Ahmed et al., 2022). Although some researchers' findings did not align with this. Risk perception significantly mediates the investment decision-making of individuals (Srivástava et al., 2024; Yadav & Chaudhary, 2022), whereas others express partial or no mediation (Loris & Jayanto, 2021). This argument highlights the need for systematically synthesising findings to clarify these dynamics. The consequences of this gap are significant, as supervising the mediating role of risk attitude may lead to weakening the effectiveness of investor education and policy interventions (Ishfaq, 2016). Representativeness bias involves judging chances based on similarity to stereotypes, anchoring bias refers to overreliance on initial information, and availability bias is linked to judgments influenced by easily recalled events (Braga, 2024; Zhengyang, 2024). Risk attitude mediates how these biases translate into investment decisions, influencing the risk that investors are willing to accept (Rani et al., 2024).

Risk attitude plays a pivotal role in translating cognitive impressions into action. Investors who are more risk-tolerant may view heuristic cues as opportunities, while risk-averse individuals may interpret them as warnings. Hence, risk attitude can mediate the relationship between heuristic biases and investment decisions. Despite its conceptual importance, empirical validation of this mediation remains scarce, particularly in Sri Lanka’s regional markets, where behavioural factors are shaped by local culture, limited market depth, and information asymmetry. Accordingly, the present study is warranted on both theoretical and practical grounds. Accordingly, the present study aims to examine the influence of heuristic biases, representativeness, anchoring, and availability on individual investors’ decision-making, with risk attitude as a mediating variable. The study is motivated by the need to clarify the mixed evidence from prior literature and to provide context-specific insights for emerging markets. By identifying the pathways through which cognitive biases shape investment outcomes, this research contributes to a deeper understanding of investor psychology and offers practical implications for designing behaviorally informed financial education and policy interventions in Sri Lanka. Accordingly, this study addresses the following objectives:

- To examine the direct effects of representativeness, anchoring, and availability biases on investment decision-making.
- To evaluate the mediating role of risk attitude in the relationship between heuristic biases and investment decision-making.

This research contributes theoretically by extending behavioural-finance theory through an integrated mediation framework and practically by providing insights for investor education and advisory practice in Sri Lanka.

Literature Review

Studies on heuristic biases, especially representativeness, anchoring, and availability, consistently associate these cognitive shortcuts with unpredictability in investors' judgments and selection. Across various market backgrounds and samples, most research reports revealed that significant direct effects of at least two of the three heuristics on investment decisions, with representativeness and anchoring frequently exerting more substantial impact than availability (Siraji, 2019; Ahmed et al., 2023; Kasoga, 2021). Simultaneously, findings are not universally common: availability bias is sometimes weak or insignificant depending on the market, instrument, or sampling frame, pointing to substantial contextual dependence in how investors regain and weight salient information (Loris & Jayanto, 2021; Sumantri et al., 2024). Many studies also position overconfidence as an adjacent but potent bias that influences the risk-taking and performance of individuals, reinforcing the broader behavioural view that multiple prejudices often co-occur in actual decision-making environments (Kasoga, 2021; Sihombing & Prameswary, 2023; Javed et al., 2017).

A defining thread in this literature is the mediating role of risk attitude. Many studies reveal that the pathway from heuristics to investment decision-making commonly operates through changes in perceived risk or tolerance for risk, with partial or even complete mediation in the case of representativeness (Srivastava et al., 2024; Jain et al., 2023; Ishfaq, 2016). Mediation by risk tolerance tends to be more stable for overconfidence and representativeness than for availability or herding, implying that not all heuristics translate into action via the same psychological route (Soraya et al., 2023; Sudirman et al., 2023; Rani et al., 2024). Extensions of the basic mediation model incorporate moderators such as locus of control or information asymmetry, producing moderated-mediation assemblies that better mirror market resistances and individual differences (Zhang et al., 2022; Dangol & Manandhar, 2020). However, some studies report either weak mediation or a shift toward moderation-only findings, especially around herding, highlighting that mediation strength differs with construct operationalisation and context (Ranaweera & Kawshala, 2022; Ahmed et al., 2022).

