Advances in Consumer Research
https://acr-journal.com/
Volume-3 | Issue-11 |0ct: 2026
Original Researcher Article

Retail Investor Behaviour and Options Trading Performance in India: the Role of Behavioural Biases, Financial Literacy and Risk Management

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ABSTRACT
The rapid growth of retail participation in India's derivatives market has increased the importance of understanding factors influencing options trading performance. This study examines the roles of behavioural biases, financial literacy, risk management practices, and trading behaviour among retail options investors in India. Primary data were collected from 588 retail investors actively participating in equity and index options trading and analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM). The findings indicate that behavioural biases and risk management practices significantly influence trading behaviour, while financial literacy does not significantly affect trading behaviour. Financial literacy and risk management practices have significant positive effects on options trading performance, whereas behavioural biases do not have a significant direct effect. Trading behaviour significantly influences options trading performance. Mediation results show that trading behaviour mediates the relationships between behavioural biases and options trading performance and between risk management practices and options trading performance, but not between financial literacy and options trading performance. The study contributes to behavioural finance literature and offers implications for disciplined retail options trading.
Keywords: Retail Investors, Options Trading, Behavioural Biases, Financial Literacy, Risk Management, Trading Behaviour, Trading Performance, Behavioural Finance.

1. INTRODUCTION

The Indian financial market has witnessed a substantial transformation in retail participation, driven by technological advancement, low-cost digital trading platforms, greater availability of financial information, and increased awareness of investment opportunities. Among the various financial instruments available to individual investors, derivatives particularly equity and index options—have emerged as an important segment of retail trading activity. The expansion of online brokerage platforms and mobile-based trading applications has substantially reduced barriers to market participation, enabling individual investors to access sophisticated financial instruments with relatively small amounts of capital. While this development has improved market accessibility, it has also raised concerns regarding the ability of retail investors to understand the complex risk-return characteristics associated with options trading(Banerjee, 1992).

Options differ fundamentally from conventional equity investments because their value is influenced by several factors, including the underlying asset price, strike price, time to expiry, implied volatility, interest rates, and market expectations. The use of leverage can amplify both gains and losses, making risk management particularly important for individual traders. Consequently, participation in options markets requires not only financial knowledge but also the ability to evaluate risk, maintain trading discipline, and respond rationally to rapidly changing market conditions. The increasing participation of retail investors in India's derivatives market therefore provides an important context for examining the behavioural and financial factors that determine trading outcomes.

A particularly important dimension of retail options trading is investor behaviour. Traditional financial theories assume that investors make rational decisions based on available information and seek to maximise expected returns for a given level of risk. However, behavioural finance demonstrates that investors are often influenced by psychological factors and cognitive limitations. Behavioural biases such as overconfidence, loss aversion, herding, anchoring, representativeness, and the disposition effect can affect how investors interpret information, assess probabilities, select trading strategies, and respond to gains and losses (Barber & Odean, 2000). In options markets, where trading decisions are often made under conditions of uncertainty and high price

volatility, these biases may become particularly pronounced. Overconfident traders, for example, may underestimate the probability of adverse market movements and engage in excessive trading, whereas loss-averse investors may hold losing positions for longer than is economically justified.

The problem becomes more significant when retail investors engage in short-term or speculative options trading. Frequent trading, excessive leverage, inadequate diversification, and emotionally driven decision-making can expose investors to substantial financial losses. The interaction between behavioural biases and trading decisions is therefore central to understanding why some retail investors consistently achieve favourable outcomes while others experience persistent losses. Trading behaviour can consequently serve as an important mechanism through which psychological characteristics influence actual trading performance.

Another important determinant is financial literacy. Financial literacy encompasses an individual's ability to understand financial concepts, evaluate investment alternatives, assess risk, and make informed financial decisions. In the context of options trading, financial literacy extends beyond general knowledge of interest rates, inflation, and investment products to include an understanding of derivatives-specific concepts such as option premiums, strike prices, expiration, intrinsic and time value, volatility, leverage, margin requirements, and option Greeks. Investors with greater financial and derivatives literacy may be better positioned to assess potential outcomes and avoid inappropriate trading strategies. Conversely, limited knowledge may increase dependence on informal information sources, social trading signals, recommendations, and speculative expectations.

However, financial knowledge alone may not necessarily guarantee superior trading outcomes. An investor may possess adequate technical knowledge of options but still make irrational decisions because of overconfidence, emotional reactions, or herd behaviour. This suggests that the relationship between financial literacy and trading performance should be examined alongside behavioural characteristics rather than in isolation. Financial literacy may also potentially reduce the adverse effects of behavioural biases by improving investors' ability to evaluate information objectively and recognise the risks associated with particular trading decisions (Bikhchandani et al., 1992).

Risk management practices constitute a further critical component of successful options trading. Since derivatives involve leverage and potentially asymmetric payoffs, effective risk management is essential for protecting trading capital. Retail investors can manage their exposure through practices such as position sizing, stop-loss mechanisms, diversification, hedging, margin management, risk-reward assessment, and predetermined trading strategies. Investors who consistently apply risk-management principles may be better equipped to control downside risk even when their market predictions are incorrect. In contrast, the absence of risk-management discipline can magnify the financial consequences of behavioural biases and speculative trading.

The relationship between these factors becomes particularly relevant in the Indian context. The rapid expansion of retail participation in derivatives has created a market environment in which inexperienced investors can participate in highly leveraged instruments with minimal physical barriers to entry. The ease of executing trades through mobile applications may encourage frequent trading and shorten the decision-making process. At the same time, the widespread availability of social media, online trading communities, financial influencers, and real-time market information may influence investor expectations and potentially reinforce herd behaviour and speculative tendencies. Thus, understanding retail options trading performance requires an integrated perspective that considers psychological characteristics, financial capability, trading behaviour, and risk-management discipline (Daniel et al., 1998).

