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# BEHAVIORAL BIASES IN INVESTMENT DECISIONS: FINANCIAL LITERACY AND SOCIAL IMPACT AWARENESS AS MODERATOR

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**Abstract**

This study examines the influence of behavioural biases on investment decisions among graduate-educated retail investors affiliated with Universitas Pendidikan Indonesia, while investigating the moderating roles of financial literacy and social impact awareness. Adopting a quantitative research design, data were collected from 322 respondents through a cross-sectional survey and analyzed using Partial Least Squares Structural Equation Modelling (PLS-SEM). The results demonstrate that behavioural biases exert the strongest positive direct effect on investment decisions, confirming that cognitive tendencies such as overconfidence, anchoring, and herding significantly shape decision-making regardless of educational background. Furthermore, financial literacy and social impact awareness show statistically significant positive direct effects on investment behaviour, indicating that both analytical financial knowledge and sustainability-oriented considerations contribute to more disciplined investment outcomes. However, the study finds that neither financial literacy nor social impact awareness significantly moderates the relationship between behavioural biases and investment decisions, suggesting that these cognitive biases are deeply rooted and cannot be fully neutralized by financial knowledge or ethical awareness alone. These findings highlight the persistent influence of behavioural factors in modern digital investment environments and underscore the complexity of investor behaviour among educated cohorts.

**Keywords: Investment Decisions, Financial Literacy And Social Impact Awareness**

## INTRODUCTION

Retail participation in Indonesia's capital market has expanded significantly in recent years, reflecting broader trends in financial inclusion and digital transformation. As of January 2026, the number of Single Investor Identification (SID) accounts exceeded 21 million, with a growth rate of 36.82% recorded in 2025 alone (KSEI, 2026). This rapid expansion has been facilitated by the proliferation of mobile-based brokerage platforms, declining transaction costs, simplified onboarding procedures, and the widespread dissemination of financial information through digital media and social networks (IDX, 2024). Technological innovations such as electronic Know Your Customer (e-KYC) systems, reduced capital requirements, and intuitive application interfaces have significantly lowered both financial and psychological barriers to entry (Arner et al., 2017; Gelb & Castrillon, 2019). Consequently, participation in financial markets is no longer primarily constrained by access but increasingly influenced by how investors process information and make decisions within complex and rapidly evolving environments.

Despite the increased accessibility of financial markets, the contemporary investment landscape is characterized by a high degree of informational intensity and social interaction. Retail investors are continuously exposed to real-time market updates, trending asset information, curated news feeds, and peer-generated content. These features create an environment in which information is abundant but often fragmented, simplified, or amplified through social validation mechanisms. Such conditions may encourage rapid decision-making and increase reliance on cognitive shortcuts rather than deliberate analysis (Kahneman, 2011; Barberis et al., 2018). In this context, investment decisions are shaped not only by objective financial data but also by psychological and social influences that affect perception, judgment, and behaviour.

Classical financial theory, particularly the Efficient Market Hypothesis (EMH), assumes that investors act rationally and utilize all available information to maximize expected returns (Fama, 1970). Under this framework, asset prices reflect all relevant information, and systematic deviations from rational behaviour are assumed to be minimal. However, a substantial body of research in behavioural finance challenges this assumption by demonstrating that investors frequently deviate from rationality due to cognitive limitations and emotional responses. Individuals often rely on heuristics, which are mental shortcuts used to simplify complex decision-making processes, but these heuristics can lead to systematic biases such as overconfidence, anchoring, and herding (Barberis et al., 2018). These biases may result in distorted judgments, inefficient portfolio choices, and suboptimal investment outcomes.

This study focuses on graduate-educated retail investors, particularly those affiliated with Universitas Pendidikan Indonesia (UPI). This group is theoretically significant because it represents individuals who possess relatively high levels of formal education and are expected to demonstrate greater analytical capability in financial decision-making. Nevertheless, behavioural finance suggests that higher levels of education do not necessarily eliminate cognitive biases, especially in environments characterized by uncertainty, time pressure, and social influence (Kahneman, 2011). Graduate-educated investors therefore provide an appropriate context for examining whether behavioural biases persist even when individuals are equipped with advanced knowledge and access to information.

In addition to behavioural biases, this study incorporates financial literacy and social impact awareness as moderating variables. Financial literacy refers to the ability to understand and apply financial knowledge in decision-making contexts and is often associated with improved financial outcomes and more rational investment behaviour (Lusardi & Mitchell, 2014). However, empirical findings regarding its ability to reduce behavioural biases remain inconclusive. Social impact awareness, on the other hand, reflects the extent to which individuals consider the social and ethical implications of their investment decisions. This construct introduces a normative dimension that may influence decision-making processes, particularly in relation to herding behaviour, which may be interpreted not only as irrational imitation but also as alignment with shared values or collective preferences (Friede et al., 2015).

