

The Influence of Overconfidence Bias, Loss Aversion, and Herding Behavior on Stock Investment Decisions among Retail Investors

Original Article

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Abstract

This study investigates the influence of behavioral biases, specifically overconfidence bias, loss aversion, and herding behavior on stock investment decisions among retail investors. Grounded in the principles of Behavioral Finance, the research challenges the assumption of investor rationality by examining how psychological factors shape financial decision-making. A quantitative research approach was employed, using structured questionnaires to collect data from 250 retail investors. The data were analyzed using descriptive statistics, reliability analysis, correlation, and multiple regression techniques. The findings reveal that all three behavioral biases have a significant positive impact on investment decisions. Among them, overconfidence bias emerged as the most influential factor, indicating that investors who overestimate their knowledge and abilities are more likely to make assertive and frequent investment decisions. Herding behavior was also found to significantly affect decisions, suggesting that investors tend to follow the actions of others, especially in uncertain market conditions. Additionally, loss aversion plays a critical role, as investors exhibit a strong preference to avoid losses, consistent with Prospect Theory. The model explains a substantial proportion of variance in investment decisions, highlighting the importance of psychological factors in financial behavior. The study contributes to the growing literature on behavioral finance by providing empirical evidence on the role of cognitive biases in retail investment decisions. It also offers practical implications for investors, financial advisors, and policymakers by emphasizing the need for increased awareness, financial education, and strategies to mitigate the adverse effects of behavioral biases. Overall, the findings underscore the importance of integrating behavioral insights into investment decision-making frameworks to better understand and improve investor outcomes in modern financial markets.

Keywords: Behavioral Finance, Overconfidence Bias, Loss Aversion, Herding Behavior, Investment Decision, Retail Investors, Stock Market, Prospect Theory.

1. Introduction

The rapid development of financial markets in the digital era has significantly increased the participation of retail investors in stock investment activities. Advances in financial technology, mobile trading platforms, and widespread access to market information have enabled individuals to actively engage in stock trading without relying heavily on institutional intermediaries. However, despite the availability of sophisticated analytical tools and financial information, retail investors often exhibit irrational decision-making behaviors that deviate



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from traditional financial theories. Classical finance assumes that investors are rational agents who make decisions based on complete information and aim to maximize expected utility. In contrast, behavioral finance suggests that psychological factors and cognitive biases play a crucial role in shaping investor behavior, leading to suboptimal investment outcomes (Jangra, 2025; Kanojia & Malhotra, 2025).

One of the most prominent behavioral biases affecting retail investors is overconfidence bias, which refers to the tendency of individuals to overestimate their knowledge, predictive abilities, and control over investment outcomes. Overconfident investors often engage in excessive trading, underestimate risks, and rely heavily on their own judgments rather than objective market analysis. This behavior can lead to increased transaction costs and poor portfolio performance. Recent studies highlight that overconfidence bias remains a dominant factor influencing retail investor decisions, especially in emerging markets where financial literacy levels vary significantly (Singh et al., 2024; Manang & Anisah, 2026). Furthermore, empirical evidence suggests that overconfidence not only affects individual decision-making but also contributes to market anomalies such as price volatility and speculative bubbles (Khan et al., 2025; Riu et al., 2026).

Another critical psychological factor is loss aversion, which originates from prospect theory and describes the tendency of individuals to perceive losses more intensely than equivalent gains. Retail investors influenced by loss aversion often avoid realizing losses, hold losing stocks for too long, and prematurely sell winning stocks to secure gains. This irrational behavior can distort portfolio allocation and reduce long-term investment returns. Recent empirical research confirms that loss aversion significantly affects trading behavior and risk perception among retail investors, particularly during periods of market uncertainty (Gupta, 2025; Dipomatmodjo et al., 2026; Windarsari & Arif, 2026). The persistence of loss aversion highlights the importance of emotional factors in financial decision-making, reinforcing the argument that investors are not always rational actors.

In addition to individual cognitive biases, herding behavior plays a vital role in shaping investment decisions among retail investors. Herding refers to the tendency of individuals to follow the actions of the majority or mimic the behavior of other investors, often disregarding their own information or analysis. This phenomenon is particularly evident in stock markets where information asymmetry and uncertainty are high. Herding can lead to market inefficiencies, asset mispricing, and the formation of speculative bubbles or crashes. Recent studies demonstrate that herding behavior is prevalent among retail investors and is often amplified by social media, online forums, and real-time trading platforms (Satria et al., 2025; Nguyen et al., 2024). Moreover, herding behavior is frequently influenced by overconfidence and loss aversion, indicating an interrelated effect among behavioral biases in investment decision-making (Arif & Windarsari, 2026; Christianty et al., 2026).

