



The Mediating Role of Risk Perception between Behavioural Finance and Investment Decisions: A Survey-Based PLS-SEM Study of Retail Investors in Bali

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Abstract

This study examines the direct relationships among behavioural finance, risk perception, and investment decisions and tests the mediating role of risk perception among retail investors in Bali, Indonesia. A quantitative cross-sectional survey was conducted with 153 retail investors selected through purposive sampling based on predefined eligibility criteria. Data were analysed using Partial Least Squares Structural Equation Modeling (PLS-SEM). Following measurement-model assessment, indicators with inadequate loadings were removed, resulting in a reduced seven-indicator measurement model comprising overconfidence and investor awareness for behavioural finance; liquidity, regulatory, and systemic risk for risk perception; and decision satisfaction and readiness for investment decisions. Using 5,000 bootstrap resamples, behavioural finance was positively associated with risk perception ($\beta = 0.538$, $p < 0.001$, 95% CI [0.410, 0.655]) and investment decisions ($\beta = 0.633$, $p < 0.001$, 95% CI [0.513, 0.743]). Risk perception was not significantly associated with investment decisions ($\beta = 0.048$, $p = 0.525$, 95% CI [-0.099, 0.196]). The specific indirect effect through risk perception was also not significant ($\beta = 0.026$, $p = 0.539$, 95% bootstrap CI [-0.053, 0.113]), providing no evidence of mediation in the final model. The findings indicate that the retained behavioural-finance construct is directly associated with investment decisions, whereas risk perception does not statistically transmit this relationship. The study contributes to behavioural investment research by clarifying the empirical role of risk perception within the tested model of Indonesian retail investors while recognising the implications of measurement-model reduction.

Keywords: *Behavioural Finance, Risk Perception, Investment Decision*

INTRODUCTION

The Indonesian capital market has experienced substantial growth in retail investor participation, accompanied by the increasing availability of digital investment platforms and financial information. Previous studies suggest that technological accessibility has facilitated retail participation by simplifying access to investment services and market information (Fernado et al., 2021; Tahir & Danarsari, 2023; Putranta & Darma, 2024). In particular, Tahir and Danarsari (2023) show that the rapid growth of Indonesian retail investors has occurred alongside easier access to investment through digital applications. However, easier market access does not necessarily imply that investment decisions are based exclusively on objective financial evaluation. Evidence from Indonesian retail investors indicates that psychological and social factors are associated with investment decision-making (Fathin & Hersugondo, 2022), suggesting that greater market accessibility coexists with behavioural influences on investment choices.

Behavioural finance provides a framework for explaining these deviations from fully rational decision-making by incorporating cognitive, psychological, and social influences into

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financial decisions. Retail investors may exhibit behavioural tendencies such as overconfidence, anchoring, representativeness, loss aversion, and herding, which can affect how market information and investment alternatives are evaluated (Dutta et al., 2020; Gorzon et al., 2024; Bihari et al., 2025; Sood et al., 2025). Emotional responses and information framing may further influence investors' judgements under uncertainty (Krishnamurthy, 2024; Suresh G., 2024). Rather than treating these tendencies as evidence that investors are uniformly irrational, behavioural finance suggests that investment judgements may systematically depart from purely rational risk–return evaluation. This distinction is important because behavioural tendencies may influence investment decisions directly or indirectly by altering how investors perceive investment risk.

Risk perception therefore represents a potentially important psychological mechanism connecting behavioural tendencies with investment decisions. Previous studies show that perceived risk can influence how investors evaluate investment opportunities and respond to uncertainty (Moueed & Hunjra, 2020; Hirdinis, 2024; Kumari et al., 2025). However, the evidence is not uniform. Some behavioural biases appear to strengthen or alter risk perceptions, whereas others do not consistently influence perceived risk (Kumari et al., 2025). More importantly, mediation studies provide different explanations of this mechanism. Jain et al. (2023), using 432 individual equity investors in India, found that risk perception partially mediated the effects of overconfidence, availability, gambler's fallacy, and anchoring on investment decisions, while fully mediating the effect of representativeness. Chaudhary et al. (2025) similarly reported a mediating role of investor risk perception in the relationship between heuristic biases and investment decisions. These findings suggest that risk perception may transmit behavioural effects, but the strength and form of this mechanism can depend on the particular behavioural bias and investor setting.

The Indonesian evidence further demonstrates why this mechanism requires closer examination. Studies of Indonesian retail investors have predominantly focused on direct behavioural effects or alternative explanatory mechanisms. Fathin and Hersugondo (2022), based on 105 Indonesian retail investors, found that psychological and social factors jointly influence investment decision-making. Tahir and Danarsari (2023) examined overconfidence, representativeness, and loss aversion in app-based investment decision-making and found that overconfidence had a significant positive effect, whereas representativeness and loss aversion were not significant. More recently, Budiman et al. (2025) found that herding significantly influenced investment decisions among Indonesian retail investors, whereas loss aversion, overconfidence, and risk perception showed no significant direct effects; their model instead identified fear of missing out (FOMO) as a mediator between loss aversion and investment decisions. Evidence from Bali provides an important regional comparison. Gama et al. (2023), examining 267 stock investors in Bali, found that overconfidence positively influenced investment decisions whereas herding did not, and further examined financial knowledge and financial attitude as moderating variables. Taken together, these studies confirm the relevance of behavioural factors among Indonesian and Balinese investors but leave uncertainty regarding whether risk perception transmits the effect of a broader, multidimensional behavioural finance construct on investment decisions among retail investors in Bali.