Although behavioural finance has been widely studied, several gaps remain evident in the literature. First, there is limited empirical research that examines multiple behavioural biases simultaneously within a unified analytical framework in the Indonesian context. Second, the moderating role of financial literacy in shaping the relationship between behavioural biases and investment decisions remains inconsistent across studies. Third, the role of social impact awareness as a contextual factor influencing investor behaviour has received limited attention, particularly in emerging markets. Finally, there is a lack of research focusing specifically on graduate-educated retail investors, who are often assumed to be less susceptible to behavioural biases but may still be influenced by psychological and social factors.

Given these considerations, this study aims to examine the influence of behavioural biases on investment decisions among graduate-educated retail investors in Indonesia and to assess the moderating roles of financial literacy and social impact awareness. By addressing these gaps, the study seeks to contribute to both theoretical development and practical understanding of investor behaviour in modern financial markets.

## LITERATURE REVIEW

### Classical Finance Theory

Classical finance theory, built on assumptions of rational investor behavior and market efficiency, has faced significant challenges due to observed market inefficiencies and irrational human behavior (Kanapickienė et al., 2024). This has led to the emergence of behavioral finance, which integrates psychological insights into financial decision-making by recognizing that investors are "complex psychological beings full of emotions"(Quaicoe & Eleke-Aboagye, 2021). Research demonstrates the prevalence of various behavioral biases affecting investment decisions, with herding behavior being particularly dominant, accounting for nearly 62% influence among surveyed investors(Quaicoe & Eleke-Aboagye, 2021). Other significant biases include regret aversion, gambler's fallacy, mental accounting, overconfidence, and anchoring (Quaicoe & Eleke-Aboagye, 2021). Behavioral finance has evolved as a "harmonious blend of research principles derived from subjects like finance, cognitive psychology, and behavioural economics" to address the limitations of traditional financial theories (Sharma et al., 2021).

### Investment decision

Investment decision refers to the process through which investors allocate financial resources into investment opportunities based on expectations regarding future returns, risk exposure, and personal objectives.

Investment decisions involve several dimensions, including asset selection, diversification, timing behaviour, risk management, and portfolio review. In this study, investment decision is conceptualized as a latent behavioural construct reflecting the extent to which investors demonstrate disciplined and informed investment behaviour**.** Investment decisions are significantly influenced by behavioral biases and risk factors, challenging traditional rational investor assumptions. Islam et al., (2024) demonstrate that prospect theory, herding, and heuristics biases significantly impact financial risk propensity, which in turn affects investment decisions, suggesting these biases mediate the relationship between psychological factors and investment choices. Similarly, Thasleema et al., (2024) found that risk factors including risk capacity, tolerance, and propensity positively influence investment priority and strategy, ultimately affecting investment decision-making, with conscientiousness moderating these relationships. Sathya, (2024) provide comprehensive evidence that cognitive and emotional biases such as overconfidence, loss aversion, anchoring, and herding behavior systematically distort investor judgment, leading to suboptimal investment behaviors and market volatility. At the corporate level, Farooq et al., (2022) identify information asymmetry, cash holdings, policy uncertainty, and governance quality as key factors influencing real investment decisions, highlighting the complexity of investment decision-making processes across different contexts.

**Behavioural biases**

Behavioural biases represent systematic psychological tendencies that influence investment decision-making. This study conceptualizes behavioural biases through three major dimensions: overconfidence, anchoring, and herding behaviour. These biases are expected to influence how investors process information, evaluate risk, and respond to market conditions. Research on behavioral biases in investment decision-making reveals systematic psychological tendencies that significantly influence investor behavior. Key biases include overconfidence, anchoring, and herding behavior, which affect how investors process information and evaluate risk (Adil et al., 2021; Jain et al., 2021). Studies demonstrate that overconfidence positively influences investment decisions among male investors, while risk-aversion and herding show negative effects (Adil et al., 2021). Comprehensive scale development research identifies behavioral biases as multidimensional phenomena encompassing availability bias, representativeness bias, overconfidence, market factors, herding, anchoring, mental accounting, regret aversion, and loss aversion (Jain et al., 2021). These biases lead to suboptimal investment behaviors, portfolio misalignments, and heightened market volatility (Sathya, 2024) Financial literacy serves as a crucial moderating factor, with higher literacy levels helping investors overcome behavioral biases in decision-making (Suresh, 2021).

**Financial literacy**

Financial literacy refers to the knowledge, understanding, and capability required to make informed financial decisions. It includes understanding of concepts such as diversification, risk-return relationships, inflation, compound interest, and investment planning (Lusardi & Mitchell, 2014). Financial literacy is expected to improve investment decision-making and potentially reduce reliance on irrational heuristics. Research consistently demonstrates that financial literacy positively influences investment decision-making, though this relationship is significantly mediated by behavioral biases. Agarwal et al., (2025) found a notable positive correlation between financial literacy and investment decisions among Indian retail investors, with behavioral biases serving as mediating factors rather than simple moderators. Similarly, Wang & Zou, (2024) reported that financial literacy has a significant positive direct effect on investment decision quality, but cognitive biases account for 40% of the total effect, with herding behavior and availability bias showing the strongest mediating effects. However, the relationship is complex: while higher financial literacy reduces susceptibility to availability bias and herding behavior, it paradoxically increases overconfidence bias (Wang & Zou, 2024).

