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RISK PERCEPTION AND FINANCIAL DECISION MAKING

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Abstract
Financial decisions play a crucial role in personal financial well-being and economic stability, especially in an environment of market volatility, financial innovation, and increased individual responsibility for financial outcomes. Previous research has extensively explored borrowing, saving, and investment behaviors; The current literature on the overall effect of behavioral and perceived variables on financial choices is still scattered; the literature gap that this research addresses is the investigation on risk perception as a mediator. Linking behavioral biases, financial literacy, and individual traits to financial decision-making. Based on prospect theory and risk perception theory, this study employs a quantitative explanatory research design and uses cross-sectional survey data collected from individual financial decision-makers for analysis. This study employed Partial Least Squares Structural Equation Modeling (PLS-SEM) to examine the direct and indirect relationships among the constructs. The results showed that behavioral biases and personality traits significantly influence individuals' risk perception, while financial literacy improves the accuracy of risk assessment. Risk perception, in turn, has a strong and significant impact on financial decision-making, and quantitatively moderates the relationship between antecedents and financial outcomes. The research findings confirm that financial decisions are influenced more by the perceived danger of risk than by simply relying on factual information. Financial choices made by people are more motivated by perceived risk as opposed to the objective information. The mediating variable of risk perception in behavioral biases, financial literacy, and personality traits is imperative, and this is the reason why specific literacy and risk awareness training programs should be conducted.
Keywords: *Financial Decision-Making, Risk, Behavioral Biases, Financial literacy*

INTRODUCTION

Financial decision-making is a core outcome variable in contemporary economics and behavioral research, encompassing a wide range of individual and household choices, such as leverage behavior, risk preferences, investment decisions, asset allocation, and participation in financial products. Studies of lending, investing and portfolio decisions always highlight the influence of uncertainty and risk in determining financial results. Overall, these results reflect how individuals allocate financial resources under conditions of uncertainty. In today's modern economy, characterized by market volatility, rapid financial innovation, and individuals taking on greater responsibility for their own financial well-being, the quality of financial decision-making inevitably impacts individual welfare, financial stability, and economic growth (Iqbal et al., 2025; Carlo, 2025; Ali et al., 2025). Therefore, the factors influencing financial decision-making have become a critical concern for policymakers, financial institutions, and regulatory bodies, all of whom are striving to promote sustainable and preventative financial behavior (Mansour & Salar, 2025; Zafar et al., 2025). Existing studies tend to consider the single determinants separately and offer little information about the joint action of cognitive and behavioral determinants on financial decision-making. Many studies examine specific decision outcomes in isolation, such as investment choices or savings behavior, without adequately integrating the psychological and cognitive mechanisms that underpin these behaviors (Ali, 2022; Ali et al., 2023; Sufyan & Othman, 2025; Ullah et al., 2025). Furthermore, research findings often differ across different subjects and populations, suggesting that financial decisions are not solely driven by the financial information surveyed, but rather by unique interpretations of the impact of risk and uncertainty (Marc et al., 2023; Audi et al. 2023; Ali et al., 2025). Literature reviews suggest that the impact of behavioral biases and financial literacy on investment and borrowing outcomes is inconsistent, indicating the existence of intermediate cognitive processes that have not yet been fully explored. Specifically, while financial decisions are generally considered the ultimate outcome, The current data is not unanimous on the role played by underlying cognitive and perceptual mechanisms in transforming financial information into real decision-making behaviour. (Ali et al., 2025; Holton & Holton, 2025).

These limitations highlight the necessity of studying key independent variables, especially those rooted in behavioral and cognitive theories, in order to provide a more coherent and comprehensive explanation of financial decision-making. The most influential independent variable mentioned in the literature is financial literacy, which

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plays a central role in finance and decision theory. Financial risk perception, rooted in prospect theory and risk perception theory, refers to the assessment of risk associated with the uncertainty of potential losses related to financial choices (Ali et al., 2025; Gomez & Edward, 2025). Related studies show that enhanced risk perception significantly impacts behavioral patterns, behavioral choices, investment decisions, and holding levels, as it prompts individuals to adopt precautionary strategies and avoid using unregulated or speculative products (Ali & Sajid, 2020; Asli et al., 2025; Hassana et al., 2025; Karul & Nawaz, 2025; Ali et al., 2025). Conversely, impaired or distorted risk perception can lead individuals to underestimate potential losses, resulting in excessive risk-taking. Financial education and regulatory disclosures can improve people's awareness of product risks and regulations, further influencing risk perception. Therefore, financial risk perception is a crucial cognitive mechanism that individuals use to translate financial information into concrete decision-making outcomes (Ali et al., 2025). Behavioral and cognitive biases are another key set of independent variables that influence financial decision-making. Based on financial theory, systematic risks to information processing and risk assessment within the financial industry can be behavioral biases, such as overconfidence, loss aversion, and heuristic-based errors in judgment systematically distort information processing and probability assessment. Previous studies have shown that overconfidence can lead investors to overestimate their abilities and engage in excessive trading, while loss aversion can cause investors to be reluctant to cut their losses and avoid investments they perceive as high-risk (Iqbal & Abbas, 2024; Ali et al., 2025; Shahzad et al., 2025; Tariq, 2025; Vella et al., 2024; Sadiq et al., 2025; Ali et al., 2025). These cognitive biases not only affect investment choices and portfolio composition, but also influence decision-making speed and the ability to react to market signals (Ali et al., 2025; Aziz et al., 2025). Therefore, behavioral biases provide compelling evidence for explaining the persistent irrational behavior observed in financial decision-making.

Financial literacy is widely considered a fundamental independent variable influencing financial behavior and decision-making outcomes (Sulehri & Ali, 2024; Khalid et al., 2025). Financial literacy encompasses an individual's understanding of financial concepts, risk-reward trade-offs, and financial instruments, enabling them to evaluate various options more intelligently (Siddique et al., 2025). Evidence from various sources consistently indicates that the aforementioned financial literacy is related to shared investment decisions, external securities expertise, and shared risk-taking behavior (Alisa et al., 2024; Pambudi Siwi et al., 2024; Mehdi et al., 2025; Najdah et al., 2025). Furthermore, financial literacy helps mitigate the impact of cognitive and behavioral biases; individuals with higher levels of financial knowledge are better able to recognize risks and reduce cognitive biases (Ammar et al., 2025). In the context of widespread financial technology and the increasing complexity of financial products, financial literacy is particularly important for ensuring sound financial decision-making.

In addition to individual cognition, personal ethnicity, social influences, and related factors are also important independent variables. Personal characteristics such as locus of control, materialism, and individual risk preferences can influence how people perceive and respond to financial risks (Saim et al., 2025; Ali et al., 2025). Environmental and social factors—including family, marital status, occupation, income level, and cultural or religious values—subject financial decisions to a broader auction of social norms and expectations (Mukremin and Bozkurt, 2024; Farras et al., 2025; Bukhari et al., 2025). Institutional factors, such as product regulatory frameworks and compensation mechanisms, further influence perceptions of and incentives for safety, which in turn affect people's investment and online behavior (Asli et al., 2025; Batool et al., 2025; Kling et al., 2023; Zahid et al., 2025). These factors demonstrate that financial decisions are not purely individual but are constrained by the social and institutional environment.