Methodologically, most studies employ the survey method with validated multi-item scales and estimate models using SEM or PLS-SEM, thereby enabling the assessment of both measurement quality and structural relations (Siraji, 2019; Srivastava et al., 2024; Jain et al., 2023). Complementary methods include regression-based mediation, PROCESS macros, and correlational designs (Ahmed et al., 2023; Javed et al., 2017; Zhang et al., 2022). A smaller set of papers experiment with hybrid multi-criteria methods to prioritise or map causal interaction among biases, adding methodological extensiveness to the field (Abhijith & Bijulal, 2024). There are also theoretical and investigational contributions from cognitive psychology and decision science. Anchoring and adjustment in expert diagnostics, construal-level effects on heuristic reliance, and Bayesian accounts of how preliminary anchors reshape risk attitudes,

which enrich the theoretical toolkit for finance scholars (Branch et al., 2022; Braga, 2024; Fumarola et al., 2024).

Demographic and contextual heterogeneity are other prominent features. Age, gender, education, financial literacy, and experience can influence both the vulnerability to heuristic cues and the strength of mediation via risk perception or tolerance (Siraji, 2019; Jameel & Siddiqui, 2019; Wawrosz & Schulz, 2023). Contextual moderators, market development stage, asset class, fintech platforms, and crisis periods also matter, with many studies documenting shifts in bias expression during COVID-19 and in volatile or emerging markets (Sudirman et al., 2023; Parveen et al., 2021; Cuandra et al., 2024). Focused population studies, such as working women or Islamic investors, reveal distinctive patterns consistent with differing social norms and investment constraints (Srivástava et al., 2024; Loris & Jayanto, 2021). Together, these patterns support a contingent view: the magnitude and pathways of heuristic effects are not fixed properties but rather vary with the investor's characteristics and the context in which they invest.

Hypothetical alignment predominantly draws from bounded rationality and prospect theory, framing heuristics as efficient but error-prone shortcuts under uncertainty. Within this framework, the risk attitude of an individual serves as a proximal psychological mechanism that translates heuristic impressions into action (Xue et al., 2015; Sudirman et al., 2023; Soraya et al., 2023; Rani et al., 2024). Recent theoretical development extends beyond classic dual-process intuitions. Construal-level accounts suggest that psychological distance shifts dependence between representativeness and availability, while Bayesian anchoring models articulate how priors and noisy updates generate persistent deviations in perceived risk (Braga, 2024; Fumarola et al., 2024). Despite this progress, integration across cognitive, affective, and social channels is still partial: studies rarely model emotional biases jointly with heuristics, and neuro-cognitive evidence has yet to be systematically linked to field data (Suresh, 2013; Branch et al., 2022).

At the level of specific heuristics, representativeness and anchoring repeatedly emerge as central drivers of investment choices and risk attitudes, aligning with the idea that investors match current cues to salient prototypes or insufficiently adjust from initial anchors when forming valuations and risk judgments (Siraji, 2019; Loris & Jayanto, 2021; M & Srinath, 2024). Availability shows more mixed effects, likely because what is “available” to memory differs across investors, instruments, and information environments; in some domains, salience increases perceived risk and caution, while in others it increases attention and risk taking (Srivástava et al., 2024; Sudirman et al., 2023; Zhengyang, 2024). Reports of null or adverse effects for specific biases caution against one-size-fits-all interventions and motivate closer attention to boundary conditions (Sumantri et al., 2024).

From an applied perspective, the literature supports targeted financial education and advisory interventions that explicitly address heuristic pitfalls, recalibrate risk perception, and provide scaffolding for better choice architectures. This includes debiasing prompts, structured reflection on base rates, and improved disclosure to reduce information asymmetry (Siraji, 2019; Parveen et al., 2021; Srivástava et al., 2024; Sudirman et al., 2023; Cuandra et al., 2024). However, practical recommendations often remain generic, and rigorous field tests of intervention efficacy are rare; translation into policy or platform design is uneven and under-evaluated (Shah et al., 2017; Zhang et al., 2022; Subeesh & Liya, 2024).