**Social Impact Awareness**

Social impact awareness refers to the extent to which investors consider environmental, ethical, and social consequences when making investment decisions. Investors with higher social impact awareness may place greater emphasis on sustainability, corporate responsibility, and ESG-related considerations when evaluating investment opportunities (Friede et al., 2015). Research demonstrates that social impact awareness significantly influences investment decisions across various contexts. In real estate investment, the social component of ESG remains poorly understood despite affecting all investments, yet incorporating social considerations can enhance risk-return performance when tailored to specific investors (Foster et al., 2023). Portfolio analysis reveals that investors with higher social impact aspirations tend to invest in firms with similar social goals, particularly when operating in

countries with high social inequality or strong social progress support (Boni & Toschi, 2021). Individual investor behavior shows that collectivism, environmental concerns, financial performance expectations, and SRI awareness positively influence attitudes toward socially responsible investments, which subsequently drive investment intentions (Thanki et al., 2022). Bibliometric analysis of ESG literature indicates growing interconnections between environmental consciousness and investment decisions, suggesting investors are becoming more environmentally aware when making investment choices, despite challenges in terminology

## METHOD

### Research Design

This study adopts a quantitative research design. Quantitative research is appropriate because the study seeks to test relationships among variables, measure the strength of those relationships, and evaluate hypotheses using statistical procedures. Quantitative methods allow the researcher to transform responses from a structured questionnaire into numerical data, which can then be analysed objectively using statistical software (Creswell, 2018). Since this research aims to examine direct and moderating effects among latent constructs, a quantitative design is considered suitable. The study uses a cross-sectional survey approach. A cross-sectional design involves collecting data from respondents at a single point in time. This design is appropriate for examining perceptions, attitudes, and behavioural tendencies among a defined group of respondents. In this study, the survey captures the investment-related attitudes and behaviours of UPI graduate-educated retail investors during the period of data collection. Although cross-sectional research does not establish causality in the same way as longitudinal or experimental research, it is widely used in behavioural finance and management studies to examine structural relationships among psychological and behavioural constructs (Hair et al., 2021).

The analytical approach used in this study is Partial Least Squares Structural Equation Modelling, commonly known as PLS-SEM. PLS-SEM is suitable for this study because the research model includes several latent variables measured by multiple indicators, as well as moderation effects. Structural equation modeling is useful when the researcher wishes to evaluate both the measurement model and the structural model within the same analytical framework. The measurement model assesses whether the indicators properly measure the constructs, while the structural model evaluates the relationships among the constructs (Hair et al., 2021). PLS-SEM is particularly appropriate for predictive and explanatory research. It is also suitable when the research model is relatively complex and when the data may not fully meet the strict assumptions of covariance-based SEM, such as multivariate normality (Hair et al., 2021). In this study, SmartPLS 4 is used to conduct the analysis because it provides tools for assessing construct reliability, convergent validity, discriminant validity, path coefficients, coefficient of determination, effect size, multicollinearity, and bootstrapped significance testing. The research design can therefore be described as quantitative, explanatory, cross-sectional, and survey-based. It is explanatory because it seeks to explain how behavioural biases, financial literacy, and social impact awareness influence investment decisions. It is also predictive because it evaluates the extent to which the independent variables explain variation in investment decisions.

### Operationalization of Variables

Operationalization refers to the process of translating abstract theoretical constructs into measurable indicators. Since the variables in this study are latent constructs, they cannot be observed directly. Instead, they are measured through several questionnaire items that reflect the meaning of each construct. The use of multiple indicators is important because it improves measurement accuracy and allows the researcher to assess reliability and validity (Hair et al., 2021). The main constructs in this study are behavioural biases, financial literacy, social impact awareness, and investment decision. Behavioural biases are operationalized as a construct reflecting psychological tendencies that influence investment behaviour. The indicators of behavioural biases include items related to overconfidence, anchoring, and herding. Financial literacy is measured through items assessing respondents' understanding of risk, return, diversification, compound interest, and financial information. Social impact awareness is measured through items related to environmental concern, social contribution, employment practices, sustainability information, and ESG consideration. Investment decision is measured through items capturing diversification, reliance on analysis, long-term orientation, and portfolio review behaviour. All items are measured using a five-point Likert scale. The Likert scale is appropriate because it allows respondents to indicate the degree to which they agree or disagree with each statement. The scale ranges from 1 to 5, where 1 represents "Strongly Disagree" and 5 represents "Strongly Agree." Likert-scale measurement is commonly used in behavioural finance and social science research because it enables the quantification of attitudes, perceptions, and behavioural tendencies.