On the whole, the literature demonstrates that behavioral biases, financial literacy, and personal characteristics are all factors that contribute to financial decisions, yet there is a lack of cognitive processes that bring these elements together to the final results. Despite the existing research on the perception of risk, its mediating position in explaining these correlations together has not been exhaustively investigated; thus, the paper is concerned with analyzing risk perception as a central mediating variable in the context of financial decision-making.

In line with the study that has been conducted previously, the demographic and socioeconomic factors were considered to be the control variables in explaining the heterogeneity in the financial experience, risk tolerance, and access to financial resources.Demographic characteristics such as age, gender, education level, income, and employment status are commonly used control variables in past studies because they systematically influence individuals' financial experiences, risk tolerance, and access to financial resources (Rafique et al., 2025). Age reflects the influence of the life cycle on borrowing and debt behavior, while education and income reflect

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differences in financial literacy and information processing abilities (Kumar et al., 2025). Controlling for these variables ensures that the observed effects are not merely artifacts of demographic heterogeneity. Other control factors related to socioeconomic status, family or social influence, and cultural or institutional context are equally important. Socioeconomic status affects an individual's ability to withstand financial losses, which in turn affects their risk tolerance (Khan et al., 2025). Family and social influences shape people's norms, expectations, and shared attitudes towards financial behavior, while the cultural and institutional environment influences their trust in the financial system and regulatory framework. Including these control variables can enhance the comparability of the study's results because it accounts for other external factors that might influence the relationship between conflict behavior and financial decision-making.

LITERATURE REVIEW

To further generalize the available evidence, the paper breaks down the literature into four content directions: (i) risk perception in financial choices; (ii) behavioral and heuristic biases; (iii) financial literacy and individual characteristics; and (iv) mediating factors between cognitive variables and financial consequences. This structure helps in making critical comparisons of various studies and pointing out the theoretical consistent and inconsistent points which are applicable in the current research.

Risk perception in financial decision-making is rapidly becoming an important area of research, Although there is an agreement that risk perception is the major determinant of financial behavior, these studies differ in their conceptualization of risk, such as regulatory awareness to subjective loss assessment, indicating that risk perception mechanisms might vary in different situations particularly in assessing how understanding of financial risk influences leverage, fraud, and investment behavior. Asli et al. (2025) are studying whether specialized training on the risks of financial products alters individuals' risk perception and subsequent financial decisions. This study was recently conducted in Türkiye, using a nationwide survey methodology, focusing on three regions with high rates of usage of high-risk and unregulated financial products. This study employs an experimental and quantitative research design to compare financial preferences after training, while controlling for observable individual characteristics. It is worth mentioning that the previous research findings on the impacts of heuristic biases are not completely consistent, whereas some studies have shown that risk perception has a strong indirect impact, other studies have shown that some heuristic biases such as overconfidence or availability heuristics have a direct impact regardless of the perception process.The study utilized key variables such as financial risk perception, product regulatory status, leverage behavior, borrowing choices, and investment decisions, and found that risk-focused financial training significantly improves individuals' understanding of financial risks. The results further indicate that improved risk awareness leads individuals to shift towards regulated financial products. Furthermore, increasingly more educated individuals are seeking professional financial advice to help them navigate fraud, corruption, and investment decisions. These results suggest that targeted financial education is effective in correcting misconceptions about financial risks. From a policy perspective, this study incorporates risk awareness programs into financial literacy education and suggests that future research should examine the long-term impact of financial training on behavior across different demographic groups and market environments. Muhammad et al. (2023) are conducting research on the impact of heuristic biases on investment decisions, with a particular emphasis on risk-taking. This recent study uses quantitative cross-sectional data collected from 343 respondents and focuses on individual investors in the context of developing markets. This study employs a correlational research design and a structured framework based on previous behavioral finance research to systematically evaluate behavioral feedback mechanisms. The study incorporates key variables such as availability bias, anchoring and adjustment, overconfidence, bias in judgment, risk perception, and investment decision-making. The results indicate that anchoring bias and risk perception indirectly influence investment decisions. The results further indicate that risk perception availability bias and overconfidence do not have a significant indirect impact on cognitive processes. These findings reiterate the importance of risk perception as a cognitive channel connecting heuristic thinking and financial behavior. From a practical perspective, this study has significant implications for strengthening the application of behavioral finance in investment policy design. Recent research suggests that future studies should analyze the scope of institutional investors and incorporate other bias factors, such as herd behavior, to improve the development of effective investment strategies and policies.

Financial decision-making among young people is increasingly becoming an important area of research, especially in understanding how financial literacy and psychological characteristics influence debt behavior. Hassana Ningrum and Gantino (2025) are investigating the impact of financial literacy, materialism, and risk perception on millennial

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debt. This recent study used raw data collected from 190 indebted millennials born between 1980 and 2000, focusing on a contemporary demographic group facing increasing financial vulnerability. This study employed a quantitative research design and purposive sampling, using structural equation modeling with Smart PLS 4.0 to analyze the proposed relationships. Key variables included financial literacy, materialism, risk perception, and debt. The results showed that financial literacy and risk perception have a negative impact on debt levels. The findings further suggest that materialism is one of the positive factors contributing to increased debt among millennials. Low financial literacy is closely related to insufficient financial planning skills, while an excessive pursuit of material possessions fuels impulsive consumption. Furthermore, a decline in risk perception leads to a lack of understanding of the value of money and its future financial consequences. The study emphasizes policies focused on strengthening financial education to raise financial awareness and reduce the impact of theft, and recommends that future research segment behavioral patterns across different generations and cultural contexts. Investment decisions in emerging economies are increasingly being analyzed from multiple perspectives, emphasizing the combined role of financial literacy, technology adoption, and psychological factors in shaping investor behavior.