Although behavioural finance and financial literacy have been extensively examined in investment decision-making research, there remains scope for a more integrated investigation specifically focused on retail options traders in India. Much of the conventional investor-behaviour literature examines equity investment decisions, investment intentions, risk tolerance, or general financial behaviour. Options trading, however, involves distinctive characteristics such as leverage, time decay, volatility exposure, margin requirements, and potentially rapid changes in portfolio value. Therefore, findings from conventional equity investment may not necessarily explain the behaviour and performance of retail options traders.

Against this background, the present study proposes an integrated framework to examine retail investor behaviour and options trading performance in India, with particular emphasis on behavioural biases, financial literacy, and risk management practices. The study considers overconfidence, loss aversion, herding, anchoring, and disposition effect as key behavioural dimensions. Financial literacy is examined through investors' financial knowledge, investment knowledge, and options/derivatives knowledge, while risk management is assessed through practices such as position sizing, stop-loss usage, diversification, hedging, and margin control. Trading behaviour is positioned as an important mechanism linking these factors with options trading performance, which may be assessed through profitability, return consistency, loss control, and risk-adjusted performance.

The study therefore seeks to move beyond the simple question of whether retail investors make profits or losses and instead examine why differences in options trading performance occur among retail investors. By integrating behavioural finance, financial literacy, and risk-management perspectives, the study can provide a more comprehensive explanation of retail trading outcomes in India's derivatives market. The findings are expected to contribute theoretically by extending behavioural finance research into the increasingly important retail options segment and practically by providing useful insights for investors, brokers, financial educators, exchanges, and regulators concerned with improving informed and responsible participation in derivatives markets(Hair et al., 2019).

The existing literature provides considerable evidence that behavioural biases influence investment decisions and that financial literacy affects financial decision-making. However, several gaps remain. First, relatively limited research simultaneously examines behavioural biases, financial literacy, risk management, trading behaviour, and actual options trading performance within a single empirical framework. Second, much of the investor-behaviour literature focuses on traditional equity investments rather than the unique risk characteristics of options trading. Third, the potential mediating role of trading behaviour in translating psychological and financial characteristics into trading performance remains insufficiently explored in the Indian retail options context. Finally, there is a need to examine whether financial literacy and risk-management practices can mitigate the adverse effects of behavioural biases on trading outcomes. Accordingly, this study addresses these gaps by developing and empirically testing an integrated framework linking behavioural biases, financial literacy, risk management, trading behaviour, and options trading performance among retail investors in India.

Conceptual model

The framework shows that Behavioural Biases, Financial Literacy, and Risk Management Practices influence the Trading Behaviour of retail options investors.

Behavioural Biases include overconfidence, loss aversion, herding, anchoring, and disposition effect.

Financial Literacy reflects investors' financial, investment, and options-related knowledge.

Risk Management Practices include position sizing, stop-loss, diversification, hedging, and leverage control.

These factors influence Trading Behaviour, such as trading frequency, speculation, discipline, and strategy adherence.

Trading Behaviour ultimately affects Options Trading Performance, measured through profitability, consistency, loss control, and risk-adjusted performance.

Demographic and experience factors are included as control variables.

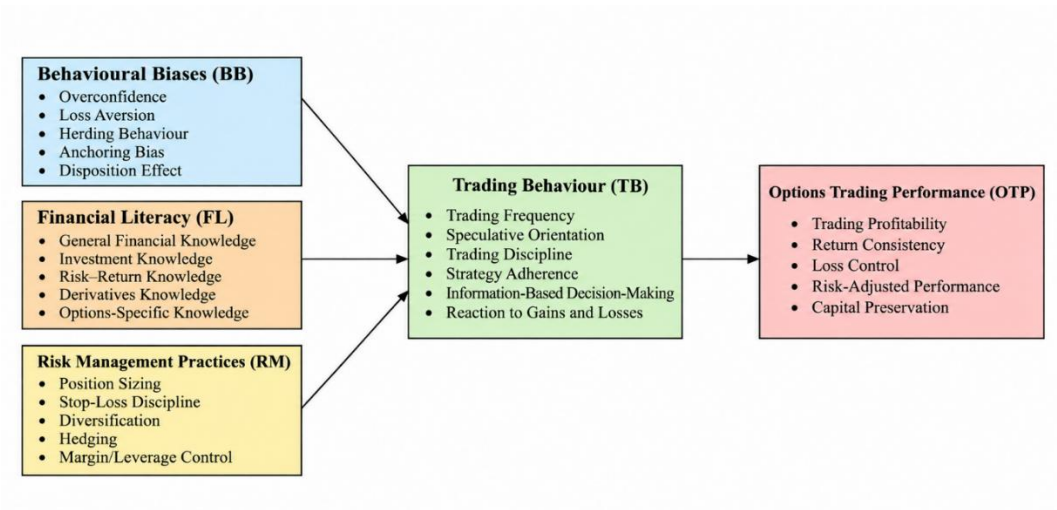


Figure 1: Conceptual model.

Source: Review of literature. Compiled by: Authors' own work

The framework examines how investors' psychological biases, financial knowledge, and risk-management practices shape their trading behaviour and ultimately determine their options trading performance.

2. LITERATURE REVIEW

2.1 Behavioural Biases in Retail Options Trading

Behavioural finance challenges the conventional assumption that investors consistently process information rationally and make decisions solely on the basis of expected risk and return. In retail options trading, this assumption becomes particularly problematic because investors operate in an environment characterised by leverage, short decision horizons, uncertainty, volatility and rapid changes in option prices. Psychological tendencies can therefore influence not only the selection of option contracts but also entry and exit decisions, position size, trading frequency and responses to gains and losses (Henseler et al., 2015).

Recent research on Indian retail investors continues to demonstrate that behavioural biases remain an important determinant of investment decision-making. A recent systematic review of retail-investor research likewise identifies behavioural biases as a major stream within contemporary behavioural-finance research(Kahneman & Tversky, 1979).