Taken together, the state of the evidence is strong on the existence of heuristic effects and on the central mediating role of risk attitudes/perceptions, but still developing in its handling of context, dynamics, and construct precision.

Methodology

Population and sample

The study used proportionate stratified sampling to confirm that the selected respondents accurately represented the distribution of investors across the three divisions of Anuradhapura District. Following Hair et al. (2019), the rule of ten observations per path in the structural model requires at least 90 cases; the present study's 100 responses therefore satisfy this criterion. Five Likert questionnaires were used to measure all the variables, and the structured questionnaire was collected and analysed using SmartPLS. PLS-SEM was chosen because it supports small samples, non-normal data, and models with multiple mediating relationships, making it appropriate for exploratory behavioural-finance studies.

Table 1: Population and sample

District	Population	Proportion (%)	Sample (n=100)
Anuradhapura	645	39.79%	40
Padaviya	435	26.83%	27
Kekirawa	541	33.37%	33
Total	1621	100%	100

Source: Small enterprises development division, Anuradhapura

Conceptual framework

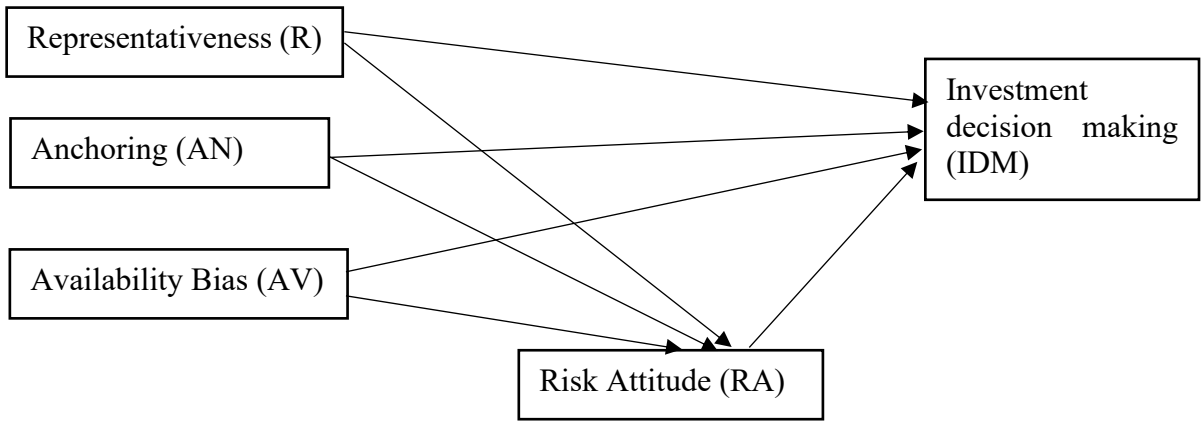

Figure 1: Conceptual Framework

Hypotheses and model development

Behavioural finance theory highlights that heuristics such as representativeness, anchoring, and availability systematically influence investors' decision-making under uncertainty (Tversky & Kahneman, 1974; Todd, 2001). Prior studies have revealed that these heuristics can lead to biased or illogical financial decisions by simplifying complex information (Siraji, 2019; Kasoga, 2021). Thus, it is reasonable to expect that investors in emerging markets such as the Anuradhapura District are also influenced by these heuristics when making investment choices.

H_1: Heuristics bias significantly influences individual investors' decision-making

$$IDM_i = \alpha_0 + \beta_1 R_i + \beta_2 AN_i + \beta_3 AV_i + \varepsilon_1$$

Prior research (Srivástava et al., 2024; Jain et al., 2023) confirms that heuristics shape investors' willingness to tolerate risk.