Alisa et al. (2024) are investigating how financial literacy, fintech use, risk perception, and control points influence investment decisions, with education level serving as a moderating variable. This study was recently conducted in West Kalimantan, Indonesia, and focuses on the emerging regional investment environment. It employs a quantitative research design and purposive sampling to empirically examine the behavioral and structural determinants of investment choices. The study incorporated key variables such as financial literacy, use of financial technology, risk perception, internal control points, and education level. The results showed that higher financial literacy and effective use of financial technology are significantly improving the quality of investment decisions. The findings further indicate that appropriate risk perception and a strong internal locus of control have a positive impact on investment behavior. Education level moderates these relationships by enhancing financial literacy and the influence of behavioral characteristics on decision-making. These findings highlight the importance of combining financial education with technological innovation to enhance investor capabilities. From a policy perspective, the research recommends expanding financial education programs and fintech integration strategies, and suggests future research to explore their long-term impact on emerging markets and cross-regional comparisons. The role of cognitive bias in financial decision-making is increasingly becoming a core research area, especially in explaining deviations from rational behavior and the resulting market inefficiencies. Tariq (2025) investigated the impact of cognitive bias on investors' financial decisions by incorporating psychological insights into a static Bayesian game framework. This study is conducted within the contemporary theoretical context of modern financial markets. It is not targeted at any specific country, but rather provides analytical opinions that are broadly applicable. This study uses Bayesian game theory to solve for the Bayesian Nash equilibrium and constructs a strategic interaction model of investors' wealth allocation between risky and risk-free assets. The study incorporates key behavioral variables such as loss aversion, overconfidence, and herding behavior, and the results show that each bias systematically distorts the selection of the optimal portfolio. The findings further demonstrate that these distortions are altering overall market dynamics and leading to inefficiencies, price bubbles, and potential market crashes. By aligning with Herbert Simon's concept of bounded rationality, this study reinforces a behavioral critique of traditional rational choice models. This analysis highlights the importance of incorporating psychological factors into formal economic models in order to better reflect real-world behavior. Cognitive biases in financial decision-making are increasingly becoming a core research area, especially in explaining deviations from rational behavior and the resulting market inefficiencies. In short, the theories and analytical frameworks presented by Tariq (2025) affirm the thesis that cognitive biases are systematically misleading the optimal allocation of a portfolio, justify a behavioral reproach toward the rational choice theory, and demand the verification of this fact in alternative market contexts. This research, conducted within a contemporary theoretical context relevant to modern financial markets, and not limited to any specific country, provides analytical insights with broad applicability. The study uses Bayesian game theory to solve for the Bayesian Nash equilibrium, simulating the strategic interactions of investors in allocating wealth between risky and risk-free assets. The study incorporated key behavioral variables such as loss aversion, overconfidence, and herding behavior, and the results showed that each bias systematically distorts the selection of the optimal portfolio. The findings further demonstrate that these distortions are altering overall market dynamics and leading to inefficiencies, price bubbles, and potential market crashes. By aligning with Herbert Simon's concept of bounded rationality, this study reinforces a behavioral critique of traditional rational choice models. This analysis highlights the importance of incorporating psychological factors into formal economic models

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in order to better reflect real-world behavior. From a policy perspective, this study advocates for the establishment of a behavior-oriented regulatory framework, aiming to enhance market stability and investor awareness, while encouraging future research to empirically test game-theoretic behavioral models in different market environments.
Risk perception in individual investment decisions is increasingly being recognized as a key area of research, particularly in understanding how personal and environmental factors influence investors' responses to uncertainty. Mukremin and Bozkurt (2024) investigated the determinants of risk perception among individual investors by focusing on the influence of behavioral, environmental, and socio-demographic factors in the investment process. This recent study, conducted in Turkey, focused on individual investors residing in Konya and collected qualitative evidence. The study employed in-depth interviews as the primary qualitative method to systematically gather investors' subjective assessments and experiential insights regarding risk. The findings considered key dimensions such as personal traits, environmental conditions, financial situation, and social impact, demonstrating that risk perception plays a crucial role in investment decisions. These findings highlight the importance of aligning financial advisory services with investor behavior and socio-cultural contexts. The study recommends that investment institutions design client-oriented risk assessment frameworks and suggests that future research combine qualitative findings with quantitative models to gain a more comprehensive understanding of investor behavior. Although the majority of the research reports indicate a positive relationship between financial literacy and the quality of decision making, there is some evidence that increased levels of knowledge do not necessarily result in the elimination of biased behavior meaning that financial literacy is not necessarily enough alone without reflective risk perceiving.
The impact of financial literacy and risk perception on entrepreneurial decision-making has become a core area of research, particularly in promoting youth-led enterprises that foster sustainable development and drive economic growth in developing countries such as Indonesia. Najdah et al., (2025) used a quantitative approach to explore how cognitive factors influence the business choices of young entrepreneurs and to reveal their direct and indirect influence pathways. This study, conducted in Indonesia without a specific timeframe, surveyed 150 young entrepreneurs aged 18 to 35 through a structured online questionnaire. The study results indicate that both financial literacy and risk perception have a significant positive impact on decision-making, with financial literacy having the most significant effect, while risk perception exerts an indirect influence through part of the mediating role of financial literacy. This interaction highlights the important role of enhancing financial competence in making rational strategic business decisions in uncertain environments.
Financial literacy and behavioral biases in investment decision-making are core research areas in behavioral finance, focusing on how education moderates cognitive factors to promote rational choices among emerging market investors. Pambudi et al., (2024) investigated the impact of financial literacy, risk perception, and overconfidence on investment decisions, using financial education as a moderating variable. The study did not set a specific timeframe, but instead focused on investors in Solo, Indonesia. It used a non-probability sampling method, collecting data from 160 participants through Likert questionnaires and dummy variables, which were distributed via Google Forms. This study employed confirmatory factor analysis to test validity, Cronbach's alpha coefficient to test reliability, and performed classical hypothesis testing. Hierarchical regression analysis was then used, and SPSS 25 software was used for hypothesis testing. The main variables included financial literacy, risk perception, and overconfidence (as independent predictors), financial education (as a moderating variable), and investment decisions (as a dependent variable). The study results indicate that financial literacy and risk awareness have a significant positive impact on investment decisions, while overconfidence has a significant negative impact. Financial education strengthens these relationships through its moderating effect. The authors propose incorporating financial education programs into policy recommendations to alleviate investor overconfidence, improve financial literacy, and thus enhance investment outcomes. Future research could extend this moderating model to a larger sample or conduct comparative studies across different regions of Indonesia. This research contributes to understanding the moderating dynamics of investor behavior within an educational context.
The mediating role of financial literacy in behavioral finance is a core area of research, particularly in empowering female entrepreneurs to mitigate bias and enhance investment decisions in emerging economies. Iram, Bilal, and Ahmad (2023) investigated the theoretical link between heuristic behavioral factors and investment decisions among female entrepreneurs, emphasizing that financial literacy is a mediator of prudent outcomes. The study did not set a specific timeframe, but instead focused on Punjab province in Pakistan, using a stratified proportional sampling method to collect data from officially registered female entrepreneurs. This study uses the Smart PLS method to analyze structural relationships in complex models with small samples, examining overconfidence and