The questionnaire was designed to capture both behavioural tendencies and decision outcomes. The financial literacy items were not limited to objective knowledge tests but were adapted to reflect respondents' perceived understanding of key investment principles. This is appropriate because the study focuses on how perceived capability affects decision-making behaviour. However, the limitation of self-reported measures is acknowledged, as respondents may overestimate or underestimate their actual financial knowledge.

### Population, Sample, and Sampling Technique

#### Population

The population of this study consists of UPI graduate-educated retail investors in Indonesia. This includes postgraduate students and recent alumni of Universitas Pendidikan Indonesia who have made at least one investment transaction or have participated in retail investment activities. The focus on retail investors is important because retail investors are more likely than institutional investors to be influenced by behavioural biases, social cues, and limited information processing capacity. The selected population is appropriate for the research problem because UPI graduate-educated investors represent a group with relatively high educational attainment. Classical finance might suggest that such individuals should be more rational and better able to process financial information. However, behavioural finance suggests that higher education does not fully remove cognitive biases. Therefore, this population is theoretically relevant for examining whether behavioural biases continue to influence investment decisions among educated investors.

#### Sampling Technique

This study uses purposive sampling. Purposive sampling is a non-probability sampling technique in which respondents are selected based on specific criteria relevant to the research objectives. This technique is appropriate when the study requires respondents with particular characteristics or experiences (Sekaran & Roger Bougie, 2016). Since the study focuses on UPI graduate-educated retail investors, not all members of the general public are suitable respondents. The criteria for inclusion in this study are as follows. Respondents must be postgraduate students or recent alumni affiliated with UPI. They must also have experience as retail investors or have made at least one investment transaction within the relevant period. This criterion ensures that respondents have practical exposure to investment decision-making and are therefore capable of answering the questionnaire meaningfully. Although purposive sampling may limit generalizability, it is appropriate for this study because the research is focused on a specific investor group rather than the entire Indonesian population. The goal is not to generalize broadly to all investors but to understand behavioural mechanisms within a theoretically meaningful educated cohort.

#### Sample Size

The final sample used in this study consists of 322 respondents. This sample size is considered adequate for PLS-SEM analysis. According to Hair et al. (2021), PLS-SEM can be applied effectively with moderate sample sizes, particularly when the model is prediction-oriented and includes latent variables. A larger sample improves the stability of estimates and strengthens the statistical power of hypothesis testing. In PLS-SEM, sample adequacy may be assessed using several approaches. One commonly cited rule is the “ten-times rule,” which suggests that the minimum sample should be ten times the largest number of structural paths directed at any construct or ten times the largest number of indicators used to measure a construct . However, more recent methodological literature recommends using statistical power analysis rather than relying only on the ten-times rule. Since this study has a sample of 322 respondents, it exceeds the minimum requirements for the model tested and is considered sufficient for reliable estimation.

## RESULTS AND DISCUSSION

### Results

Path coefficients represent the strength and direction of the relationships among the constructs included in the structural model. In Partial Least Squares Structural Equation Modelling (PLS-SEM), path coefficients are standardized beta (β) values that indicate how strongly one construct influences another construct. A positive coefficient indicates that an increase in the predictor variable is associated with an increase in the dependent variable, whereas a negative coefficient indicates an inverse relationship between the constructs. In this study, path coefficients were used to examine both the direct effects and moderation effects among Behavioural Biases, Financial Literacy, Social Impact Awareness, and Investment Decision. The structural model results provide important insight into how behavioural and contextual factors shape investment decision-making among UPI graduate-educated retail investors.