H_2: Heuristics bias significantly influences Risk attitude

$$RA_i = \alpha_0 + \alpha_1 R_i + \alpha_2 AN_i + \alpha_3 AV_i + \varepsilon_2$$

The prior studies highlight that the influence of heuristics on decisions often occurs indirectly through changes in risk perception or tolerance (Jain et al., 2023; Ishfaq, 2016; Soraya et al., 2023). By acting as a mediator, risk attitude explains the psychological mechanism through which heuristics shape investment outcomes.

H_3: Heuristics bias significantly influences individual investors' decision-making through the mediation of risk attitude.

$$IDM_i = \alpha_0 + \beta_1 R_i + \beta_2 AN_i + \beta_3 AV_i + \beta_4 RA_i + \varepsilon_3$$

For hypothesis testing purposes, these hypotheses are subdivided into H_{1a}, H_{1b}, H_{1c}, H_{2a}, H_{2b}, H_{2c}, H_{3a}, H_{3b}, and H_{3c}.

Data analysis

Partial Least Squares Structural Equation Modelling

The Final Model of PLS SEM is derived by removing R4, R5, IDM3, IDM5, Risk4, and Risk5 indicators to ensure all outer loading values are accounted for. Table 2 expresses the outer loading of indicators.

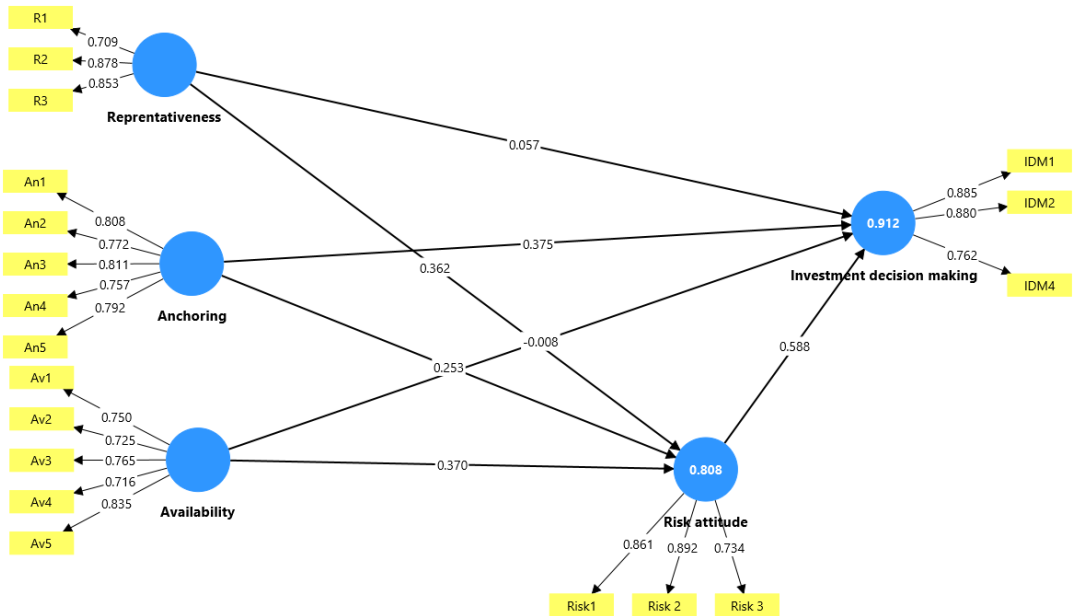

Figure 2: Final path of the model.

Table 2: Outer loading factors

	Anchoring	Availability	Investment decision making	Representativeness	Risk attitude
An1	0.808				
An2	0.772				
An3	0.811				
An4	0.757				
An5	0.792				
Av1		0.750			
Av2		0.725			
Av3		0.765			
Av4		0.716			
Av5		0.835			
IDM1			0.885		
IDM2			0.880		
IDM4			0.762		
R1				0.709	
R2				0.878	
R3				0.853	
Risk2					0.892
Risk3					0.734
Risk1					0.861

Since all items exceed the recommended threshold of 0.70, indicator reliability is established. This supports including all items in further analysis without the need for deletion.