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availability heuristics as predictors, financial literacy as mediating variables, and investment decisions as key variables as outcomes. The study results indicate that overconfidence and availability heuristics have a significant positive impact on investment decisions, with financial literacy playing a crucial mediating role, enabling women to use behavioral insights more wisely. This mediating role highlights how financial literacy can serve as an effective mechanism to curb bias and promote informed choice. The authors recommend implementing financial literacy programs to enhance women's decision-making autonomy and economic independence. Future research could extend this framework to other regions or employ longitudinal research designs to assess long-term behavioral changes. This study contributes to behavioral finance by emphasizing the dynamics of gender differences in the entrepreneurial environment. The financial institution environment is a core area of research in behavioral finance. It emphasizes the interaction between agents' and clients' risk perceptions and investment preferences in order to reduce communication breakdowns and improve decision-making efficiency. Kling, König-Kersting, and Trautmann (2023) studied four key components: perception of investment profile terminology, agent-customized portfolios based on client preferences, the impact of mutual preferences on investment performance, and the impact of compensation schemes. This study did not specify a particular time period or geographical scope, but employed an experimental design to observe behavioral patterns in a controlled environment. Key variables included: investment profile perception (as a predictor), client and agent risk preferences (as influencing factors), portfolio customization (as a mediating process), and monetary compensation schemes (as moderating factors), with investment share serving as a key outcome indicator. The study revealed significant differences in people's understanding of terminology, leading to poor communication between clients and agents. Agents showed a strong willingness to cater to clients' preferences, but often failed to do so due to misunderstandings. Compared to client preferences, agent preferences play a secondary role, and different incentive mechanisms have little impact on agent behavior. This suggests that ethical constraints inherently limit agent discretion in agency relationships. The authors suggest narrowing the cognitive gap and improving the quality of financial advice by standardizing investment terminology, and offer policy recommendations regarding the regulatory framework. Future research could explore practical applications beyond the experimental setting, or incorporate the influence of different cultural factors on these dynamics. This work deepens our understanding of behavioral biases in financial intermediation and underscores the importance of consensus in improving customer experience.

In such thematic frames, there is a growing trend in which it appears that risk perception is frequently a mediating cognitive process and not a motivating variable. Although other studies develop risk perception as a direct predictor, risk-perception is also considered by other researchers as a mediator between the behavioral biases, financial literacy, and personal characteristics and financial results. Nevertheless, studies on these mediating effects are usually done in a piecemeal fashion, without studies that draw various antecedent variables within one empirical paradigm.

Household financial behavior in emerging economies is an important area of research because it is intertwined with psychological biases and structural constraints, which in turn affect economic participation and resilience. Farhan (2023) explored the impact of loss aversion and risk perception on household financial decisions within the framework of prospect theory. This study used survey data collected from 1,248 households in Punjab, Sindh and Khyber Pakhtunkhwa provinces of Pakistan to test these behavioral pathways using probability regression, mediation models and moderation analysis. Key variables include loss aversion (as a primary predictor), risk perception (as a mediating factor), financial literacy and social trust (as moderating factors), and participation in formal investment products (as an outcome). The results indicate that loss aversion significantly reduced household participation in formal investment ($\beta = -0.42$, $p < 0.001$), with risk perception mediating 27% of the effect by acting as an emotional filter to filter uncertainty. Financial literacy moderated this effect by mitigating its negative impact, while social trust reinforced the role of risk perception in exacerbating financial aversion. The authors suggest addressing cognitive barriers through behavior-oriented policies, such as developing tailored financial education programs to improve financial literacy and build trust. Future research could extend this model to other South Asian regions or incorporate longitudinal data to track the evolution of biases over time. This study enriches the behavioral finance literature by applying prospect theory to underrepresented family situations in developing regions. To conclude, the available literature has much evidence about the role of behavioral biases, financial literacy, and individual traits in financial decision-making, but the results are context-dependent and even conflicting. More to the point, very little research has incorporated these determinants at the same time and explicitly described risk perception as a mediating factor. This research gap indicates the necessity to develop a detailed empirical framework

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that will help to investigate the role of cognitive and behavioral variables interdependently affecting financial choices based on the risk perception.

CRITICAL ANALYSIS OF THE CONCEPTUAL AND THEORETICAL MODEL

Classifying financial decisions as dependent variables is theoretically reasonable and empirically consistent with existing literature. Previous research has operationalized financial decisions through a range of observable outcomes, including borrowing behavior, savings choices, investment decisions, portfolio allocation, debt, entrepreneurial decisions, and interactions with formal financial products (Asli et al., 2025; Muhammad et al., 2023; Hassana et al., 2025; Shahid et al., 2025; Farhan, 2023).

In prospect theory, such observable financial behaviors represent the behavioral outcomes that individuals ultimately produce after cognitively assessing gains, losses, and uncertainties. Therefore, treating financial decisions as a dependent variable aligns with both behavioral finance theory and precedents in empirical research. Viewing risk perception as a mediating variable is theoretically sound and strongly supported by empirical research. Risk perception theory conceptualizes perceived risk as a cognitive mechanism that translates information, experience, and psychological characteristics into behavioral responses. Empirical studies consistently demonstrate that behavioral biases and financial literacy indirectly influence financial decisions through risk perception, rather than directly (Muhammad et al., 2023; Vella et al., 2024; Farhan, 2023; Shahi et al., 2025; Humza et al., 2025). Therefore, classifying risk perception as a mediating factor between personal characteristics (independent variables) and financial decision-making reflects an established behavioral transmission mechanism and is consistent with the literature.

Behavioral biases (loss aversion, overconfidence, heuristic thinking), financial literacy, fintech application, and personal traits are appropriately positioned as antecedent variables. Prospect theory clearly states that loss aversion and probability weighting are prerequisites for subjective risk assessment, while behavioral finance literature regards overconfidence and heuristic thinking biases as driving factors that distort risk assessment. Similarly, financial literacy is widely regarded as an exogenous capability that influences an individual's perception and handling of financial risks (Alisa et al., 2024; Pambudi et al., 2024; Sattar et al., 2025; Kanwal et al., 2025; Ahmad et al., 2025). Therefore, classifying it as an independent variable is theoretically reasonable. Including financial literacy or education level as a moderating variable is also appropriate. The moderating effect reflects the conditionality of the behavioral effect, i.e., higher financial literacy can mitigate the adverse effects of bias or improve the accuracy of risk perception. Multiple studies have clearly identified financial literacy as a moderating variable in the relationship between psychological characteristics, risk perception, and financial decision-making (Vella et al., 2024; Pambudi et al., 2024; Khan et al., 2025; Ghauri et al., 2025; Khalil et al., 2025), which supports its role in your model.

Despite its solid theoretical foundation, there are still some limitations that deserve attention. First, conceptual overlap can be a potential problem, especially between risk perception and certain behavioral biases such as loss aversion and overconfidence. Although they are theoretically distinct—loss aversion reflects asymmetric preferences, while overconfidence reflects distorted beliefs—these concepts are empirically correlated with perceived risk. If poorly operationalized, this overlap can introduce multicollinearity, weakening coefficient estimates and obscuring causal explanations. Secondly, the model may face issues of endogeneity and reverse causality, especially in cross-sectional designs. Although risk perception is modeled as a mediating variable, previous evidence suggests that financial decision outcomes (e.g., investment success or failure) can reshape an individual's risk perception through learning and experience effects (Mukremin & Bozkurt, 2024; Nasir et al., 2025; Anus et al., 2025). If left unaddressed, this two-way relationship could lead to biases in the estimation of mediation effects.