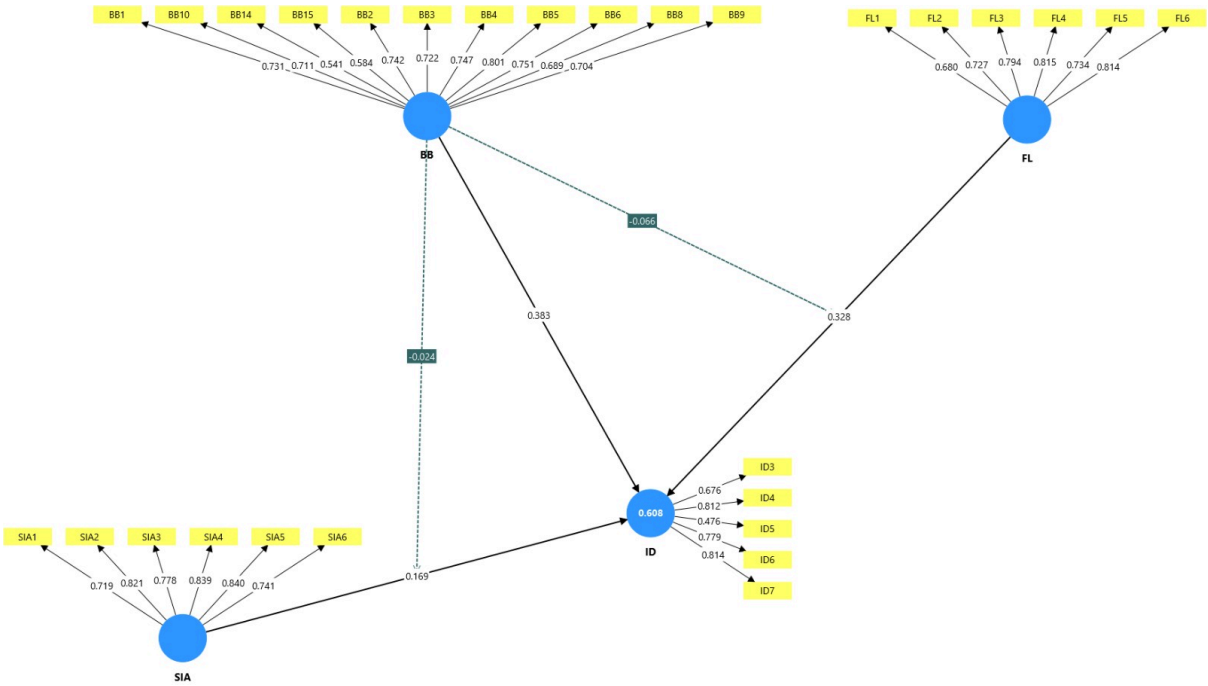


**Figure 1 Structural Model with Path Coefficients**

The structural model presented in Figure 4.4 illustrates the standardized path coefficients obtained from the SmartPLS analysis. The model shows that Behavioural Biases recorded a positive path coefficient of β = 0.383 toward Investment Decision, indicating that behavioural bias tendencies significantly influence investment decisions among respondents. Financial Literacy also recorded a positive path coefficient of β = 0.328, suggesting that higher financial literacy contributes positively to investment decision behaviour. Social Impact Awareness recorded a smaller positive coefficient of β = 0.169, indicating a weaker but still meaningful positive relationship with investment decision.

The moderation effect of Behavioural Biases × Financial Literacy recorded a negative coefficient of β = -0.066, while the moderation effect of Behavioural Biases × Social Impact Awareness recorded a negative coefficient of β = -0.024. These negative coefficients suggest that Financial Literacy and Social Impact Awareness slightly weaken the relationship between behavioural biases and investment decisions. However, the practical and statistical significance of these moderation effects must be interpreted together with the hypothesis testing results presented later in the chapter.

The structural model also shows that the endogenous construct, Investment Decision, recorded an R-square value of 0.608. This indicates that approximately 60.8% of the variance in investment decision can be explained jointly by Behavioural Biases, Financial Literacy, Social Impact Awareness, and the moderation terms included in the model. This reflects a moderate to substantial explanatory power of the structural model. Overall, the path coefficient results suggest that behavioural and cognitive factors play a substantial role in shaping investment decisions among UPI graduate-educated retail investors, while financial literacy and social impact awareness provide additional explanatory contributions within the structural framework

**Table 1 Path Coefficients and Bootstrapping Results**

| Relationship | Original Sample | Sample Mean | STDEV | T-Statistics | P-Value | Decision |
|---|---|---|---|---|---|---|
| BB → ID | 0.383 | 0.382 | 0.058 | 6.654 | 0.000 | Supported |
| BB × FL → ID | -0.066 | -0.062 | 0.043 | 1.525 | 0.127 | Not Supported |
| BB × SIA → ID | -0.024 | -0.027 | 0.047 | 0.523 | 0.601 | Not Supported |
| FL → ID | 0.328 | 0.327 | 0.059 | 5.567 | 0.000 | Supported |
| SIA → ID | 0.169 | 0.174 | 0.052 | 3.260 | 0.001 | Supported |

The bootstrapping results presented in Table 4.12 provide the statistical significance of the structural relationships within the model. The findings show that Behavioural Biases have a positive and statistically significant effect on Investment Decision, with a path coefficient of β = 0.383, t-statistic = 6.654, and p-value = 0.000. Since the p-value is below 0.05, the relationship is statistically significant. This indicates that behavioural bias tendencies significantly influence the investment decision behaviour of UPI graduate-educated retail investors. Financial Literacy also recorded a positive and statistically significant relationship with Investment Decision, with a path coefficient of β = 0.328, t-statistic = 5.567, and p-value = 0.000. This finding suggests that respondents with higher levels of financial literacy are more likely to demonstrate stronger investment decision discipline and more informed investment behaviour.

