

# Behavioral Biases in AI-Assisted Investment Decisions

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*Abstract- Artificial Intelligence (AI) is increasingly integrated into financial services through robo-advisors and trading platforms. These tools promise objectivity and efficiency, yet investor behavior continues to be shaped by cognitive and emotional biases. This study investigates the role of biases overconfidence, loss aversion, emotional control, speed of decision-making, and herding in AI-assisted investment decisions among Indian retail investors. Primary data were collected from 200 respondents using a structured questionnaire, analyzed through descriptive statistics, Chi-Square tests, ANOVA, and regression analysis. Findings reveal that AI enhances confidence and speed but can also amplify overconfidence. Emotional biases remain only partially mitigated, underscoring the enduring role of human judgment. The study concludes that AI should serve as a supportive guide rather than a replacement for human decision-making. Recommendations include strengthening financial literacy, building transparent AI platforms, and enhancing regulatory frameworks.*

**Keywords:** behavioral finance, ai-assisted investment, robo-advisors, overconfidence, loss aversion, herding.

## I. INTRODUCTION

The rapid development of financial technologies has reshaped investment decision-making. AI-based systems analyze large datasets, identify patterns, and generate investment options, offering investors seemingly objective solutions. Yet, behavioral finance research consistently shows that investor decisions are influenced by biases such as overconfidence, loss aversion, and herding.

This study focuses on Indian retail investors, a group increasingly adopting AI-enabled platforms. Despite AI's promise, investor attitudes, trust, and biases continue to influence outcomes. The research addresses a gap in empirical evidence on how biases interact with AI-assisted decisions in emerging markets.

### 1.1 Research Objectives

- To identify key behavioral biases in investment decisions.
- To analyze the presence of automation bias in AI-assisted decisions.
- To examine the impact of AI assistance on biases.
- To compare decision-making between AI-assisted and non-AI-assisted investors.
- To study how AI affects overall investment decisions.

### 1.2 Research Gap

- Automation bias in AI-assisted investing among Indian retail investors.
- Do biases reduce or transform when AI is involved?
- When and why investors switch between trust and distrust in AI advice.

## II. LITERATURE REVIEW

Behavioral biases distort rational investment models. Sharma & Negi (2025) highlight loss aversion and overconfidence as major influences, while Rakshika & Kumar (2025) show that emotional decisions often lead to poor portfolio choices. Jindal et al. (2025) confirm that financial literacy mitigates but does not eliminate biases. AI tools act as moderators. Maheshwari et al. (2025) find that AI reduces anchoring and herding, while Kulkarni et al. (2025) shows robo-advisors mitigate loss aversion and overconfidence through personalization. However, Paradiso (2025) warns that excessive reliance on AI can amplify overconfidence. Trust and emotional intelligence also matter. Singh et al. (2023) demonstrate that emotionally intelligent investors manage biases better, while Sharma (2022) emphasizes brand trust in reducing irrational behavior.

## 2.2 Hypothesis

- H01: There is no significant association between AI assistance and the reduction of behavioral biases in investment.
- H11: There is a significant association between AI assistance and the reduction of behavioral biases in investment.
- H02: There is no significant difference in decision-making, confidence, and trust between AI-assisted and non-AI-assisted investors.
- H12: There is a significant difference in decision-making, confidence, and trust between AI-assisted and non-AI-assisted investors.
- H03: There is no significant effect of AI usage on investment decision-making behavior.
- H13: There is a significant effect of AI usage on investment decision-making behavior.

## III. RESEARCH METHODOLOGY

A mixed-method design combining descriptive and explanatory approaches was adopted. Data were collected via a structured questionnaire from 200 Indian retail investors aged 20 years and above, using convenience sampling through online platforms.

### Statistical tools used:

- Descriptive statistics: summarize demographics and AI usage.
- Chi-Square tests: analyze associations between AI assistance and bias reduction.
- ANOVA: compare confidence levels between AI-assisted and non-AI-assisted investors.
- Regression analysis: examine predictive relationships between AI usage, biases, and outcomes.

### 3.1 Reliability and Variables

The questionnaire contained 15 questions. Cronbach's alpha was reported as 0.876, indicating good internal consistency, which demonstrates high internal consistency. As the value is greater than the acceptable value of 0.70, the scale may be deemed as valid in measuring the construct of interest. Therefore, the instrument is statistically reliable for further analysis.

## IV. RESULTS AND FINDINGS

### Demographics

Majority of the respondents were between 20-30 years (64%), followed by 41 and above (14%)., Gender distribution almost balanced (Male: 53.5%, Female: 46.5%), Majority of the respondents were Postgraduate (47.5%), which shows that their ability to understand and adopt AI in investment decisions.

### Confidence and trust in AI

Investors generally feel confident making decisions without AI, but AI becomes a safety net when uncertainty raises, most of the respondents prefer to cross check AI recommendations before doing investment, and just blindly following the recommendations is low, More than the automated and AI suggestions, human advice remains more trusted and shows that traditional expertise is still carrying weight in financial decisions.

