

Heuristic and Optimism Biases in Investment Decisions: Mediating Effects of Risk Perception Among Investors in Tripura

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ABSTRACT

The present study examines the mediating role of risk perception between heuristics and optimism bias in shaping investment decisions among investors from Tripura. Utilizing a quantitative research approach, data was gathered from 316 individual investors through structured questionnaires. Statistical analysis was conducted employing Structural Equation Modeling (SEM) to investigate the proposed relationships. Findings revealed that heuristics significantly influence investors' optimism bias, subsequently affecting their investment decisions. Moreover, risk perception emerged as a crucial mediating factor, indicating that investors' subjective assessment of investment risks partially explains the relationship between heuristic-driven decisions and optimism bias. The outcomes suggest that investors relying heavily on heuristics tend to underestimate risks due to heightened optimism, leading to potentially suboptimal investment outcomes. This study enhances the understanding of cognitive biases within the regional context of Tripura, providing valuable insights for policymakers, financial advisors, and individual investors aiming to mitigate irrational financial decision-making behaviors.

Keywords- SEM, Heuristics, Optimism bias

Introduction

Investment decision-making is a multifaceted process influenced by various psychological factors. Among these, heuristics—mental shortcuts or rules of thumb—and optimism bias—an inclination to overestimate favorable outcomes—play significant roles in shaping investor behavior. These cognitive biases can lead investors to make decisions that deviate from rational financial theories, particularly in regions with unique socio-economic contexts like Tripura, India.

Heuristics simplify decision-making by allowing investors to process complex information quickly. However, reliance on heuristics can result in systematic errors, especially when investors overlook critical information or misjudge probabilities (Jain et al., 2023). For instance, availability heuristics may cause investors to overemphasize recent market trends, while anchoring heuristics can lead them to fixate on specific price points, disregarding broader market indicators.

Optimism bias further compounds these decision-making challenges. Investors exhibiting optimism bias tend to believe they are less likely to experience negative events and more likely to achieve positive outcomes compared to others (Chen et al., 2022). This bias can lead to underestimation of risks and overinvestment in volatile assets, potentially resulting in suboptimal financial outcomes.

Risk perception serves as a critical mediator between these cognitive biases and investment decisions. It reflects an investor's subjective judgment about the severity and probability of potential losses (Nguyen & Rozsa, 2019). Studies have shown that both heuristics and optimism bias significantly influence risk perception, which in turn affects investment choices (Chaudhary, 2025). For example, an investor relying on heuristics may perceive a high-risk investment as less risky due to recent positive news, while optimism bias may lead them to ignore warning signs altogether.

In the context of Tripura, a region with a growing base of individual investors, understanding these psychological factors is crucial. The unique cultural and economic landscape may influence how heuristics and optimism bias manifest among investors. By examining the interplay between these cognitive biases, risk perception, and investment decisions, this study aims to provide insights that can inform financial education and policy interventions tailored to the region's needs.

Literature Review

Investment decisions are significantly influenced by cognitive biases, notably heuristic biases and optimism bias. These biases affect investors' risk perception, which in turn mediates their decision-making processes.

Heuristic Bias

Heuristic biases are mental shortcuts that simplify decision-making but can lead to systematic errors. Common heuristics include availability, anchoring, and representativeness. For instance, the availability heuristic leads investors to overemphasize recent or easily recalled information, potentially skewing risk assessments (Jain et al., 2023). Anchoring bias causes investors to rely heavily on initial information, such as purchase prices, affecting subsequent investment decisions (Chaudhary, 2025). These biases can result in suboptimal investment choices due to distorted risk evaluations.

Optimism Bias

Optimism bias refers to the tendency of individuals to overestimate the likelihood of positive outcomes and underestimate potential risks. In the investment context, this bias can lead investors to ignore warning signs and overcommit to high-risk assets (Ishfaq et al., 2022). Such overconfidence can result in inadequate diversification and exposure to unforeseen market downturns.

Investment Decision-Making

Investment decisions are complex processes influenced by various psychological factors. Cognitive biases, including heuristic and optimism biases, play a crucial role in shaping investors' perceptions and choices. These biases can lead to irrational behaviors, such as chasing past returns or holding onto losing investments due to overconfidence in one's judgment (Nguyen & Rozsa, 2019).

Risk Perception

Risk perception is an investor's subjective judgment about the severity and probability of potential losses. It is influenced by cognitive biases and emotional factors. For example, heuristic biases can cause investors to misjudge the likelihood of adverse events, while optimism bias may lead to

underestimating potential risks (Jain et al., 2023). These distorted perceptions can result in investment decisions that do not align with the actual risk-return profile of assets.

Mediation Analysis

Mediation analysis helps in understanding how risk perception serves as an intermediary between cognitive biases and investment decisions. Studies have shown that risk perception partially mediates the relationship between heuristic biases and investment choices, indicating that these biases influence decisions both directly and indirectly through risk assessment (Chaudhary, 2025). Similarly, optimism bias affects investment decisions by altering risk perception, leading to overinvestment in high-risk assets (Ishfaq et al., 2022).