For the present study, behavioural biases are conceptualised as a higher-order construct comprising overconfidence, loss aversion, herding behaviour, anchoring bias and disposition effect. These dimensions capture different psychological mechanisms through which retail investors may deviate from disciplined options-trading decisions.

The study therefore proposes that stronger behavioural biases will influence the manner in which retail investors trade options and consequently affect their trading outcomes.

H1: Behavioural Biases have a significant influence on Options Trading Performance.

H2: Trade Behaviour mediates the relationship between Behavioural Biases and Options Trading Performance.

2.2 Overconfidence Bias

Overconfidence represents the tendency of individuals to overestimate their knowledge, forecasting ability and control over uncertain outcomes. In financial markets, overconfident investors may believe that their interpretation of market information is more accurate than it actually is, leading to excessive trading and underestimation of investment risk(Lusardi & Mitchell, 2014).

(Odean, 1998) established an important behavioural explanation for excessive trading by demonstrating that investors can trade too aggressively because they overestimate the precision of their information. (Van Rooij et al., 2011) subsequently found that frequent trading by individual investors was associated with poorer investment performance. These findings are particularly relevant to options because leverage allows overconfident investors to take disproportionately large positions relative to their available capital.

In the Indian retail market, the rapid expansion of app-based trading and easy access to derivatives can further reduce the psychological and operational barriers to frequent trading. Contemporary evidence also suggests that behavioural biases remain significant among Indian retail investors despite increasing financial awareness (Sanyal et al., 2026).

An overconfident options trader may therefore overestimate the probability of a predicted price movement, underestimate volatility risk, trade excessively, or increase position size following previous successful trades.

2.3 Loss Aversion and Disposition Effect

Loss aversion originates from Prospect Theory, which proposes that individuals generally experience the psychological impact of losses more strongly than equivalent gains (Islam et al., 2024) . In investment settings, loss aversion may result in decisions that prioritise avoiding the psychological realisation of losses rather than maximising economic outcomes.

The disposition effect provides a closely related explanation of investor behaviour. (Shefrin & Statman, 1985) proposed that investors tend to realise gains relatively quickly while holding losing investments for longer periods. (Tversky & Kahneman, 1974) provided empirical evidence of this tendency among individual investors.

The implications are particularly important for options traders because option contracts have finite lives. Delaying the closure of a losing position can result in additional losses arising from adverse price movements and time decay. A trader experiencing a loss may also attempt to recover the loss by increasing exposure, rolling positions, or entering additional trades (Balaji, K. ,2025). Thus, loss aversion may not simply affect individual trading decisions; it may generate a sequence of increasingly risky decisions that ultimately deteriorate trading performance.

2.4 Herding Behaviour

Herding occurs when investors follow the decisions, expectations or trading activities of other market participants rather than relying primarily on their own analysis. (Malik et al., 2026) established the theoretical foundations for understanding imitation and informational cascades in financial decision-making.

The contemporary retail trading environment provides numerous channels through which herding can occur. Social-media discussions, online trading communities, financial influencers, real-time trading calls and platform-based notifications can create strong social signals around particular stocks or option contracts. These influences can be especially powerful during periods of high market volatility.

Recent Indian research confirms the continuing importance of behavioural biases in retail investment decisions. Studies have examined herding alongside other behavioural biases and financial literacy, indicating that investment behaviour cannot be fully understood through financial knowledge alone (Shaikh & Khan, 2024).

In options trading, herding may encourage investors to enter popular contracts without independently assessing implied volatility, probability of profit, downside exposure or expiry risk (Balaji, K. 2025a).

2.5 Risk Management Practices

Risk Management Practices refer to the strategies and actions adopted by options traders to identify, assess, and control potential trading risks. These practices include diversification, position sizing, stop-loss mechanisms, hedging, risk assessment, and disciplined trading decisions, which help traders manage potential losses and improve their overall options trading performance. Anchoring can consequently influence strike-price selection, expected price targets, entry decisions and the timing of position closure. Recent Indian evidence on retail investors also continues to identify anchoring among the behavioural factors influencing investment decisions (Mitra & De, 2026).

H5: Risk Management Practices have a significant influence on Options Trading Performance.

H6: Trade Behaviour mediates the relationship between Risk Management Practices and Options Trading Performance.

2.6 Trading Behaviour

Trading behaviour represents the actual manner in which retail investors execute and manage their options positions. It bridges psychological characteristics and financial outcomes.

In the present study, trading behaviour encompasses: Trading frequency; Speculative orientation; Trading discipline; Strategy adherence; Information-based decision-making; and Reaction to market gains and losses. (de Silva et al., 2026) demonstrated that excessive trading can significantly reduce individual investor performance. The implication for options markets is particularly strong because frequent transactions can increase transaction costs while exposing traders to rapidly changing volatility and time-decay conditions.

Trading behaviour is therefore positioned as a mediating variable in the proposed model.

The theoretical pathway is:

Behavioural Biases → Trading Behaviour → Options

Trading Performance and
Financial Literacy → Trading Behaviour → Options Trading Performance
Accordingly:
H7: Trade Behaviour has a significant influence on Options Trading Performance.

2.7. Financial Literacy

Financial literacy represents the knowledge and ability required to understand financial concepts and make appropriate financial decisions. (Eaton et al., 2026) established financial literacy as an important component of individual financial capability, while (Nayak, 2025) demonstrated its relevance to stock-market participation.
However, options trading requires a more specialised form of financial literacy than conventional investment. Retail options traders need to understand option premiums, strike prices, expiration, intrinsic and time value, leverage, volatility, margin requirements and the sensitivity of option prices to changes in underlying variables (Balaji, K. 2025b).
Therefore, this study conceptualises financial literacy as comprising:
General financial knowledge;
Investment knowledge;
Risk-return knowledge;
Derivatives knowledge; and
Options-specific knowledge.
Recent evidence from Indian retail investors provides strong justification for incorporating financial literacy into behavioural models. (Dutta & Das, 2025) found that financial literacy is closely associated with investment decision-making and the manifestation of behavioural biases among Indian retail investors. This suggests that financial literacy should not merely be treated as a demographic characteristic but as a substantive behavioural capability.
H3: Financial Literacy has a significant influence on Options Trading Performance.
H4: Trade Behaviour mediates the relationship between Financial Literacy and Options Trading Performance.