Table 3: Reliability and Convergent Validity Statistics

Construct	Cronbach's Alpha	Composite Reliability (ρ_a)	Composite Reliability (ρ_c)	AVE
Anchoring	0.848	0.851	0.891	0.622
Availability	0.817	0.828	0.872	0.577
Investment Decision-Making	0.797	0.810	0.881	0.713
Representativeness	0.747	0.769	0.856	0.667
Risk Attitude	0.775	0.793	0.870	0.692

Table 3 presents the reliability and convergent validity statistics for the constructs. Cronbach's alpha values ranged from 0.747 to 0.848, all exceeding the recommended threshold of 0.70 (Nunnally, 1978), indicating satisfactory internal consistency. Composite reliability values (ρ_a and ρ_c) were also consistently above 0.70, confirming construct reliability (Hair et al., 2019).

Convergent validity was assessed using the Average Variance Extracted (AVE). All constructs recorded AVE values between 0.577 and 0.713, above the minimum criterion of 0.50 (Fornell & Larcker, 1981). This demonstrates that each construct explains more than half of the variance of its observed indicators.

Table 4: Model fit

	Saturated model	Estimated model
SRMR	0.089	0.089
d_ULS	1.494	1.494
d_G	2.200	2.200
Chi-square	735.623	735.623
NFI	0.589	0.589

The model fit was assessed using SRMR, d_ULS, d_G, Chi-square, and NFI. The SRMR value of 0.089 is below the threshold of 0.10, indicating an acceptable fit (Hu & Bentler, 1999). Both d_ULS (1.494) and d_G (2.200) also fell within acceptable ranges. Although the NFI value (0.589) falls below the conventional threshold of 0.90, such results are common in small-sample PLS-SEM models. Combined with an SRMR of 0.089 (< 0.10), the model demonstrates an acceptable overall fit (Hair et al., 2019).

The results reveal that anchoring bias directly and indirectly influences investment decision-making (partial mediation), whereas representativeness and availability biases affect decisions only through risk attitude (complete mediation). Among heuristics, anchoring shows the most substantial overall effect on investment decisions (β = 0.463), while risk attitude emerges as the dominant predictor of decision-making (β = 0.757). This highlights the central role of psychological predispositions in translating cognitive biases into investment outcomes.

Table 5: Hypothesis Testing Results

Hypothesis	Path	Direct Effect	Indirect Effect	Total Effect	Decision
H1a H3a	R →RA→ IDM	0.057 (0.373)	0.212 (< 0.001)	0.212 (< 0.001)	H1a not supported H3a supported with full mediation
H1b H3b	AN → RA→ IDM	0.375 (< 0.001)	0.149 (0.004)	0.463 (< 0.001)	H1b supported H3b supported with partial mediation
H1c H3c	AV → RA→ IDM	–0.008 (0.899)	0.217 (< 0.001)	0.217 (< 0.001)	H1c not supported H3c supported with full mediation
H2a	R → RA	0.362 (< 0.001)	–	0.293	H2a supported
H2b	AN → RA	0.253 (0.001)	–	0.106	H2b supported
H2c	AV → RA	0.370 (<0.001)	–	0.197	H2c supported
	RA → IDM	0.588 (<0.001)	–	0.757	

Note: p-values are given within parentheses.

The model's explanatory power was evaluated using the coefficient of determination (R^2) and adjusted R^2 values.

Table 6: Coefficient of Determination

Construct	R^2	Adjusted R^2
Investment Decision-Making	0.912	0.909
Risk Attitude	0.808	0.802

The R^2 value for Risk Attitude was 0.808, indicating that representativeness, anchoring, and availability heuristics together explained 80.8% of the variance in risk attitude. The R^2 for Investment Decision-Making was 0.912, suggesting that heuristics and risk attitude collectively explained 91.2% of the variance in decision-making behaviour. According to the guidelines of Cohen (1988) and Hair et al. (2019), values above 0.75 are considered substantial, confirming that the proposed model has very high explanatory power.