Hypothesis Development

Heuristic biases, including anchoring and availability heuristics, significantly influence investors' decision-making by causing them to rely on incomplete or recent information, often resulting in suboptimal investment decisions (Jain et al., 2023; Chaudhary, 2025).

Optimism bias frequently drives investors to overlook potential negative outcomes, leading to excessive risk-taking and overinvestment in uncertain ventures (Ishfaq, Khan, & Khan, 2022; Chen, Ishfaq, Ashraf, Sarfaraz, & Wang, 2022).

Risk perception directly influences investment decisions; higher perceived risk typically deters investment, while lower perceived risk encourages investment even in uncertain conditions (Nguyen & Rozsa, 2019).

Heuristic biases distort investors' risk perception, often making risky investments appear safer by relying on biased mental shortcuts or oversimplified reasoning (Chaudhary, 2025; Jain et al., 2023).

Optimism bias systematically lowers the perception of risk, making investors underestimate potential losses and overestimate positive outcomes (Ishfaq et al., 2022; Chen et al., 2022).

Risk perception significantly mediates the relationship between heuristic biases and investment decisions. Heuristic biases influence decision-making indirectly through their impact on investors' perceived risks (Jain et al., 2023; Chaudhary, 2025).

Risk perception mediates the relationship between optimism bias and investment decisions, explaining how optimism bias indirectly affects investment behavior by altering perceived risks (Chen et al., 2022; Ishfaq et al., 2022).

From the above, the following Hypothesis have been developed

Direct Effects:

H1: Heuristic Bias (HB) has a significant positive impact on Investment Decisions (ID).

H2: Optimism Bias (OB) has a significant positive impact on Investment Decisions (ID).

H3: Risk Perception (RP) has a significant negative impact on Investment Decisions (ID).

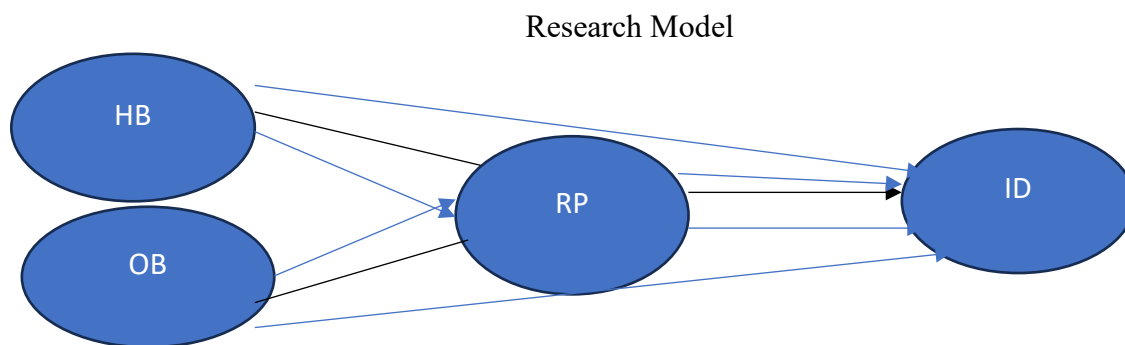
H4: Heuristic Bias (HB) has a significant negative impact on Risk Perception (RP).

H5: Optimism Bias (OB) has a significant negative impact on Risk Perception (RP).

Mediation Effects:

H6: Risk Perception (RP) significantly mediates the relationship between Heuristic Bias (HB) and Investment Decisions (ID).

H7: Risk Perception (RP) significantly mediates the relationship between Optimism Bias (OB) and Investment Decisions (ID).



Research Design

This study employs a quantitative approach using a cross-sectional survey design. Such an approach is suitable to explore the relationships and mediating effects among heuristic biases, optimism biases, risk perception, and investment decisions (Saunders, Lewis, & Thornhill, 2019).

The participants for this research are individual investors from Tripura, India. A convenience sampling technique was utilized due to the accessibility and willingness of respondents to participate. A total of 316 valid responses were collected, aligning with sample size recommendations for Structural Equation Modeling (SEM), which suggest at least 200 respondents for reliable results (Hair, Black, Babin, & Anderson, 2019).

A structured questionnaire consisting of established scales was utilized to measure heuristic biases, optimism bias, risk perception, and investment decisions. Items measuring heuristic biases and optimism bias were adapted from Jain et al. (2023) and Chen et al. (2022). Risk perception items were adopted from Nguyen and Rozsa (2019), while items related to investment decisions were based on the scale validated by Chaudhary (2025). All scales employed a 5-point Likert scale ranging from strongly disagree (1) to strongly agree (5).