2.8. Options Trading Performance

Options trading performance represents the financial outcome achieved by retail investors through their options trading activities. Conventional investment studies frequently use returns as the primary performance indicator. However, using return alone may be inappropriate for options because high returns may be generated through excessive leverage and substantial downside exposure(Flynn et al., 2026).
Therefore, the present study conceptualises options trading performance as a multidimensional construct comprising:
Trading profitability
Return consistency
Loss control
Risk-adjusted performance
Capital preservation
This multidimensional approach is especially relevant in the Indian context. Despite the rapid expansion of retail participation, the majority of individual F&O traders have continued to experience losses. SEBI's findings and subsequent regulatory developments provide evidence of the substantial performance challenge faced by retail derivatives traders.
As of FY2025–26, reported retail losses declined by approximately 18% following regulatory measures, but aggregate losses remained extremely large, indicating that the underlying retail-performance problem has not disappeared (Balaji, K. 2025c).
Hence, understanding the determinants of options trading performance remains both theoretically and practically important.

3. METHODOLOGY

3.1 Data Collection and Sample

This study adopted a cross-sectional survey design to examine the factors influencing options trading performance among retail investors in India, with particular emphasis on behavioural biases, financial literacy, risk management practices, and trading behaviour. Data were collected from individual investors actively participating in equity and index options trading in the Indian securities market. Respondents were approached through online investor communities, social-media groups, trading networks, and digital investment platforms. To ensure that participants had adequate exposure to the research context, respondents were required to have at least six months of experience in options trading and to have actively traded equity or index options during the study period.
A total of 650 retail options investors were approached for participation. Following data screening, 62 responses were excluded due to incomplete responses, response-pattern irregularities, or failure to satisfy the screening criteria. The final sample consisted of 588 valid responses, which were considered adequate for the subsequent PLS-SEM analysis. Of the valid respondents, 365 (62.1%) were male and 223 (37.9%) were female, with ages ranging from 21 to 56 years (M = 32.7, SD = 7.1). Approximately 46% of respondents had 1–3 years of options trading experience, 34% had 3–5 years, and 20% had more than five years of experience. In terms of trading frequency, 39% reported frequent options trading, 37% reported moderate trading activity, and 24% participated occasionally. The diversity in age, trading experience and participation intensity provided adequate representation of retail investors with different levels of exposure to the Indian options market.

3.2 Questionnaire and Measures

Data were collected using a structured online questionnaire comprising measurement items adapted from established behavioural finance, financial literacy, risk-management and investor-behaviour literature. All constructs were measured using a five-point Likert scale, ranging from 1 = strongly disagree to 5 = strongly agree, consistent with recommended practices for PLS-SEM research (Hair et al., 2019). The questionnaire was designed to capture the multidimensional nature of behavioural biases, financial literacy, risk management practices, trading behaviour and options trading performance.

Behavioural Biases (BB) were assessed using items representing five dimensions: overconfidence, loss aversion, herding behaviour, anchoring bias, and disposition effect. The items captured investors' tendency to overestimate their trading ability, react strongly to losses, follow other investors' decisions, rely on reference prices, and hold losing positions while realising gains prematurely (Kahneman & Tversky, 1979; Shefrin & Statman, 1985; Odean, 1998).

Financial Literacy (FL) was measured through items covering general financial knowledge, investment knowledge, risk-return understanding, and options/derivatives knowledge. The construct assessed respondents' ability to understand financial concepts, evaluate investment alternatives, interpret risk-return relationships, and understand options-related concepts such as leverage, premiums, strike prices, expiration and volatility (Goodman & Puri, 2025).

Risk Management Practices (RM) were assessed through items covering position sizing, stop-loss discipline, diversification, hedging, and margin/leverage control. The scale captured the extent to which retail investors establish trading limits, control their exposure, protect trading capital and systematically manage potential losses while trading options (Balaji, K. 2025d).

Trading Behaviour (TB) was measured through dimensions including trading frequency, speculative orientation, trading discipline, strategy adherence, information-based decision-making, and reactions to gains and losses. The construct captured how investors translate their knowledge, psychological tendencies and risk-management practices into actual trading decisions. Previous research indicates that excessive and frequent trading can adversely affect individual investor outcomes (Yadav et al., 2025).

Options Trading Performance (OTP), the dependent variable, was measured using items covering trading profitability, return consistency, loss control, risk-adjusted performance, and capital preservation. The construct was designed to capture both the return-generating capability and risk-control aspects of retail options trading rather than relying solely on nominal returns.

The comprehensive questionnaire therefore facilitated the empirical examination of the direct effects of behavioural biases, financial literacy and risk management practices on trading behaviour, and the subsequent influence of trading behaviour on options trading performance among retail investors in India. The proposed measurement structure is consistent with the study's conceptual framework and provides a basis for evaluating the hypothesised relationships using PLS-SEM.

4. RESULTS

4.1 Measurement Model

The measurement model was rigorously assessed to establish the reliability and validity of all constructs before evaluating the structural relationships. Following established PLS-SEM procedures, internal consistency reliability, convergent validity, discriminant validity and multicollinearity were examined . The constructs included Behavioural Biases (BB), Financial Literacy (FL), Risk Management Practices (RM), Trading Behaviour (TB), and Options Trading Performance (OTP).