Table 7: Total effects

	Investment decision making	Risk attitude
Anchoring	0.463	0.106
Availability	0.000	0.197
Representativeness	0.012	0.293
Risk attitude	0.757	

The results confirm that risk attitude had the most substantial effect on investment decision-making ($\beta = 0.757$), emphasising its central role in the model. Anchoring bias also exhibited a substantial total effect ($\beta = 0.463$), indicating that it had a direct and indirect influence on investment decisions. In contrast, availability ($\beta = 0.000$) and representativeness ($\beta = 0.012$) biases showed negligible total effects on decision-making, suggesting their influence occurs mainly through risk attitude rather than directly. Regarding predictors of risk attitude, representativeness ($\beta = 0.293$) and availability ($\beta = 0.197$) had more potent effects than anchoring ($\beta = 0.106$). This indicates that investors' risk predispositions are shaped more by representativeness and availability heuristics than anchoring.

Discussion of Findings

The findings indicate that anchoring bias significantly influences investment decision-making, both directly and indirectly, supporting earlier research that emphasised the strong role of anchors in shaping financial decisions (Kasoga, 2021; Jain et al., 2023). In contrast, availability and representativeness biases did not have a significant direct effect, suggesting that investors in the Anuradhapura District did not rely solely on ease of recall or similarity heuristics when making final investment decisions. This moderately diverges from studies in developed markets where representativeness is often a strong predictor (Siraji, 2019; Ahmed et al., 2023).

A significant contribution of this study is confirming the central role of risk attitude. Risk attitude significantly mediated the effects of all three heuristics on investment decision-making. Specifically, representativeness and availability biases were fully mediated by risk attitude, while anchoring demonstrated partial mediation. This aligns with behavioural finance theory, which posits that risk perception and tolerance are psychological mechanisms that link cognitive shortcuts to actual behaviour (Ishfaq, 2016; Srivastava et al., 2024). Importantly, the model explained over 90% of the variance in investment decision-making ($R^2 = 0.912$),

highlighting the explanatory power of incorporating risk attitude. The results reveal that the dominance of anchoring bias in shaping decisions may reflect information limitations and market familiarity among Sri Lankan investors, who often rely on past prices or peer information when assessing investments. The weaker effects of representativeness and availability suggest that investors give less weight to stereotype-based or recall-based judgments in less-developed information environments. These findings reinforce bounded-rationality and prospect-theory assumptions: under uncertainty, investors simplify complex choices through heuristics, with risk attitude translating these biases into behaviour. From a policy perspective, investor-education programs should include bias-awareness and risk-assessment modules. Financial institutions can adopt behavioural nudges such as anchor-range disclosures or decision prompts to improve rationality in retail investment decisions.

Conclusion

This study examined the influence of heuristic biases, anchoring, availability, and representativeness on investment decision-making in Anuradhapura District, Sri Lanka, with risk attitude as a mediating variable. Results reveal that anchoring bias significantly and directly shaped investment choices, while availability and representativeness biases exerted no direct effects. However, all three heuristics significantly predicted risk attitude, which had the most potent effect on investment decision-making. These findings suggest that risk attitude is the central psychological mechanism linking cognitive shortcuts to investment outcomes.

Theoretically, the results extend behavioural finance literature by clarifying the mediating role of risk attitude. While prior studies often positioned heuristics as direct drivers of decisions, this study shows that their influence is more nuanced, with availability and representativeness operating primarily through investors' predispositions toward risk. The model's explanatory power ($R^2 = 0.912$ for investment decision-making) further demonstrates the robustness of integrating psychological mechanisms into behavioural finance frameworks.

Practically, the findings highlight the need for investor education and advisory practices to focus on risk attitudes as a critical determinant of financial behaviour. Regulators and policymakers should consider the role of heuristics and psychological biases in shaping retail investor decisions, particularly in emerging markets where informational constraints are pronounced. Overall, this study underscores that improving investment outcomes requires addressing cognitive biases directly and managing the underlying risk attitudes through which these biases operate.

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