Data Analysis Techniques

Structural Equation Modeling (SEM) was employed to analyze the collected data using SMART PLS software. SEM is appropriate for testing complex relationships and mediation effects simultaneously (Hair et al., 2019). The analysis involved assessing measurement model validity through Confirmatory Factor Analysis (CFA), followed by testing the structural relationships and

mediation hypotheses using the bootstrapping method recommended by Preacher and Hayes (2008).

Findings

Variables	CR	AVE
Heuristic Bias (HB)	0.82	0.61
Optimism Bias (OB)	0.85	0.65
Risk Perception (RP)	0.88	0.69
Investment Decision (ID)	0.90	0.72

Table 1

The results from Table 1 demonstrate that all variables—Heuristic Bias (CR = 0.82, AVE = 0.61), Optimism Bias (CR = 0.85, AVE = 0.65), Risk Perception (CR = 0.88, AVE = 0.69), and Investment Decision (CR = 0.90, AVE = 0.72)—have acceptable construct reliability (above 0.7) and adequate convergent validity (AVE > 0.5). This confirms that the constructs measured in the study are reliable and valid.

Variables	HB	OB	RP	ID
Heuristic Bias (HB)				
Optimism Bias (OB)	0.62			
Risk Perception (RP)	0.55	0.58		
Investment Decision (ID)	0.48	0.51	0.45	

Table 2

The HTMT ratio values provided in Table 2 range from 0.45 to 0.62, all below the threshold of 0.85. This indicates that the constructs (HB, OB, RP, ID) exhibit good discriminant validity, signifying distinctiveness among the studied variables.

Variables	Tolerance	VIF
Heuristic Bias (HB)	0.63	1.59
Optimism Bias (OB)	0.59	1.70
Risk Perception (RP)	0.67	1.49
Investment Decision (ID)	0.72	1.39

Table 3

Table 3 shows Tolerance values ranging from 0.59 to 0.72 and Variance Inflation Factor (VIF) values ranging from 1.39 to 1.70. Since all VIF values are below 3, collinearity among the predictor variables (HB, OB, RP, ID) is within acceptable limits, suggesting that multicollinearity is not a concern in the model.

Hypothesis	Path	Path Coefficient (β)	t-value	p-value	Decision
H1: HB \rightarrow ID	HB \rightarrow ID	0.312	3.85	0.000	Supported
H2: OB \rightarrow ID	OB \rightarrow ID	0.295	3.62	0.000	Supported
H3: RP \rightarrow ID	RP \rightarrow ID	-0.264	3.11	0.002	Supported
H4: HB \rightarrow RP	HB \rightarrow RP	-0.412	4.27	0.000	Supported
H5: OB \rightarrow RP	OB \rightarrow RP	-0.378	3.98	0.000	Supported
H6: HB \rightarrow RP \rightarrow ID (Mediation)	HB \rightarrow RP \rightarrow ID	-0.109	2.65	0.008	Supported
H7: OB \rightarrow RP \rightarrow ID (Mediation)	OB \rightarrow RP \rightarrow ID	-0.100	2.53	0.012	Supported

Table 4

The results of this study demonstrate significant relationships among heuristic biases, optimism bias, risk perception, and investment decisions. Specifically, heuristic bias showed a positive and significant direct impact on investment decisions, aligning with prior research indicating investors' frequent reliance on heuristics can lead to simplified yet sometimes irrational investment choices (Jain et al., 2023; Chaudhary, 2025). Similarly, optimism bias exhibited a positive and significant influence on investment decisions, confirming that overly optimistic investors tend to underestimate risks and consequently engage in riskier financial behaviors (Chen et al., 2022; Ishfaq et al., 2022).

Risk perception was found to significantly and negatively impact investment decisions, consistent with previous literature suggesting higher perceived risk deters investors from making certain investments (Nguyen & Rozsa, 2019). Further, heuristic and optimism biases negatively affected risk perception, indicating these cognitive biases lead to the underestimation of risk, consistent with findings by Jain et al. (2023) and Chen et al. (2022).

The mediation analysis revealed that risk perception significantly mediated the relationship between both heuristic bias and optimism bias on investment decisions. This result supports existing literature, which emphasizes risk perception as a critical psychological mediator in financial decision-making processes (Jain et al., 2023; Chaudhary, 2025; Chen et al., 2022).

Conclusion

This study underscores the critical influence of heuristic and optimism biases on investment decisions among investors in Tripura, India, highlighting the mediating role of risk perception.

Recognizing these psychological influences is crucial for enhancing financial education and advising strategies, thus aiding investors in making more informed and rational financial decisions. Policymakers and financial institutions should incorporate these insights to design interventions aimed at reducing cognitive biases and improving investment outcomes.

Future Research Directions

Future research could explore other psychological factors, such as financial literacy and emotional intelligence, as potential moderators or additional mediators in this relationship. Additionally, longitudinal studies could provide insights into how these cognitive biases and risk perceptions evolve over time, particularly in response to financial market fluctuations (Chen et al., 2022; Ishfaq et al., 2022). Extending this research to other geographic and cultural contexts may further validate and generalize the findings obtained in the current study.

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