Similarly, Social Impact Awareness recorded a positive and statistically significant effect on Investment Decision, with a coefficient of β = 0.169, t-statistic = 3.260, and p-value = 0.001. Although the strength of the relationship is weaker compared to Behavioural Biases and Financial Literacy, the result indicates that respondents who are more conscious of social, environmental, and ethical investment considerations are more likely to incorporate such considerations into their investment decision-making process. The moderation effect of Financial Literacy on the relationship between Behavioural Biases and Investment Decision was found to be statistically insignificant. The interaction term BB × FL recorded a coefficient of β = -0.066, t-statistic = 1.525, and p-value = 0.127. Since the p-value exceeds the threshold of 0.05, the moderation hypothesis is not supported. This indicates that Financial Literacy does not significantly alter the strength of the relationship between Behavioural Biases and Investment Decision among the respondents.

Similarly, the moderation effect of Social Impact Awareness on the relationship between Behavioural Biases and Investment Decision was also statistically insignificant. The interaction term BB × SIA recorded a coefficient of β = -0.024, t-statistic = 0.523, and p-value = 0.601. The result indicates that Social Impact Awareness does not significantly moderate the relationship between Behavioural Biases and Investment Decision. The structural model results indicate that Behavioural Biases, Financial Literacy, and Social Impact Awareness significantly explain variation in Investment Decision among UPI graduate-educated retail investors. However, the moderation effects proposed in the study were not statistically supported. These findings suggest that although behavioural tendencies and contextual factors directly influence investment decision-making, Financial Literacy and Social Impact Awareness do not significantly weaken the influence of behavioural biases within the tested model.

**Model Fit**

Model fit assessment evaluates how well the estimated structural model represents the observed data. Although Partial Least Squares Structural Equation Modelling (PLS-SEM) is primarily prediction-oriented rather than covariance-fit oriented, model fit indices still provide supporting evidence regarding the adequacy and quality of the proposed model . In this study, model fit was assessed using the Standardized Root Mean Square Residual (SRMR), Normed Fit Index (NFI), d_ULS, d_G, and Chi-square statistics generated from SmartPLS.

**Table 2 Model Fit Results**

| Fit Index | Value (Estimated Model) | Recommended Criterion | Interpretation |
|---|---|---|---|
| SRMR | 0.083 | < 0.08 preferred | Acceptable / marginal fit |
| NFI | 0.745 | Closer to 1 is better | Moderate fit |
| d_ULS | 2.825 | Lower value preferred | Acceptable discrepancy level |
| d_G | 0.750 | Lower value preferred | Acceptable discrepancy level |
| Chi-square | 1344.967 | Used descriptively in PLS-SEM | Reported descriptively |

**Hypothesis Testing**

Hypothesis testing was conducted using the bootstrapping procedure in SmartPLS with 5,000 bootstrap subsamples. Bootstrapping is widely used in Partial Least Squares Structural Equation Modelling (PLS-SEM) because it enables the estimation of standard errors, t-statistics, and p-values for evaluating the statistical significance of structural relationships within the model. In this study, a hypothesis is considered statistically supported when the p-value is less than 0.05 and the t-statistic exceeds the critical value of 1.96 at the 95% confidence level. The hypothesis testing procedure was used to evaluate both the direct effects and moderation effects proposed in the conceptual framework. The results of the structural model testing are presented in Table 3

**Table 3 Hypothesis Testing Summary**

| Hypothesis | Relationship | Coefficient (β) | P-Value | Result |
|---|---|---|---|---|
| H1 | Behavioural Biases → Investment Decision | 0.383 | 0.000 | Supported |
| H2 | Financial Literacy → Investment Decision | 0.328 | 0.000 | Supported |
| H3 | Social Impact Awareness → Investment Decision | 0.169 | 0.001 | Supported |
| H4 | BB × FL → Investment Decision | -0.066 | 0.127 | Not Supported |
| H5 | BB × SIA → Investment Decision | -0.024 | 0.601 | Not Supported |

## Discussion

### Hypothesis 1: Behavioural Biases Have a Direct Effect on Investment Decision

The first hypothesis proposed that behavioural biases significantly influence investment decisions among UPI graduate-educated retail investors. The results strongly support this hypothesis. Behavioural Biases recorded a positive and statistically significant effect on Investment Decision, with a path coefficient of $\beta = 0.383$ and a p-value of 0.000. This result indicates that behavioural tendencies such as overconfidence, anchoring, and herding substantially shape the investment decisions of respondents. Among all predictor variables included in the model, behavioural biases recorded the strongest direct effect on investment decision. This finding demonstrates that psychological and cognitive factors remain highly influential even among investors with graduate-level educational backgrounds. Recent research demonstrates that behavioral biases significantly influence retail investment decisions across emerging markets. Muthukumar & Krishnakumar, (2024) examined 355 Indian retail investors and found that demographic factors affect behavioral biases, with gender and education showing negative significant influence while age shows positive influence on investment behavioral biases. Their structural equation modeling revealed that market, economic, risk, cognitive, and attitude factors significantly impact investment decisions, explaining 66% of behavioral biases influencing retail investor choices. Singh & Dixit, (2025) identified key biases affecting Indian retail investors, including overconfidence, herd behavior, loss aversion, mental accounting, and anchoring, concluding that psychological factors quietly guide financial choices even when data suggests different directions.