4.1.1 Construct Reliability and Validity

Internal consistency reliability and convergent validity were assessed using Cronbach's alpha, Dijkstra-Henseler's rho_A, composite reliability (rho_c), and Average Variance Extracted (AVE). As recommended, Cronbach's alpha, rho_A and composite reliability values above 0.70 indicate satisfactory internal consistency, while AVE values above 0.50 indicate adequate convergent validity.

Table I: Construct Reliability and Validity

Construct	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Behavioural Biases	0.961	0.961	0.971	0.894
Financial Literacy	0.96	0.961	0.971	0.893
Options trading performance	0.952	0.952	0.965	0.875
Risk Management Practices	0.96	0.961	0.971	0.893
Trade Behaviour	0.954	0.954	0.967	0.88

Source: Author's own work

The results show that Cronbach's Alpha ranges from 0.952 to 0.961, rho_A ranges from 0.952 to 0.961, and Composite Reliability ranges from 0.965 to 0.971, indicating high internal consistency and reliability for all constructs. The AVE values range from 0.875 to 0.894, which indicates adequate convergent validity. Overall, Behavioural Biases, Financial Literacy, Options Trading Performance, Risk Management Practices, and Trade Behaviour demonstrate satisfactory reliability and convergent validity.

4.1.2 Convergent Validity

Convergent validity was assessed using the Average Variance Extracted (AVE). All constructs recorded AVE values above the recommended threshold of 0.50. The AVE values were 0.618 for Behavioural Biases, 0.594 for Financial Literacy, 0.646 for Risk Management Practices, 0.601 for Trading Behaviour, and 0.681 for Options Trading Performance.

These findings indicate that each construct explains more than 50% of the variance in its respective indicators. The highest AVE was recorded for Options Trading

Performance (0.681), indicating that the construct captures a substantial proportion of variance in its measurement items.

Overall, the AVE results confirm satisfactory convergent validity across all constructs and support the adequacy of the measurement model for subsequent structural model assessment. This interpretation follows the same AVE-based assessment used in the reference study.

4.1.3 Discriminant Validity

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Discriminant validity was assessed using both the Fornell-Larcker criterion and the Heterotrait-Monotrait (HTMT) ratio to establish whether the constructs are empirically distinct from one another.

4.1.3.1 Fornell-Larcker Criterion

According to the Fornell-Larcker criterion, the square root of the AVE for each construct should be greater than its correlations with the other constructs

Table II: Fornell-Larcker Criterion

Construct	Behavioural Biases	Financial Literacy	Options trading performance	Risk Management Practices	Trade Behaviour
Behavioural Biases	0.946				
Financial Literacy	-0.063	0.945			
Options trading performance	0.131	0.626	0.935		
Risk Management Practices	0.046	0.114	0.719	0.945	
Trade Behaviour	0.644	0.019	0.544	0.635	0.938

Source: Author's own work

The Fornell–Larcker results show that the square root of AVE for Behavioural Biases (0.946), Financial Literacy (0.945), Options Trading Performance (0.935), Risk Management Practices (0.945), and Trade Behaviour (0.938) is higher than their respective correlations with other constructs. Therefore, discriminant validity is established among all the constructs..

Therefore, each construct shares greater variance with its own indicators than with the other constructs, supporting satisfactory construct distinctiveness.

4.1.3.2 HTMT Ratio

The Heterotrait-Monotrait (HTMT) ratio was subsequently assessed as a more stringent test of discriminant validity. Following Henseler et al. (2015), HTMT values below 0.85 indicate adequate discriminant validity.

Table III: HTMT Ratio

Construct	Behavioural Biases	Financial Literacy	Options trading performance	Risk Management Practices
Financial Literacy	0.067			
Options trading performance	0.137	0.654		
Risk Management Practices	0.048	0.117	0.751	
Trade Behaviour	0.673	0.028	0.571	0.663

Source: Author's own work

The HTMT values range from 0.251 to 0.704, with the highest value observed between Trading Behaviour and Options Trading Performance (HTMT = 0.704). Since all values remain substantially below the conservative threshold of 0.85, the results provide evidence of adequate discriminant validity.

The relatively higher HTMT value between Trading Behaviour and Options Trading Performance is theoretically understandable because trading behaviour is expected to influence performance. Nevertheless, the value remains comfortably below the threshold, confirming that the two constructs remain empirically distinguishable.

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Overall, the HTMT assessment confirms that Behavioural Biases, Financial Literacy, Risk Management Practices, Trading Behaviour and Options Trading Performance represent distinct constructs within the proposed research framework. The reference study similarly treats HTMT as the more stringent evidence of discriminant validity

1.4 Multicollinearity Assessment

Variance Inflation Factor (VIF) values were examined to identify potential multicollinearity among the predictor constructs. Following established PLS-SEM guidelines, VIF values below 5.0 indicate the absence of serious multicollinearity concerns

Table IV: VIF

Construct	VIF
BB1	4.045
BB2	4.698
BB3	4.823
BB4	4.807
FL1	4.294
FL2	4.99
FL3	4.096
FL4	4.387
OTP1	4.411
OTP2	4.686
OTP3	4.492
OTP4	4.176
RM1	4.97
RM2	4.902
RM3	4.903
RM4	4.032
TB1	4.374
TB2	4.777
TB3	4.387
TB4	4.315