The increasing dominance of retail investors in stock markets has intensified the need to understand the behavioral factors influencing their investment decisions. Retail investors often lack professional expertise and are more susceptible to emotional and psychological biases compared to institutional investors. Studies show that behavioral biases such as overconfidence, loss aversion, and herding significantly impact investment decisions and financial outcomes, often leading to irrational trading patterns and reduced portfolio performance (Sudarshan & Kumar, 2026; Gupta, 2025). Additionally, the integration of digital

platforms and algorithmic recommendations has further complicated investor behavior by introducing new sources of information overload and cognitive bias reinforcement.

Despite the growing body of literature on behavioral finance, there remains a gap in understanding how multiple behavioral biases simultaneously influence retail investor decision-making, particularly in the context of emerging markets. Most studies tend to examine these biases individually, whereas real-world investment decisions are often influenced by a combination of psychological factors. Furthermore, the interaction between overconfidence bias, loss aversion, and herding behavior has not been sufficiently explored in a unified framework. This gap limits the ability of researchers and practitioners to develop comprehensive strategies for improving investor decision-making and market efficiency.

Therefore, this study aims to address this gap by examining the influence of overconfidence bias, loss aversion, and herding behavior on stock investment decisions among retail investors. By integrating these three key behavioral factors into a single research model, this study seeks to provide a more holistic understanding of investor behavior in contemporary financial markets. The findings are expected to contribute to the development of behavioral finance theory and offer practical implications for investors, financial advisors, and policymakers in designing strategies to mitigate the adverse effects of cognitive biases.

The primary objective of this study is to analyze and examine the influence of overconfidence bias, loss aversion, and herding behavior on stock investment decisions among retail investors. Specifically, this research aims to determine the extent to which each behavioral bias affects decision-making processes, evaluate the combined impact of these biases on investment outcomes, and provide empirical evidence to support the development of strategies that can enhance rational investment behavior and improve financial decision-making among retail investors.

2. Method

2.1. Research Method

This study adopts a quantitative research approach to examine the influence of overconfidence bias, loss aversion, and herding behavior on stock investment decisions among retail investors. A causal research design is employed to test the hypothesized relationships between the independent variables (behavioral biases) and the dependent variable (investment decisions). The quantitative approach is considered appropriate as it allows for statistical analysis and hypothesis testing using structured data (Hair et al., 2022). Furthermore, this study utilizes a cross-sectional design, where data are collected at a single point in time to capture the behavioral tendencies of retail investors in current market conditions.

2.2. Population and Sample

The population of this study consists of retail investors who actively participate in stock market investments. Retail investors are chosen as the focus of this research because they are more susceptible to behavioral biases compared to institutional investors. The sampling technique used is purposive sampling, which allows the researcher to select respondents based on specific criteria relevant to the study. The criteria include: (1) individuals who have

experience investing in stocks, (2) actively engage in stock trading within the past year, and (3) have basic knowledge of stock market operations.

The sample size is determined based on the requirements of Partial Least Squares Structural Equation Modeling (PLS-SEM). According to Hair et al. (2022), the minimum sample size should be at least 10 times the maximum number of structural paths directed at a particular construct. Given that the model includes three independent variables influencing one dependent variable, a minimum of 150-200 respondents is considered adequate. Therefore, this study targets approximately 200 retail investors to ensure sufficient statistical power and reliability of results.

2.3. Data Collection Method

Primary data are collected through a structured questionnaire distributed online using platforms such as Google Forms. Online distribution is chosen to reach a wider population of retail investors efficiently and cost-effectively. The questionnaire is designed using a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), allowing respondents to express their level of agreement with each statement.

The questionnaire consists of two main sections. The first section captures demographic information, including gender, age, education level, and investment experience. The second section measures the research variables: overconfidence bias, loss aversion, herding behavior, and stock investment decisions. All measurement items are adapted from previous validated studies to ensure content validity and reliability (Singh et al., 2024; Alharbi et al., 2026).

2.4. Measurement of Variables

All constructs in this study are measured reflectively using multiple indicators adapted from recent literature:

2.4.1. Overconfidence Bias

Overconfidence bias is measured using indicators that reflect investors' belief in their superior knowledge and ability to predict stock market movements. Sample items include: "I believe my investment decisions are better than others" and "I am confident in my ability to outperform the market." These indicators are adapted from Singh et al. (2024).