### AI reliance and usage

Level of dependency on AI vary from moderate to high, and dependency on AI is considered high by investors, Most of the respondents rely on AI for stock selection, risk analysis, market prediction showing that these areas required data driven insights, Portfolio management and general guidance are secondary uses, which shows that AI as a supportive tool.

### Perceived effects of AI

Most of the respondents having positive and mixed type of effects towards AI, which reflects cautious optimism, Respondents feel that by using excess of AI, they may feel side effects like over confidence, and faster decision making, While emotional control and herding behavioral are less influenced, showing that AI has limited effect on psychological biases that often drive market behavior.

### Decision sources

Majority of them depend on own resource as they trust more, showing that investors preference for independence, Friends, family, broker tips and social media are less important sources, whereas the role of AI are emerging as secondary information, Financial

advisors are the next preferred option, highlighting the continued importance of human expertise.

#### 4.2 Inferential Statistical Results

- Descriptive statistics: The demographic profile of 200 respondents shows that most participants are young (Mean age = 1.57) and balanced in gender (Mean = 1.46). Education levels are relatively high (Mean = 2.09), with many holdings graduate or postgraduate degrees. Investment experience is limited, as the mean score for “How long have you been investing?” is 2.01 and “Level of experience in investing” is 1.53, indicating that most respondents are beginners. This highlights that the study primarily reflects perceptions of young, educated, and novice investors.
- Chi-Square Test: Chi-Square tests examined the association between AI assistance and bias reduction. For “AI helps me make better investment decisions” Pearson Chi-Square = 42.054 (df = 16,  $p < .001$ ). For “AI reduces my fear of making wrong investment decisions”, Pearson Chi-Square = 60.339 (df = 16,  $p < .001$ ). Both results reject  $H_0$ , confirming that AI significantly reduces behavioral biases, improves decision quality, and lowers fear of mistakes.
- ANOVA: One-way ANOVA compared confidence and trust between AI-assisted and non-AI-assisted investors. Significant differences were found: “I often rely on AI advice when unsure” ( $F = 58.325$ ,  $p < .001$ ,  $\eta^2 = 0.228$ ), “I feel confident when I make investment decisions” ( $F = 19.936$ ,  $p < .001$ ,  $\eta^2 = 0.091$ ), and “I trust AI advice more than human advice” ( $F = 8.380$ ,  $p = .004$ ,  $\eta^2 = 0.041$ ). These findings confirm that AI assistance enhances confidence, reliance, and trust.
- Regression Analysis: Regression analysis studied the effect of AI usage on decision-making. The model reported  $R = 0.208$ ,  $R^2 = 0.043$ ,  $F = 8.951$ ,  $p = .003$ . The predictor “How often do you use AI tools for investing?” had  $B = 0.155$ ,  $\beta = 0.208$ ,  $t = 2.992$ ,  $p = .003$ . The model was statistically significant, confirming that frequent AI usage predicts higher investor dependence on AI tools when uncertain.

## V. DISCUSSION

AI tools enhance rationality and efficiency but cannot fully eliminate biases. Overconfidence may be amplified, while emotional biases remain largely unaffected. The findings align with prior literature, reinforcing the dual role of AI as both a bias-reducing tool and a potential amplifier.

Financial literacy and trust emerge as critical factors. Investors with stronger knowledge and confidence use AI more effectively, while transparency and security shape adoption.

### 5.1 Managerial and Theoretical Implications

For AI investment-app providers, the study suggests prioritizing user-friendly design, transparent recommendations, and clear explanations of AI outputs. Regulators should strengthen digital literacy and enforce disclosure of AI limitations. Theoretically, the study bridges behavioral finance and AI adoption, highlighting the interaction between biases and technology in emerging markets.

### 5.2 Practical Recommendations

- Strengthen financial literacy through workshops and training.
- Improve transparency and disclosure of AI limitations.
- Enhance privacy and cybersecurity measures.
- Provide reliable customer support to help investors interpret AI recommendations.

## VI. CONCLUSION

AI-assisted investment tools are gaining acceptance among Indian retail investors. They improve confidence and speed but cannot fully replace human judgment. Overconfidence and emotional biases remain significant challenges.

Key conclusions:

- AI enhances decision-making but risks amplifying biases.
- Trust, financial literacy, and transparency are essential for effective adoption.
- AI should serve as a supportive guide, not a replacement.

Limitations:

- Sample limited to 200 Indian retail investors.
- Focused only on selected biases.
- Cross-sectional design: longitudinal studies needed.

Future research:

- Larger, more diverse samples.
- Comparative studies across investor groups.
- Exploration of risk tolerance and technological readiness.

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- [8] Publication-Style Research Summary  
Research contribution: This paper condenses the original dissertation into a six-page research-paper format while retaining its research problem, objectives, methodology, reliability, variables, major empirical findings, statistical results, implications, limitations and recommendations.