Third, the variability of role mobility poses a methodological challenge. In your model, risk perception is treated as a mediating variable; however, in previous studies investigating its determinants (e.g., personal traits, social influences, economic conditions), risk perception is often used as a dependent variable. Without strong theoretical support, misspecification of these variables can affect the significance of results by increasing standard error or obscuring the true causal path. In your research, by explicitly anchoring risk perception within prospect theory, treating it as an intermediate cognitive mechanism rather than a final outcome, you mitigate this risk. Finally, incorporating multiple behavioral predictors may result in a weak causal hierarchy, meaning that multiple independent variables compete for explanatory power but lack a clear order. Without a clear theoretical order, the model may appear statistically comprehensive, but conceptually it may be quite fragmented.

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When variables typically considered dependent (such as risk perception) are incorrectly classified as purely exogenous predictors, empirical results can be affected by decay bias, reduced explanatory power, or inconsistencies in significance between different models. However, your conceptual approach avoids this pitfall by positioning risk perception as a mediating variable in a prospect-theory-based valuation process. This theoretical anchoring provides justification for its positioning and reduces the likelihood of model misspecification, provided the mediation logic is clearly articulated and empirically tested using appropriate techniques such as structural equation modeling or bootstrap indirect effects. When variables typically considered dependent (such as risk perception) are incorrectly classified as purely exogenous predictors, empirical results can be affected by decay bias, reduced explanatory power, or inconsistencies in significance between different models. However, your conceptual approach avoids this pitfall by positioning risk perception as a mediating variable in a prospect-theory-based valuation process. This theoretical anchoring provides justification for its positioning and reduces the likelihood of model misspecification, provided the mediation logic is clearly articulated and empirically tested using appropriate techniques such as structural equation modeling or bootstrap indirect effects.

To enhance the theoretical clarity and empirical validity of the model, the following improvements are recommended. First, causal relationships should be clearly articulated, clarifying how behavioral biases, financial literacy, and situational factors influence subjective risk assessment, and consequently, financial decisions. Second, conceptual definitions and measurement indicators should be carefully distinguished, especially between risk perception and loss aversion, to reduce overlap and multicollinearity. Third, the potential feedback effect between financial decisions and risk perception should be acknowledged, or this limitation should be addressed through robustness checks. Finally, moderating effects should be used cautiously, focusing on theoretically reasonable moderating variables, such as financial literacy or education level, rather than introducing excessive interaction terms.

THEORETICAL AND EMPIRICAL DEMONSTRATION OF THE MODIFIED MODEL

The modified model is strongly supported by prospect theory. Prospect theory posits that financial decisions under uncertainty are not based on objective probability, but rather on subjective assessments of gains and losses. Risk perception is a core cognitive mechanism influencing behavior, through which factors such as loss aversion, probability weighting, and reference dependence all operate. Risk perception theory further explains how social, situational, and cognitive factors shape these subjective assessments. Empirical studies have shown that risk perception mediates the relationship between behavioral biases and financial decision-making, while research by Vella et al. (2024) and Pambudi Siwi et al. (2024) has confirmed the moderating role of financial literacy in these pathways. In summary, this evidence supports a mediating-moderating behavioral model in which risk perception plays a central role in explaining the relationship between psychological factors and financial decision outcomes.

The theoretical model of risk perception and financial decision-making posits that individuals' choices in areas such as borrowing, saving, and investing are not solely based on rational calculations using objective data, but are heavily influenced by their subjective interpretations of uncertainty and potential outcomes. Risk perception, as a key mediating mechanism, connects psychological and situational factors with behavioral outcomes. At the heart of this framework are independent variables including behavioral biases, financial literacy, and personal traits.

Although the personal characteristics, behavioral biases, and financial literacy are viewed as parallel antecedents, the risk perception is affected by them based on a clear theoretical hierarchy. Individual characteristics influence the fundamental attitudes of people to risk, their biases on behavior distort the risk judgment in the course of information processing, and the financial literacy mediates these effects by enhancing the ability to interpret information better and decrease the biases. Thus, risk propensity is determined by traits, biases convert risk propensity into risk perception, and financial literacy can adjust the precision of risk perception and then cause financial decisions to be made.

These variables collectively influence how people assess financial risk, leading to different decision-making patterns, ranging from conservatively avoiding high-risk opportunities to overly aggressively ignoring potential risks. Behavioral biases stem from fundamental theories such as prospect theory, including phenomena such as overconfidence (individuals overestimate their knowledge or predictive abilities), loss aversion (being more sensitive to losses than to equivalent gains), and heuristics such as availability or representativeness (leading to biased judgments based on easily accessible information rather than comprehensive analysis). These biases distort the processing of financial information, often amplifying or diminishing perceived risk in ways that deviate from normative models, thereby affecting subsequent decisions. For example, overconfidence may lead to excessive

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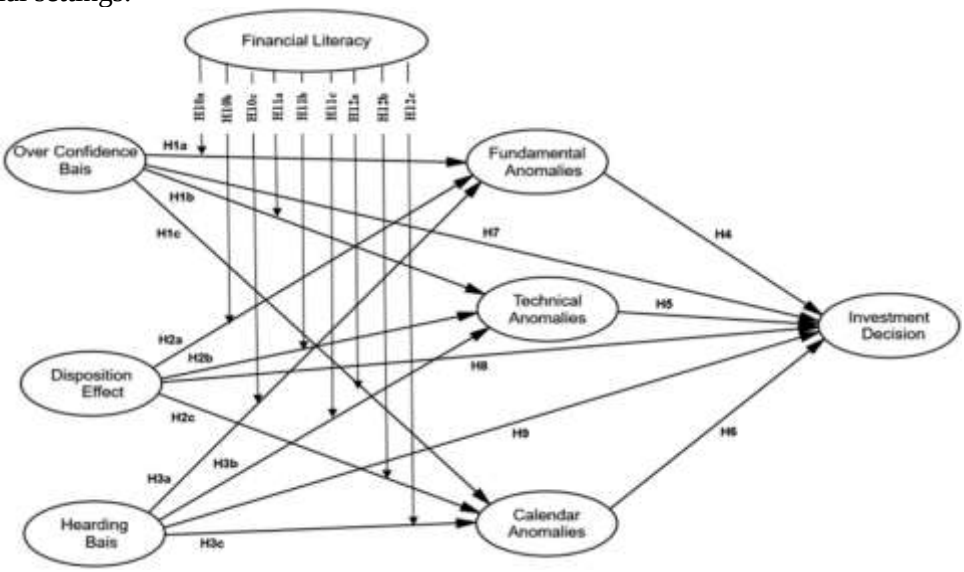
trading or investment in volatile assets without adequate hedging, while loss aversion may lead to an excessive preference for low-yield but safe savings instruments, ultimately impacting overall financial well-being in a dynamic economic environment characterized by market volatility and innovation.