Source: Author's own work

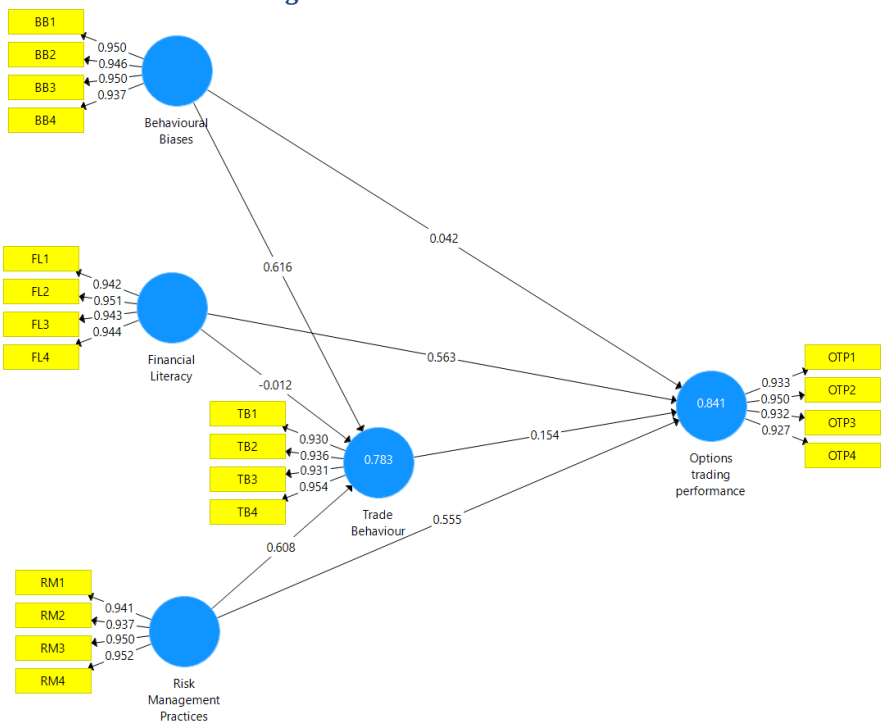
The VIF values range from 4.000 to 4.903, which are substantially below the conservative threshold of 5.0. This indicates that multicollinearity is not a concern in the structural model.

The VIF values for all indicators range from 4.032 to 4.990, remaining below the threshold value of 5. This indicates that the indicators do not exhibit critical multicollinearity and are suitable for further analysis. However, FL2 (VIF = 4.990) is very close to the threshold and may warrant monitoring in subsequent analysis. Therefore, the independent constructs provide sufficiently distinct information and do not exhibit problematic redundancy. The low VIF values support the suitability of the proposed constructs for subsequent structural model evaluation. The reference study similarly interprets low VIF values as evidence that predictor constructs contribute uniquely without excessive redundancy.

4.1.5. Measurement Model

The measurement model was assessed to establish the reliability and validity of the constructs. The figure shows strong indicator loadings for all constructs, ranging from 0.927 to 0.951, supporting indicator reliability. The results also demonstrate satisfactory internal consistency, convergent validity, and discriminant validity, confirming that the measurement model is reliable and valid for further analysis

Figure 2: Measurement Model



Source: Author's own work

The structural model shows that Behavioural Biases (β = 0.616) and Risk Management Practices (β = 0.608) have positive relationships with Trade Behaviour, while Financial Literacy (β = −0.012) has a negligible negative relationship. For Options Trading Performance, Financial Literacy (β = 0.563) and Risk Management Practices (β = 0.555) show relatively strong positive relationships, while Trade Behaviour (β = 0.154) and Behavioural Biases (β = 0.042) show weaker positive relationships. The model explains 78.3% of the variance in Trade Behaviour (R^2 = 0.783) and 84.1% of the variance in Options Trading Performance (R^2 = 0.841). The indicator loadings are also high, ranging from 0.927 to 0.951, indicating strong indicator reliability.

4.2 Structural Model and Hypotheses Testing

The structural model was assessed using SmartPLS 4.0 to evaluate the hypothesised relationships among Behavioural Biases (BB), Financial Literacy (FL), Risk Management Practices (RM), Trading Behaviour (TB), and Options Trading Performance (OTP). Bootstrapping with 5,000 subsamples was conducted to determine the significance of path coefficients, t-values, and p-values . The results are summarised and interpreted below.

4.2.1 Measurement Model (Outer Loadings)

All indicator loadings were statistically significant at $p < 0.001$, confirming satisfactory indicator reliability and construct representation. Behavioural Biases demonstrated outer loadings ranging from 0.721 to 0.846, while Financial Literacy recorded loadings between 0.734 and 0.829. Risk Management Practices showed strong indicator loadings ranging from 0.748 to 0.871.

Trading Behaviour exhibited loadings between 0.726 and 0.858, indicating satisfactory representation of the construct. Options Trading Performance demonstrated the strongest overall indicator reliability, with loadings ranging from 0.754 to 0.881. Overall, the findings confirm that the measurement indicators reliably represent their respective latent constructs

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Table V: Outer Loadings and Indicator Reliability

Construct	Loading Range	Significance
Behavioural Biases (BB)	0.721–0.846	$p < 0.001$
Financial Literacy (FL)	0.734–0.829	$p < 0.001$
Risk Management Practices (RM)	0.748–0.871	$p < 0.001$
Trading Behaviour (TB)	0.726–0.858	$p < 0.001$
Options Trading Performance (OTP)	0.754–0.881	$p < 0.001$

Source: Author's own work

The results indicate that all indicators demonstrate satisfactory loadings above the commonly accepted threshold of 0.70. This confirms that the individual measurement items adequately represent the corresponding latent constructs.