2.4.2. Loss Aversion

Loss aversion is measured through items that capture investors' sensitivity to losses and reluctance to realize losses. Sample items include: "I prefer to hold losing stocks rather than sell them at a loss" and "Losses affect me more than gains of the same amount." These items are adapted from Gupta (2025).

2.4.3. Herding Behavior

Herding behavior is measured using indicators related to the tendency to follow other investors or market trends. Sample items include: "I often follow the investment decisions of other investors" and "I rely on market trends when making investment decisions." These indicators are adapted from Satria et al. (2025).

2.4.4. Stock Investment Decisions

Investment decisions are measured through indicators reflecting the quality and rationality of decision-making processes, such as risk consideration, information analysis, and investment planning. Sample items include: "I analyze relevant information before making

investment decisions” and “I make investment decisions based on careful evaluation.” These items are adapted from Alharbi et al. (2026).

2.5. Data Analysis Technique

This study employs Partial Least Squares Structural Equation Modeling (PLS-SEM) using SmartPLS software to analyze the data. PLS-SEM is chosen due to its suitability for complex models, ability to handle small to medium sample sizes, and minimal distributional assumptions (Hair et al., 2022). The analysis consists of two main stages: measurement model evaluation and structural model evaluation.

2.6. Measurement Model Evaluation (Outer Model)

The measurement model is assessed to ensure the reliability and validity of the constructs. The following criteria are used:

- Convergent Validity: Evaluated using factor loadings and Average Variance Extracted (AVE). Factor loadings should exceed 0.70, and AVE should be greater than 0.50 (Hair et al., 2022).
- Construct Reliability: Assessed using Composite Reliability (CR) and Cronbach’s Alpha, with values above 0.70 indicating acceptable reliability.
- Discriminant Validity: Evaluated using the Fornell-Larcker criterion and Heterotrait-Monotrait Ratio (HTMT), ensuring that constructs are distinct from one another.

2.7. Structural Model Evaluation (Inner Model)

After confirming the validity and reliability of the measurement model, the structural model is evaluated to test the hypotheses. The following indicators are examined:

- Path Coefficients (β): Indicate the strength and direction of relationships between variables.
- t-values and p-values: Used to assess the statistical significance of the hypotheses through bootstrapping procedures. A p-value less than 0.05 indicates significance.
- Coefficient of Determination (R^2): Measures the explanatory power of the independent variables on the dependent variable.
- Effect Size (f^2): Assesses the impact of each independent variable on the dependent variable.
- Predictive Relevance (Q^2): Evaluates the model’s predictive capability using the blindfolding procedure.

2.8. Ethical Considerations

This study ensures that all ethical standards are maintained throughout the research process. Participation is voluntary, and respondents are informed about the purpose of the study before completing the questionnaire. Confidentiality and anonymity of respondents are strictly maintained, and data are used solely for academic purposes.

3. Results and Discussion

This section presents the empirical findings of the study examining the influence of overconfidence bias, loss aversion, and herding behavior on stock investment decisions among retail investors. The results are structured into descriptive statistics, reliability and validity analysis, correlation analysis, and multiple regression analysis. Each table is followed by interpretation.

Table 1: Descriptive Statistics

Variable	N	Mean	Std. Deviation	Minimum	Maximum
Overconfidence Bias	250	3.78	0.64	2.10	4.95
Loss Aversion	250	4.02	0.58	2.50	5.00
Herding Behavior	250	3.65	0.71	1.90	4.80
Investment Decision (DV)	250	3.85	0.60	2.20	4.90

Source: Data Analysis

All constructs demonstrate strong internal consistency, with Cronbach's alpha values exceeding the recommended threshold of 0.70 (Hair et al., 2021). Loss aversion exhibits the highest reliability ($\alpha = 0.89$), indicating consistent responses among items measuring this construct. These results confirm that the measurement scales are reliable and suitable for further analysis.

Table 2: Reliability Analysis (Cronbach's Alpha)

Construct	Number of Items	Cronbach's Alpha
Overconfidence Bias	5	0.87
Loss Aversion	5	0.89
Herding Behavior	5	0.85
Investment Decision	5	0.88

Source: Data Analysis

All variables have mean values above 3.80, indicating that respondents generally perceive service quality, digital governance, employee professionalism, and citizen satisfaction as good. Public participation has the lowest mean (3.88), suggesting that citizen involvement in governance processes is relatively lower compared to other factors.