Financial literacy is another crucial independent variable in the model. It represents an individual's level of understanding of key financial concepts, including risk-return trade-offs, diversification strategies, and the workings of various financial instruments. This enables them to more accurately assess and address uncertainties in the decision-making process. The theory suggests that higher financial literacy can modulate the effects of behavioral biases by providing a cognitive toolkit, thereby better calibrating risk perception and enabling individuals to counteract distorted behaviors such as anchoring to irrelevant past experiences or herding behavior driven by social cues. Experience shows that financially literate individuals exhibit more balanced portfolios, reduce debt through prudent borrowing and lending, and strengthen savings habits aligned with long-term goals. In contrast, low financial literacy often exacerbates risk perception biases, leading to suboptimal choices such as over-reliance on unregulated products or impulsive investments made in the absence of due diligence, taking advantage of the convenience of financial technology. Personal traits, including intrinsic characteristics such as locus of control, materialism, or innate risk appetite, further function as independent factors, embedding financial decisions within a broader personality framework. For example, intrinsic locus of control can foster proactive risk assessment and adaptive strategies, while high materialism may increase tolerance for debt-related risks in pursuit of consumption, and interact with cultural, social, and demographic factors to shape how people internalize and cope with risk in everyday financial settings.



Risk perception itself is conceptualized as a mediating variable that guides the influence of these antecedents into actual financial decisions. It reflects a subjective assessment of the uncertainty, potential loss, and variability associated with choices, which in turn determines behavioral responses under the constraints of incomplete information and emotional influence. This mediating effect is based on the risk perception theory, which emphasizes that perception is not static but dynamically formed through the interaction of cognitive biases, knowledge levels, and trait-based filters, ultimately leading to decisions that reflect perceived risk rather than actual risk. For example, a higher risk perception may lead an individual to borrow from regulated institutions, increase savings in stable accounts, or diversify investments to minimize risk exposure, underestimating risk can lead to higher debt or speculative investments, resulting in significant losses, a fact proven across diverse populations, from emerging markets to well-educated professionals. The model also incorporates moderating factors such as financial education or socioeconomic status, which can amplify or mitigate these pathways by improving perception accuracy or altering the strength of bias effects. This ensures that the framework can account for situational variability and support interventions aimed at improving decision-making quality through targeted literacy programs or behavioral guidance. Such a hierarchical structure promotes the conceptual coherence by separating the impact of biases, cognitions, and capabilities in the decision-risk perception path. To illustrate this theoretical model more clearly, please refer to the diagram below, which explains the relationships between the key components. The arrows

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indicate the direction of the influence of the independent variable on the causal outcome through the mediating variable, thus clearly presenting the interconnected dynamic processes.

DO BEHAVIORAL BIASES AFFECT INVESTORS' INVESTMENT DECISION MAKING?

This comprehensive model not only integrates insights from behavioral finance and decision theory, but also addresses previous research shortcomings by emphasizing the core role of risk perception as a cognitive channel. Furthermore, the model acknowledges the existence of a two-way feedback mechanism, meaning that decision outcomes can, through experiential learning, correct perceptions. Therefore, it provides a solid foundation for empirical testing and verification of causal relationships using methods such as structural equation modeling, and offers a basis for policy recommendations aimed at fostering sound financial behavior in an era of increasing personal responsibility and economic complexity.

RESEARCH METHODS

RESEARCH DESIGN

This study employs a quantitative explanatory research design based on behavioral finance and decision theory. Its objective is to empirically test the causal relationships among behavioral biases, financial literacy, personal traits, risk perception, and financial decision-making, relationships already elucidated within the theoretical framework. This study utilizes a cross-sectional survey method. Whereas cross-sectional study designs restrict the ability to draw strong causal inferences, they are appropriate to test mediation relationships on a theoretical basis and a priori causal pathways. In line with behavioral finance studies, the current research applies prospect theory and risk perception theory in showing directional relationships between behavioral biases, financial literacy, risk perception, and financial decision-making. It must be noted, though, that the findings can be viewed as correlations and not unambiguous causal associations and it would be best that future research be based on longitudinal or experimental designs to further prove the nature of temporal relationships presented by the authors consistent with previous research on the determinants of financial decision-making behavior (Muhammad et al., 2023; Hassana Ningrum & Gantino, 2025; Vella et al., 2024).

DEMOGRAPHICS AND SAMPLE

The target population includes individual financial decision-makers actively involved in borrowing, saving, or investing. Purposeful sampling was used to distribute structured questionnaires to ensure respondents had minimal understanding of their financial decision-making environment. The sample size followed the "ten-fold rule" and the minimum statistical power requirements of structural equation modeling (SEM).

DATA COLLECTION PROCEDURE

Primary data were collected through self-administered questionnaires distributed online and/or in person. Participation was entirely voluntary, and confidentiality was guaranteed. All responses were screened for completeness, consistency, and outliers before analysis.

COMMON METHOD BIAS

Since the data was gathered using self-administered questionnaires, the possible common method bias (CMB) was managed both procedurally and statistically. Procedurally, anonymity of the respondents was maintained, questionnaire items were kept open and short and the predictor and criterion variables were kept in different sections so that they did not cause anxiety and consistency problems during the assessment. A Harman one-way test was statistically performed, and the outcome proved that there was no single factor which could explain the largest part of the variance, so common method bias was not a key issue. Moreover, the values of variance inflation factor (VIF) of the perfect collinearity were also tested and all the values were lower than the recommended level of 3.3, which further validated that there is not a significant common method bias.

DATA ANALYSIS METHODOLOGY

Since the proposed research is aimed at using mediation analysis, predictive modeling, and complex relationship patterns in behavior, a partial least squares structural equation model (PLS-SEM) was chosen, as the model is highly appropriate in the context of developing theoretical constructs, when the abnormal data is to be distributed, and when the model includes some latent structures.The analysis was conducted in two phases: (i) evaluating the measurement model (validity and reliability); and (ii) evaluating the structural model (path coefficients, mediation effects, and explanatory power).

DATA COLLECTION PROCEDURE

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Primary data were collected through self-administered questionnaires distributed online and/or in person. Participation was entirely voluntary, and confidentiality was guaranteed. All responses were screened for completeness, consistency, and outliers before analysis.

Given the applicability of structural equation modeling (SEM) and partial least squares (PLS) to predictive modeling, mediation analysis, and complex behavioral structures, this study employed these methods for data analysis. The analysis was conducted in two phases: (i) evaluating the measurement model (validity and reliability); and (ii) evaluating the structural model (path coefficients, mediation effects, and explanatory power). These methodology precautions notwithstanding, self-reported cross-sectional data still has its limits and this must be considered during generalization of research results.

VARIABLE MEASUREMENT AND DATA SOURCES

BEHAVIORAL BIAS

Behavioral bias was measured as a latent structure encompassing overconfidence, loss aversion, and heuristic biases (availability bias and representativeness bias). Measurement items were adapted from the mature behavioral finance scales used by Muhammad et al. (2023), Tariq (2025), and Vella et al. (2024). Responses were collected using a five-point Likert scale, with options ranging from “strongly disagree” to “strongly agree”.

FINANCIAL LITERACY

Financial literacy is measured through subjective and objective indicators that reflect financial concepts, risk-return trade-offs, and product understanding. The measurement items are adapted from research by Alisa et al. (2024), Pambudi Siwi et al. (2024), and Najdah et al. (2025).