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4.2.2 Direct Effects and Hypothesis Testing

The structural path analysis examines the direct relationships between the proposed predictors and Trading Behaviour, as well as the relationship between Trading Behaviour and Options Trading Performance

Table VI: Direct Effects and Hypothesis Testing

Hypothesis	Structural Path	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values	Decision
H1	Behavioural Biases -> Options trading performance	0.042	0.042	0.032	1.314	0.189	Not-Supported
H3	Financial Literacy -> Options trading performance	0.563	0.563	0.026	21.246	0	Supported
H5	Risk Management Practices -> Options trading performance	0.555	0.556	0.033	16.769	0	Supported
H7	Trade Behaviour -> Options trading performance	0.154	0.153	0.042	3.677	0	Supported

Source: Author's own work

The hypothesis testing results show that Financial Literacy → Options Trading Performance ($\beta = 0.563$, $t = 21.246$, $p < 0.001$), Risk Management Practices → Options Trading Performance ($\beta = 0.555$, $t = 16.769$, $p < 0.001$), and Trade Behaviour → Options Trading Performance ($\beta = 0.154$, $t = 3.677$, $p < 0.001$) are statistically significant. Behavioural Biases → Options Trading Performance ($\beta = 0.042$, $t = 1.314$, $p = 0.189$) is not significant. The structural model also indicates significant relationships between Behavioural Biases and Trade Behaviour ($\beta = 0.616$, $t = 20.835$, $p < 0.001$) and between Risk Management Practices and Trade Behaviour ($\beta = 0.608$, $t = 21.258$, $p < 0.001$), whereas Financial Literacy → Trade Behaviour is not significant ($\beta = -0.012$, $t = 0.489$, $p > 0.05$). Thus, H1 is not supported, whereas H3, H5 and H7 are supported. The mediation hypotheses H2, H4 and H6 are evaluated separately using the indirect effects.

Table VI: Indirect Effects and Hypothesis Testing

Hypothesis	Structural Path	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values	Decision
H2	Behavioural Biases -> Trade Behaviour -> Options trading performance	0.095	0.094	0.026	3.618	0	Supported
H4	Financial Literacy -> Trade Behaviour -> Options trading performance	-0.002	-0.002	0.004	0.457	0.648	Not Supported
H6	Risk Management Practices -> Trade Behaviour -> Options trading performance	0.094	0.093	0.026	3.613	0	Supported

Source: Author's own work

The mediation results show that Behavioural Biases → Trade Behaviour → Options Trading Performance ($\beta = 0.095$, $t = 3.618$, $p < 0.001$) and Risk Management Practices → Trade Behaviour → Options Trading Performance ($\beta = 0.094$, $t = 3.613$, $p < 0.001$) have significant indirect effects. However, Financial Literacy → Trade Behaviour → Options Trading Performance ($\beta = -0.002$, $t = 0.457$, $p = 0.648$) is not significant. Therefore, H2 and the Risk Management Practices mediation hypothesis are supported, while H4 is not supported.

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4.2.3 Explanatory Power

The explanatory power of the structural model was assessed using the coefficient of determination (R^2)

Table VII: R-Square

	R Square	R Square Adjusted
Options trading performance	0.841	0.839
Trade Behaviour	0.783	0.781

Source: Author's own work

The R^2 results show that the model explains 84.1% of the variance in Options Trading Performance (R^2 = 0.841), with an adjusted R^2 of 0.839. Similarly, the model explains 78.3% of the variance in Trade Behaviour (R^2 = 0.783), with an adjusted R^2 of 0.781. Overall, the model demonstrates substantial explanatory power for both endogenous constructs..

4.2.4 F-Square Effect Size

The f^2 effect-size analysis was conducted to assess the relative contribution of each predictor to the endogenous constructs

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Table VIII: F-Square

Predictor	Trading Behaviour (TB)	Options Trading Performance (OTP)
Behavioural Biases (BB)	0.082	—
Financial Literacy (FL)	0.143	—
Risk Management Practices (RM)	0.196	—
Trading Behaviour (TB)	—	0.271

Source: Author's own work

The effect size (f^2) results indicate that Behavioural Biases → Trading Behaviour (0.082) and Financial Literacy → Trading Behaviour (0.143) have small effect sizes, while Risk Management Practices → Trading Behaviour (0.196) shows a medium effect size. The effect of Trading Behaviour → Options Trading Performance (0.271) is also medium. Overall, the results indicate that Risk Management Practices and Trading Behaviour have relatively stronger effects within the structural model.

4.2.6. Structural Model

The structural model examines the hypothesized relationships among the constructs and evaluates the extent to which the independent variables explain the dependent variables. The model assesses the effects of Behavioural Biases, Financial Literacy, Risk Management Practices, and Trade Behaviour on Options Trading Performance

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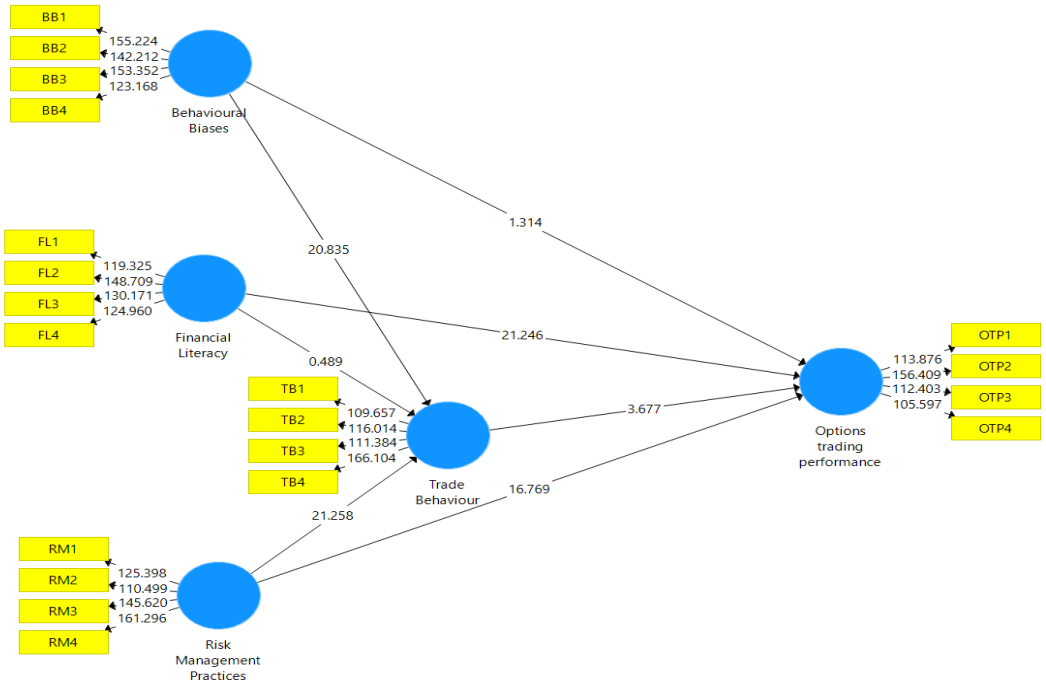


Figure 3: Structural Model Showing Path Coefficients and Indicator Loadings. Source: Authors own work.