### Hypothesis 2: Financial Literacy Has a Direct Effect on Investment Decision

The second hypothesis proposed that financial literacy significantly influences investment decision behaviour. The findings support this hypothesis. Financial Literacy recorded a positive and statistically significant effect on Investment Decision, with a path coefficient of $\beta = 0.328$ and a p-value of 0.000. This result indicates that respondents who possess stronger financial knowledge and understanding are more likely to demonstrate disciplined and structured investment behaviour. Investors with higher financial literacy levels appear more capable of evaluating investment opportunities analytically, understanding risk-return relationships, and making informed financial decisions. Research consistently demonstrates that financial literacy significantly influences investment decision-making behavior across diverse populations. Thind & Ray, (2023) found that financial literacy programs led to significant shifts toward regular, diversified investment practices and increased confidence in financial decision-making among Indian participants. Abdullah et al., (2021) confirmed a positive and significant impact of financial literacy on investment decision-making behavior among Pakistani Stock Exchange investors, with financial risk tolerance mediating this relationship. Similarly, Wijayanti et al., (2024) demonstrated that financial literacy and financial behavior significantly affect investment decisions among university students, explaining 51% of the variance in investment decision variables.

### Hypothesis 3: Social Impact Awareness Has a Direct Effect on Investment Decision

The third hypothesis proposed that social impact awareness significantly influences investment decisions. The findings support this hypothesis. Social Impact Awareness recorded a positive and statistically significant effect on Investment Decision, with a coefficient of $\beta = 0.169$ and a p-value of 0.001. This finding indicates that respondents consider environmental, social, and ethical issues when making investment decisions. Although the effect size is smaller than those of behavioural biases and financial literacy, the relationship remains statistically meaningful. This suggests that sustainability-oriented thinking increasingly forms part of investment behaviour among graduate-educated retail investors. Recent research consistently demonstrates that social factors significantly influence investment decisions, supporting the hypothesis that social impact awareness affects investment choices. Studies

from Indonesia, Nepal, and broader contexts reveal that among Environmental, Social, and Governance (ESG) factors, social considerations play a particularly prominent role in investor decision-making. In Indonesia, social issues emerged as the leading ESG factor for investors due to the country's social and political climate (Riadi et al., 2025). Similarly, research in Nepal found that social factors had a significant positive impact on investment decisions ($\beta = 0.391$, $p < 0.01$), while environmental factors showed no significant influence (Karmacharya, 2023; Poudel & Poudel, 2022). These findings are consistent across both individual and institutional investors in emerging markets. The research indicates that ESG awareness strongly affects investment decisions overall, with investors increasingly seeking to align their financial goals with sustainability and ethical considerations (Kaakandikar et al., 2025). Social and governance factors together explain approximately 69% of variation in investment decisions (Karmacharya, 2023).

**Hypothesis 4: Financial Literacy Moderates the Relationship Between Behavioural Biases and Investment Decision**

The fourth hypothesis proposed that financial literacy weakens the relationship between behavioural biases and investment decision. The findings did not support this hypothesis. The interaction term Behavioural Biases × Financial Literacy recorded a coefficient of $\beta = -0.066$ with a p-value of 0.127, indicating that the moderation effect was statistically insignificant. Recent research examining the relationship between behavioral biases and investment decisions has produced mixed findings regarding financial literacy's moderating role. Multiple studies confirm that behavioral biases significantly influence investment decisions across different markets (Hildebrandus et al., 2023; Gupta et al., 2025 ; Khan et al., 2023; Duwal et al., 2026). However, the moderating effect of financial literacy remains contentious. While Khan et al., (2023) found that financial literacy effectively moderated the relationship between behavioral biases and investment decisions in India, enabling investors to make more logical choices, three other studies reached opposite conclusions. Hildebrandus et al., (2023) reported that financial literacy failed to moderate behavioral biases in Indonesian workers' investment decisions. Similarly, Khan et al., (2023) found financial literacy played a moderating role in Pakistan, though Duwal et al., (2026) discovered that financial literacy did not moderate the relationship between overconfidence bias, herding bias, disposition effect, and investment decisions among Nepalese investors.