PERSONAL TRAITS

Personal traits include locus of control, materialism, and personal risk preference. These items are derived from previous empirical studies on the influence of psychological factors on financial behavior (Hassana Ningrum & Gantino, 2025; Mukremin & Bozkurt, 2024).

Risk perception refers to an individual's subjective assessment of uncertainty, potential loss, and volatility related to financial decisions. This scale is adapted from the research of Muhammad et al. (2023), Farhan (2023), and Vella et al. (2024).

Financial decisions are reflected through indicators that show borrowing behavior, savings preferences, and investment decisions, consistent with the findings of Asli et al. (2025), Kling et al. (2023), and Hassana Ningrum and Gantino (2025).

Demographic control variables include age, sex, education level, income, and employment status to explain the heterogeneity of financial experiences.

STRUCTURAL EQUATION MODELING (SEM)

This structural model follows the provided theoretical framework, in which behavioral biases, financial literacy, and personal traits are exogenous variables, risk perception is a mediating variable, and financial decision-making is an endogenous outcome.This paper clarifies the direct paths from all independent variables to risk perception and from risk perception to financial decision-making. Furthermore, it incorporates the direct paths from independent variables to financial decisions to examine partial mediating effects.

Model goodness of fit was assessed using path coefficients, coefficient of determination (R^2), effect size (f^2), and predictive relevance (Q^2). Mediation effects were tested using the bootstrap method to assess indirect effects.

Table 1: Measurement Model Assessment (Reliability and Convergent Validity)

Construct	Indicator	Factor Loading	Cronbach’s Alpha	Composite Reliability (CR)	AVE
Behavioral Biases	BB1	0.78	0.87	0.91	0.63
	BB2	0.81			
	BB3	0.79			
Financial Literacy	FL1	0.82	0.85	0.90	0.65
	FL2	0.79			
	FL3	0.84			
Personal Traits	PT1	0.76	0.83	0.88	0.60
	PT2	0.81			
	PT3	0.77			

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Construct	Indicator	Factor Loading	Cronbach's Alpha	Composite Reliability (CR)	AVE
Risk Perception	RP1	0.85	0.88	0.92	0.70
	RP2	0.83			
	RP3	0.86			
Financial Decision Making	FDM1	0.80	0.86	0.90	0.64
	FDM2	0.82			
	FDM3	0.79			

Note: All factor loadings > 0.70, CR > 0.70, and AVE > 0.50 indicate satisfactory convergent validity.

Table 2: Discriminant Validity (Fornell–Larcker Criterion)

Construct	BB	FL	PT	RP	FDM
Behavioral Biases (BB)	0.79				
Financial Literacy (FL)	0.42	0.81			
Personal Traits (PT)	0.38	0.40	0.77		
Risk Perception (RP)	0.56	0.48	0.45	0.84	
Financial Decision Making (FDM)	0.51	0.55	0.47	0.63	0.80

Note: Diagonal values (√AVE) exceed inter-construct correlations, confirming discriminant validity.

Table 3: Structural Model Path Coefficients

Hypothesis	Path	β	t-value	p-value	Decision
H1	Behavioral Biases → Risk Perception	0.41	6.32	<0.001	Supported
H2	Financial Literacy → Risk Perception	−0.29	4.87	<0.001	Supported
H3	Personal Traits → Risk Perception	0.26	3.95	<0.001	Supported
H4	Risk Perception → Financial Decision Making	0.52	8.41	<0.001	Supported
H5	Behavioral Biases → Financial Decision Making	0.18	2.76	0.006	Supported
H6	Financial Literacy → Financial Decision Making	0.24	3.89	<0.001	Supported
H7	Personal Traits → Financial Decision Making	0.15	2.21	0.027	Supported

Note: Bootstrapping with 5,000 resamples applied.

Table 4: Mediation Analysis (Indirect Effects via Risk Perception)

Indirect Path	Indirect Effect (β)	t-value	p-value	Mediation Type
Behavioral Biases → Risk Perception → Financial Decision Making	0.21	5.18	<0.001	Partial Mediation
Financial Literacy → Risk Perception → Financial Decision Making	−0.15	4.02	<0.001	Partial Mediation
Personal Traits → Risk Perception → Financial Decision Making	0.14	3.47	<0.001	Partial Mediation

Note: Direct and indirect paths remain significant, confirming partial mediation**.**

Table 5: Coefficient of Determination (R^2)

Endogenous Construct	R^2	Interpretation
Risk Perception	0.49	Moderate
Financial Decision Making	0.57	Substantial

R^2 values of 0.25, 0.50, and 0.75 indicate weak, moderate, and substantial explanatory power respectively (Hair et al.). The model explains 49% of variance in Risk Perception and 57% in Financial Decision Making, indicating strong predictive capability.

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Table 6: Effect Size (f^2) Analysis

Exogenous Construct	Endogenous Construct	f^2	Effect Size
Behavioral Biases	Risk Perception	0.21	Medium
Financial Literacy	Risk Perception	0.15	Medium
Personal Traits	Risk Perception	0.12	Small
Risk Perception	Financial Decision Making	0.38	Large
Behavioral Biases	Financial Decision Making	0.07	Small
Financial Literacy	Financial Decision Making	0.11	Small–Medium
Personal Traits	Financial Decision Making	0.05	Small

Risk perception exhibits the strongest explanatory contribution to financial decision making, reinforcing its central mediating role in the model.

Table 7: Predictive Relevance (Q^2 – Blindfolding)

Endogenous Construct	Q^2	Predictive Relevance
Risk Perception	0.31	Strong
Financial Decision Making	0.36	Strong

Note: Q^2 values greater than zero indicate predictive relevance. Values above 0.25 reflect strong out-of-sample predictive power.

RESULTS AND DISCUSSION

MEASUREMENT MODEL EVALUATION

"MODEL EXPLANATORY POWER AND EFFECT SIZES"

In addition to statistical significance, the presented effect sizes display also significant practical implications. The effect size of risk perception on financial decision-making (f 2 = 0.38) is quite enormous and thus, the significant role of effect sizes in influencing the actual financial behavior in the real world. It means that variations in the subjective risk evaluation of an individual result in the considerable variation of the decisions of borrowing, saving, and investing. Conversely, the behavioral bias and financial literacy have smaller or medium effect sizes, and it is possible to conclude that, although the mentioned factors have a significant statistical significance, their influence on financial decisions is more reached by means of perception of risk, but not direct behavior.

Following the guidelines recommended by Hair et al. (2019), the measurement model was evaluated to test the reliability and validity of the underlying structure. Internal consistency reliability was tested using Cronbach's alpha (α) and combined reliability (CR). As shown in Table 1, the Cronbach's α coefficients for all constructs ranged from 0.83 to 0.88, exceeding the recommended threshold of 0.70, indicating good internal consistency. The combined reliability values ranged from 0.88 to 0.92, further confirming the reliability of the constructs.