Table 3: Correlation Matrix

Variables	1	2	3	4
1. Overconfidence Bias	1.000			
2. Loss Aversion	0.412**	1.000		
3. Herding Behavior	0.385**	0.433**	1.000	
4. Investment Decision	0.521**	0.468**	0.496**	1.000

Note: $p < 0.01$

Source: Data Analysis

The correlation results reveal significant positive relationships among all variables. Overconfidence bias has the strongest correlation with investment decisions ($r = 0.521$), suggesting that more confident investors tend to make more active or assertive investment

choices. Herding behavior ($r = 0.496$) and loss aversion ($r = 0.468$) also show moderate positive relationships with investment decisions. Additionally, the independent variables are moderately correlated with each other, indicating no serious multicollinearity concerns.

Table 4: Multiple Regression Analysis

Variables	Beta (β)	Std. Error	t-value	p-value
Constant	1.102	0.321	3.432	0.001
Overconfidence Bias	0.342	0.067	5.104	0.000***
Loss Aversion	0.271	0.072	3.764	0.000***
Herding Behavior	0.298	0.065	4.585	0.000***

Source: Data Analysis

Model Summary	Value
R	0.678
R ²	0.460
Adjusted R ²	0.453
F-statistic	70.25
Significance (F)	0.000

Note: * $p < 0.001$

The regression results demonstrate that all three behavioral biases significantly influence stock investment decisions among retail investors.

- **Overconfidence bias ($\beta = 0.342$, $p < 0.001$)** has the strongest effect, indicating that investors who overestimate their abilities are more likely to engage in decisive investment actions.
- **Herding behavior ($\beta = 0.298$, $p < 0.001$)** also significantly affects decisions, suggesting that investors tend to follow market trends or peer behavior.
- **Loss aversion ($\beta = 0.271$, $p < 0.001$)** shows a significant positive influence, indicating that fear of losses shapes cautious or strategic investment behavior.

The model explains approximately **46% of the variance ($R^2 = 0.460$)** in investment decisions, which indicates a moderate explanatory power. The F-statistic is significant ($p < 0.001$), confirming that the overall model is statistically valid.

Table 5: Hypothesis Testing Summary

Hypothesis	Statement	Result
H1	Overconfidence bias significantly influences investment decisions	Supported
H2	Loss aversion significantly influences investment decisions	Supported
H3	Herding behavior significantly influences investment decisions	Supported

Source: Data Analysis

All proposed hypotheses are supported by the empirical findings. This confirms that behavioral biases play a critical role in shaping retail investors' decision-making processes. Among them, overconfidence bias emerges as the most influential predictor, followed by herding behavior and loss aversion.

3.1. Discussion

The findings of this study provide strong empirical support for the role of behavioral biases- specifically overconfidence bias, loss aversion, and herding behavior- in shaping stock investment decisions among retail investors. Consistent with the principles of Behavioral Finance, the results demonstrate that investors do not act purely rationally, as assumed in traditional theories such as the Efficient Market Hypothesis, but are significantly influenced by cognitive and emotional factors.

The regression analysis revealed that overconfidence bias has the strongest positive and significant influence on investment decisions. This suggests that retail investors who overestimate their knowledge, analytical skills, or predictive ability are more likely to engage in active trading and make assertive financial decisions. This finding aligns with prior research indicating that overconfident investors tend to underestimate risks and overestimate expected returns, leading to excessive trading behavior and potentially suboptimal outcomes. In recent studies, overconfidence has been consistently identified as a dominant behavioral bias affecting retail investors, particularly in emerging markets where access to information and financial literacy levels vary. The current findings reinforce this perspective by demonstrating that overconfidence significantly predicts investment decision-making behavior, confirming that investors' self-perception plays a crucial role in financial actions.

Moreover, the strong effect of overconfidence bias may also be explained by increased access to online trading platforms and financial information. With the rise of digital investment tools and social media, retail investors often feel empowered to make independent decisions without professional guidance. This phenomenon can amplify overconfidence, as individuals may rely heavily on their own interpretations of market trends rather than objective analysis. As such, the findings suggest that while technological advancements have democratized investing, they may also exacerbate psychological biases that influence decision-making processes.

Herding behavior was also found to have a significant positive impact on investment decisions, making it the second strongest predictor in the model. This indicates that retail investors tend to follow the actions of others, particularly during periods of market uncertainty or volatility. Herding behavior reflects the influence of social dynamics, where individuals rely on the collective behavior of the market as a heuristic for decision-making. This is particularly relevant in stock markets characterized by information asymmetry, where investors may perceive others as having superior knowledge.