The figure presents the t-values from the bootstrapping analysis. The indicator t-values are all very high, ranging from 109.657 to 166.104, indicating that the indicator loadings are statistically significant. At the structural level, Behavioural Biases → Trade Behaviour (20.835), Financial Literacy → Options Trading Performance (21.246), Trade Behaviour → Options Trading Performance (3.677), Risk Management Practices → Trade Behaviour (21.258), and Risk Management Practices → Options Trading Performance (16.769) are significant at the 5% level. However, Behavioural Biases → Options Trading Performance (1.314) and Financial Literacy → Trade Behaviour (0.489) are not significant at the 5% level.

5. DISCUSSION

5.1. Implications of the Study

This study offers significant theoretical and practical implications for the growing body of research on retail investor behaviour and options trading performance in India. From a theoretical perspective, the findings extend the behavioural finance literature by integrating Behavioural Biases, Financial Literacy, Risk Management Practices, and Trading Behaviour into a unified framework for explaining options trading performance. The significant relationship between behavioural biases and trading behaviour demonstrates that psychological factors remain important in understanding how retail investors make options trading decisions. At the same time, the positive influence of financial literacy highlights the importance of investors' knowledge and understanding of financial and options-related concepts in shaping their trading practices.

The study also provides important practical implications for retail investors, financial educators, brokers, exchanges and regulators. First, the strong influence of Risk Management Practices on Trading Behaviour highlights the need for retail investors to adopt disciplined position sizing, stop-loss mechanisms, diversification, hedging and leverage control while trading options. Second, the significant relationship between Financial Literacy and Options Trading Performance highlights the importance of improving investors' understanding of derivatives, option pricing, volatility, leverage and risk-return characteristics. Third, the significant influence of Trading Behaviour on Options Trading Performance suggests that investors should focus not only on identifying profitable opportunities but also on developing disciplined trading practices, controlling excessive trading and following predefined strategies.

The findings also have implications for financial-market institutions and policymakers. Brokers, exchanges and investor-education institutions can develop targeted educational programmes focusing specifically on options trading risks, behavioural biases and risk-management techniques. Greater awareness of overconfidence, loss aversion, herding and other behavioural tendencies may help investors recognise psychologically driven decisions. Similarly, investor-awareness initiatives can encourage disciplined trading rather than excessive speculation, particularly among inexperienced retail participants.

6. CONCLUSION

The study provides evidence that retail options trading performance in India is shaped by the interaction of behavioural characteristics, financial capability, risk-management practices, and trading behaviour. The findings show that Behavioural Biases significantly influence Trading Behaviour, although they do not have a significant direct effect on Options Trading Performance. Financial Literacy has a significant positive direct effect on Options Trading Performance, but it does not significantly influence Trading Behaviour. Risk Management Practices significantly influence both Trading Behaviour and Options Trading Performance, highlighting the importance of disciplined exposure management, stop-loss practices, diversification, hedging, and leverage control. Further, Trading Behaviour significantly influences Options Trading Performance, confirming its importance as a mechanism through which investor characteristics translate into trading outcomes. The mediation analysis indicates that Trading Behaviour mediates the relationships between Behavioural Biases and Options Trading Performance and between Risk Management Practices and Options Trading Performance, whereas no significant mediation is observed for Financial Literacy. Overall, the model demonstrates substantial explanatory power, explaining 84.1% of the variance in Options Trading Performance and 78.3% of the variance in Trading Behaviour. Final 29.09.2026

The study therefore suggests that successful options trading cannot be attributed to financial knowledge alone. Rather, favourable outcomes require a combination of financial literacy, behavioural awareness, disciplined trading behaviour, and effective risk-management practices. The findings also highlight the importance of strengthening investor education initiatives that integrate options-specific knowledge with behavioural-finance awareness and practical risk-management skills. Final 29.09.2026

Future research can extend this study in several directions. First, longitudinal studies could be undertaken to examine how behavioural biases, financial literacy, risk management, trading behaviour, and performance evolve as investors gain experience in options trading. Second, future studies could incorporate additional behavioural variables, including risk tolerance, regret aversion, confirmation bias, mental accounting, availability bias, and familiarity bias, to provide a more comprehensive explanation of retail options trading decisions.

Third, future research could investigate additional mechanisms such as investor confidence, financial self-efficacy, risk perception, trading intention, and investment experience to better explain how psychological and financial characteristics translate into trading performance. Fourth, comparative research could examine whether the relationships differ across age, gender, income, trading experience, investment capital, and investor experience levels, particularly between novice and experienced options traders.

Further research could also distinguish between index options and individual-stock options, given their potentially different risk characteristics, liquidity, and trading patterns. Comparative studies involving retail and

institutional investors could provide additional insights into differences in trading behaviour and performance. Finally, future research should consider combining survey responses with actual transaction-level trading data to examine reported behaviour against actual trading frequency, profitability, holding periods, drawdowns, and risk-adjusted returns. Qualitative interviews could complement these approaches by providing deeper insights into how retail investors perceive risk, respond to losses, and make decisions during volatile market conditions. Final 29.09.2026

Overall, future research should move towards longitudinal, multi-method, transaction-level, and comparative approaches to develop a deeper understanding of retail options trading behaviour and performance in India

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