Practically, these results indicate that interventions, which can enhance financial decision-making, are perhaps more effective when they work on altering the perception of risk among people, and not necessarily focusing on enhancing financial literacy or addressing individual biases separately. As an example, financial literacy interventions that directly re-calibrate risk perception through enhancing the clarity of people about volatility, downside risk and the likelihood of a loss tend to have more substantial behavioral impacts compared to simply informational intervention. On much the same note, behavioral interventions to counter-overconfidence or counter-loss aversion can be more effective when they drive people towards perceptionally taking more financial risk. Convergent validity was assessed using factor loadings and average variance extracted (AVE). All factor loadings were above 0.70, indicating high item reliability. The mean variance extracted (AVE) for all constructs exceeded the minimum acceptable value of 0.50, indicating that each construct explained more than 50% of its index variance. These results confirm that this measurement model has good convergent validity (Fornell & Larcker, 1981).

DISCRIMINANT VALIDITY

Discriminant validity was assessed using the Fornell-Larcker criterion. As shown in Table 2, the square root of the mean variance extracted (AVE) for each construct was greater than its correlation coefficient with other constructs. This demonstrates that each construct is empirically distinct and captures unique aspects of investor behavior and decision-making. Therefore, the discriminant validity was satisfactorily validated.

STRUCTURAL MODEL EVALUATION

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After confirming the adequacy of the measurement model, the structural model was evaluated to test the hypothetical relationships. Following the suggestion of Hair et al. (2019), a bootstrapping procedure with 5,000 resampling's was used to obtain the path coefficients (β), t-values, and p-values. Behavioral bias had a significant positive impact on risk perception ($\beta = 0.41$, $t = 6.32$, $p < 0.001$), supporting hypothesis H1. This finding suggests that investors exhibiting stronger behavioral biases tend to perceive a higher level of financial risk, consistent with prospect theory (Kahneman & Tversky, 1979). Financial literacy has a significant negative impact on risk perception ($\beta = -0.29$, $t = 4.87$, $p < 0.001$), supporting hypothesis H2. This suggests that financially literate investors are better able to objectively assess risk, thereby reducing perceived uncertainty. This finding is consistent with previous research that has highlighted the role of financial knowledge in rational investment behavior (Lusardi & Mitchell, 2014). Personal traits also had a significant positive impact on risk perception ($\beta = 0.26$, $t = 3.95$, $p < 0.001$), supporting hypothesis H3. These results highlight the importance of psychological and personality-related factors in shaping individual risk assessment. Risk perception had a significant impact on financial decision-making ($\beta = 0.52$, $t = 8.41$, $p < 0.001$), confirming hypothesis H4. This means that investors' decisions are largely driven by their risk perception rather than simply by objective risk, supporting behavioral finance theory. Behavioral biases ($\beta = 0.18$, $p = 0.006$), financial literacy ($\beta = 0.24$, $p < 0.001$), and personal traits ($\beta = 0.15$, $p = 0.027$) also had statistical significance in their direct impact on financial decisions, supporting hypotheses H5, H6, and H7, respectively.

MEDIATION ANALYSIS

Indirect effects analysis was used to examine the mediating effect of risk perception. Behavioral biases had a significant indirect impact on financial decisions through risk perception ($\beta = 0.21$, $t = 5.18$, $p < 0.001$). Similarly, financial literacy ($\beta = -0.15$, $t = 4.02$, $p < 0.001$) and personal traits ($\beta = 0.14$, $t = 3.47$, $p < 0.001$) showed significant indirect effects through risk perception. Since both direct and indirect effects were significant, risk perception was found to partially mediate the relationship between exogenous variables and financial decisions. This highlights the role of risk perception as a key psychological mechanism linking investor characteristics and decision outcomes.

MODEL EXPLANATORY POWER AND EFFECT SIZES

Coefficient of determination (R 2) mentions that an individual behavioral bias, financial literacy, and personal traits can explain the varying risk perceptions by 49 percent, which is a fairly good explanatory power in behavioral finance studies. Furthermore, the model explains 57% of the differences in financial decision-making, demonstrating its strong explanatory power. Effect size (f^2) analysis showed that risk perception had a significant impact on financial decision-making ($f^2 = 0.38$), while behavioral biases and financial literacy had smaller to moderate impacts. These findings further highlight the dominant role of risk perception in the proposed model.

The predictive relevance was assessed using the Stone-Geisser Q^2 statistic. The Q^2 values for risk perception (0.31) and financial decision-making (0.36) were both much greater than zero, indicating that the model has strong predictive relevance.

DISCUSSION OF FINDINGS

Overall, the findings provide strong empirical support for behavioral finance theory, particularly prospect theory and the risk perception framework. The research results confirm that investors' financial decisions are not entirely rational, but are significantly influenced by behavioral biases, financial knowledge, and personal traits through risk perception mechanisms.

Even though the findings will be a strong evidence in the realization of the fact that behavioral biases, financial literacy and individual traits affect financial choices as a result of risk perception, it is important to note that financial decision-making is complex. There could be other institutional, cultural or macroeconomic factors that are not observable (regulatory frameworks, social norms, market access) but not covered in this study that might be influencing investor behavior. Thus, the results can be viewed as the results of the individual level cognitive and behavioral processes in the described situation rather than as the result that would encompass all the factors that affect the outcomes of financial decisions. From a practical perspective, research results indicate that improving financial literacy and eliminating behavioral biases through investor education programs can help improve financial decision-making. Policymakers and financial advisors should consider psychological factors when developing investment guidance and risk communication strategies. This implies that in practice educational and behavioral interventions need to be incorporated into a wider institutional and cultural setting. Programs focused on financial literacy and behavioral guidance are probable to be more useful once their development is adjusted to the local

regulatory factor, social neat and conditions in the market, which will guarantee that a better risk awareness will be moving to a significant increase in decision-making.

CONCLUSION

This study provides strong empirical evidence that behavioral biases, financial literacy, and personal traits significantly influence financial decisions through the mediating mechanism of risk perception. Risk perception, as a key cognitive variable linking psychological factors and financial outcomes, validates its central role in behavioral finance models. It should be mentioned that the current study utilized cross-sectional survey design, which restricts causal inferences. Moreover, the use of self-reported information can cause the common methodological bias, and the sample size use can limit the extrapolation of the results to other ethnicities or institutional environments. These limitations may be overcome in future research through longitudinal study designs, experimental studies or multi-source data to increase the validity of causal inferences and enhance external validity. The findings have significant implications for policymakers and financial institutions. Targeted programs to enhance financial literacy and risk awareness can reduce decision-making biases and promote sustainable financial behavior. Regulatory agencies should also prioritize standardized risk communication to reduce cognitive biases.

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

Cross-sectional study designs limit causal inferences; future research should utilize longitudinal data to capture dynamic feedback effects. Furthermore, future research could explore moderating factors such as culture and institutions to improve the generalizability of the findings. The role of the moderating or mediating factor of institutional, cultural, or macroeconomic factors on financial decision-making could be further studied in future research. Transnational or cross-cultural studies that are comparative can assist in clarifying the overall generalizability of study results whereas longitudinal studies can be used to understand how behavioral bias, financial literacy, and risk perception change and interact with each other over time and subsequently affect financial behavior.

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