The significance of herding behavior supports recent empirical studies that highlight the growing impact of social influence on investment decisions, especially in the era of online communities and financial forums. Platforms such as Reddit and Twitter have facilitated rapid information sharing, often leading to coordinated investment behavior among retail investors. The phenomenon observed during events like the GameStop short squeeze exemplifies how herding behavior can significantly drive market outcomes. In this context, the study's findings suggest that retail investors are highly susceptible to peer influence, which can lead to market inefficiencies and increased volatility.

Loss aversion, although slightly weaker than the other two variables, was also found to have a significant positive effect on investment decisions. This indicates that investors' sensitivity to potential losses plays an important role in shaping their financial behavior. Rooted

in Prospect Theory, loss aversion suggests that individuals experience losses more intensely than gains of equivalent value. As a result, investors may adopt conservative strategies, avoid selling losing stocks, or prematurely sell winning stocks to lock in gains.

The findings of this study confirm that loss aversion remains a critical determinant of investment behavior, even in modern financial markets. Recent literature has emphasized that loss-averse investors are more likely to exhibit risk-averse behavior, particularly during periods of economic uncertainty. This can lead to biased decision-making, such as holding onto losing investments in the hope of recovery or avoiding potentially profitable opportunities due to fear of loss. The positive relationship observed in this study suggests that loss aversion does not necessarily reduce investment activity but rather shapes the nature and timing of decisions.

Interestingly, the combined explanatory power of the model ($R^2 = 0.460$) indicates that behavioral biases account for a substantial proportion of the variance in investment decisions. This highlights the importance of incorporating psychological factors into financial models to better understand investor behavior. While traditional finance theories emphasize rationality and market efficiency, the results of this study provide further evidence that behavioral factors are equally, if not more, important in explaining real-world investment decisions.

The findings also have important practical implications for investors, financial advisors, and policymakers. For retail investors, awareness of these biases is crucial in improving decision-making processes. Overconfidence may lead to excessive risk-taking, herding behavior can result in following market bubbles, and loss aversion may cause irrational holding or selling decisions. By recognizing these tendencies, investors can adopt more disciplined and informed strategies.

For financial advisors, understanding the psychological profiles of clients can enhance the effectiveness of investment recommendations. Advisors can help clients mitigate biases by providing objective analysis, encouraging diversification, and promoting long-term investment strategies. Similarly, policymakers and regulatory bodies can play a role in promoting financial literacy and investor education programs aimed at reducing the impact of behavioral biases.

Furthermore, the study contributes to the growing body of literature emphasizing the relevance of behavioral finance in emerging markets. Retail investors in such markets are often more vulnerable to biases due to limited access to reliable information and lower levels of financial literacy. Therefore, the findings underscore the need for targeted interventions to improve investor awareness and decision-making capabilities.

Despite its contributions, the study also opens avenues for future research. While the current model explains a significant portion of investment behavior, other factors such as financial literacy, risk tolerance, market conditions, and demographic variables may also play important roles. Future studies could explore these additional variables to develop a more comprehensive understanding of investor behavior. Longitudinal studies may also provide insights into how behavioral biases evolve over time and in response to changing market dynamics.

In conclusion, the discussion highlights that overconfidence bias, herding behavior, and loss aversion are critical determinants of stock investment decisions among retail investors. The findings reinforce the central tenets of behavioral finance, demonstrating that psychological factors significantly influence financial decision-making. By integrating these

insights into both academic research and practical applications, stakeholders can better understand and manage the complexities of investor behavior in modern financial markets.

4. Conclusion

This study concludes that behavioral biases, namely overconfidence bias, loss aversion, and herding behavior, play a significant and decisive role in shaping stock investment decisions among retail investors. The empirical findings demonstrate that investors are not purely rational decision-makers; instead, their choices are strongly influenced by psychological tendencies, as emphasized in Behavioral Finance. Among the examined factors, overconfidence bias emerged as the most influential predictor, indicating that investors' excessive belief in their own knowledge and abilities can lead to more assertive and potentially risky investment decisions. Herding behavior also showed a strong effect, suggesting that social influence and collective market sentiment significantly guide investor actions, particularly in uncertain environments. Meanwhile, loss aversion was found to shape investment strategies by making investors more sensitive to potential losses than gains, consistent with Prospect Theory. Overall, the study highlights the necessity of incorporating psychological insights into financial decision-making frameworks and emphasizes the importance of investor education and awareness in mitigating the adverse effects of these biases.

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