**Hypothesis 5: Social Impact Awareness Moderates the Relationship Between Behavioural Biases and Investment Decision**

The fifth hypothesis proposed that social impact awareness weakens the relationship between behavioural biases and investment decision. The findings did not support this hypothesis. The interaction term Behavioural Biases × Social Impact Awareness recorded a coefficient of $\beta = -0.024$ with a p-value of 0.601, indicating that the moderation effect was statistically insignificant. This result suggests that social impact awareness does not significantly alter the influence of behavioural biases on investment decision behaviour. Although respondents may consider environmental, social, and ethical factors when making investment choices, such considerations do not appear to reduce susceptibility to behavioural biases such as overconfidence, anchoring, and herding. These studies examine the relationship between behavioral biases and investment decisions, with mixed findings regarding moderating factors. Chowdhary et al., (2025) found that behavioral biases do not moderate the relationship between attitudes and impact investment behavior among Generation Z investors. Similarly, Khan et al., (2023) demonstrated that investment experience does not moderate the connection between behavioral biases and investment decisions, concluding that behavioral biases persist regardless of investing experience. In contrast, other studies found selective moderating effects. Ullah et al., (2014) reported that investor type shows no moderating role for disposition effect, negative moderation for herding, and positive moderation for overconfidence in investment decisions. Ikram, (2016) discovered that locus of control moderates the relationship between representative bias and investment decisions, though not for availability bias. All studies consistently demonstrate that various behavioral biases significantly impact investment decisions, but the moderating role of different factors appears limited and context-dependent.

## CONCLUSION

This study examined the influence of behavioural biases on investment decisions among UPI graduate-educated retail investors in Indonesia, while also investigating the roles of financial literacy and social impact awareness within the proposed structural model. The study was motivated by the growing participation of educated retail investors in Indonesia's digital investment environment and the increasing recognition that investment decisions are shaped not only by rational financial analysis but also by behavioural and psychological factors.

Using Partial Least Squares Structural Equation Modelling (PLS-SEM), the study analysed the relationships among Behavioural Biases, Financial Literacy, Social Impact Awareness, and Investment Decision based on data collected from 322 respondents. The findings provide several important conclusions regarding the investment behaviour of graduate-educated retail investors.

First, the study confirms that behavioural biases significantly influence investment decisions among UPI graduate-educated retail investors. Behavioural Biases recorded the strongest direct effect on Investment Decision within the structural model. This finding demonstrates that cognitive tendencies such as overconfidence, anchoring, and herding remain highly influential even among educated investors with relatively strong academic backgrounds. The result reinforces the central argument of behavioural finance theory that investment decisions are not purely rational processes but are strongly shaped by psychological tendencies, emotions, and social influences (Kahneman, 2011; Barberis, 2018).

The findings further suggest that modern digital investment environments may intensify behavioural tendencies because investors are continuously exposed to market narratives, online discussions, social media influence, and real-time investment information. As a result, behavioural biases remain an important determinant of investment behaviour regardless of educational attainment or formal financial knowledge.

Second, the study concludes that financial literacy has a significant positive effect on investment decision behaviour. Respondents with stronger financial knowledge and understanding demonstrated more disciplined and structured investment tendencies. This indicates that financial literacy contributes positively to investment decision-making by improving analytical reasoning, awareness of risk-return relationships, diversification understanding, and long-term investment planning.

However, although financial literacy improves investment decisions directly, the findings also reveal that financial knowledge alone is insufficient to eliminate behavioural biases. Behavioural tendencies remained significant even among financially literate respondents. This suggests that knowledge and behaviour are not perfectly aligned within investment decision-making processes. Investors may understand financial principles theoretically while still relying on intuition, emotional responses, or social influence during actual market situations.

Third, the study concludes that social impact awareness significantly influences investment decisions among respondents. Investors increasingly consider environmental, social, and ethical factors when evaluating investment opportunities. This finding reflects the growing importance of sustainability-oriented investing and ESG considerations within modern financial markets.

The result suggests that investment decisions among graduate-educated investors are influenced not only by financial profitability but also by broader social and ethical concerns. Nevertheless, the effect of social impact awareness was smaller than the effects of behavioural biases and financial literacy, indicating that cognitive and behavioural factors remain more dominant in shaping investment decisions.

Fourth, the study concludes that financial literacy does not significantly moderate the relationship between behavioural biases and investment decision. Although financial literacy directly improves investment behaviour, it does not significantly weaken or alter the influence of behavioural biases within the structural model. This finding indicates that behavioural biases are deeply rooted psychological tendencies that cannot be fully reduced through financial knowledge alone.

Similarly, the study concludes that social impact awareness does not significantly moderate the relationship between behavioural biases and investment decision. While respondents may consider sustainability and ethical issues during investment decision-making, such awareness does not significantly reduce susceptibility to overconfidence, anchoring, or herding behaviour.

The study demonstrates that behavioural factors remain highly influential in shaping investment decisions among graduate-educated retail investors in Indonesia. The findings therefore reinforce the continuing relevance of behavioural finance theory within modern investment environments and challenge purely rational models of investor behaviour. The study further highlights that financial knowledge and social awareness contribute positively to investment decision-making but are insufficient to fully neutralize behavioural tendencies.

The conclusion explains what is expected in the Introduction section, as well as conclusions from the Results and Discussion section. Conclusions can also be added to the development plan for the implementation of the future service.

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