Accordingly, the research gap lies not merely in establishing whether behavioural finance and risk perception are associated with investment decisions, but in clarifying the mechanism through which these relationships operate. International mediation evidence has primarily examined specific heuristic biases; for example, Jain et al. (2023) modelled overconfidence, availability, gambler's fallacy, anchoring, and representativeness separately in examining the mediating role of risk perception. In contrast, Indonesian studies have tended to investigate direct behavioural relationships or alternative mediating and moderating mechanisms (Fathin &

Hersugondo, 2022; Tahir & Danarsari, 2023; Budiman et al., 2025), while evidence from Bali has focused on specific biases such as overconfidence and herding (Gama et al., 2023). Therefore, it remains insufficiently established whether behavioural finance, conceptualised through financial, psychological, and social dimensions, shapes investment decisions directly or whether its influence is transmitted through investors' subjective perceptions of risk.

This unresolved evidence raises a broader theoretical question regarding the role of risk perception in behavioural investment models. If behavioural tendencies shape risk perception but perceived risk does not subsequently influence investment decisions, risk perception may function primarily as a subjective evaluation of uncertainty rather than as a mechanism through which behavioural tendencies are translated into investment behaviour. Conversely, if behavioural effects are transmitted through risk perception, perceived risk represents an important psychological pathway linking behavioural tendencies to investment choices. Distinguishing between these mechanisms is therefore necessary to clarify the theoretical position of risk perception in retail investment decision-making and provides the basis for re-examining its role in the behavioural investment framework.

This study addresses these gaps by examining retail investors in Bali, Indonesia, while treating Bali as the empirical setting and population context rather than as a measured cultural construct. Accordingly, the study does not attribute investor behaviour to specific Balinese cultural values that are not directly measured in the research design. Instead, the study offers three contributions. Theoretically, it clarifies the role of risk perception within behavioural investment models by distinguishing between direct behavioural effects and an indirect risk-mediated mechanism. Empirically, it extends previous evidence from Indonesian and Balinese retail investors by simultaneously examining behavioural finance, risk perception, and investment decisions within a single structural model. Practically, identifying whether investment decisions are driven primarily by behavioural tendencies or through subjective risk evaluations can provide insights for regulators, securities companies, and investor education institutions in designing more targeted financial education and investor protection initiatives.

Accordingly, this study addresses four research questions: RQ1: Does behavioural finance influence the risk perception of retail investors in Bali? RQ2: Does behavioural finance influence their investment decisions? RQ3: Does risk perception influence their investment decisions? RQ4: Does risk perception mediate the relationship between behavioural finance and investment decisions? Correspondingly, the study aims to (1) examine the effect of behavioural finance on risk perception (H1), (2) examine the effect of behavioural finance on investment decisions (H2), (3) assess the effect of risk perception on investment decisions (H3), and (4) determine whether risk perception mediates the relationship between behavioural finance and investment decisions (H4).

LITERATURE REVIEW

Theoretical Foundation

Investment decision-making has traditionally been explained through the assumption that investors rationally process available information when evaluating investment alternatives. The Efficient Market Hypothesis (EMH) provides the rational benchmark for this perspective by proposing that asset prices reflect available information and that investors respond to information incorporated into market prices (Fama, 1970). However, persistent patterns such as overreaction, underreaction, excessive trading, loss aversion, overconfidence, and herding challenge the assumption of fully rational investor behaviour and provide an important foundation for behavioural finance (Barberis & Thaler, 2003).

In this study, behavioural finance is positioned as the primary theoretical framework, while EMH, Prospect Theory, and the Theory of Planned Behaviour (TPB) provide complementary

theoretical explanations for specific relationships within the proposed model. Behavioural finance explains how cognitive, psychological, and social tendencies may systematically influence financial judgements. Prospect Theory provides a more specific explanation of decision-making under uncertainty by proposing that individuals evaluate outcomes relative to reference points and are generally more sensitive to losses than to equivalent gains ([Kahneman & Tversky, 1979](#)). Consequently, investors' responses to uncertainty may reflect subjective evaluations of gains and losses rather than purely objective risk–return calculations.

TPB complements these perspectives by explaining behaviour through attitudes, subjective norms, and perceived behavioural control ([Ajzen, 1991](#)). In an investment context, personal beliefs and evaluations may contribute to attitudes toward investment, while social influences can shape subjective norms surrounding investment behaviour. EMH, meanwhile, serves primarily as the rational benchmark against which behavioural deviations can be interpreted rather than as the main explanatory framework of this study. Together, these theoretical perspectives support the examination of two possible mechanisms: a direct behavioural pathway, through which behavioural tendencies influence investment decisions, and an indirect risk-mediated pathway, through which behavioural tendencies first influence subjective risk perception and subsequently investment decisions.

Conceptualisation of Behavioural Finance

Behavioural finance integrates psychological, cognitive, and social perspectives into financial decision-making to explain systematic deviations from purely rational investment behaviour ([Barberis & Thaler, 2003](#)). Rather than treating individual biases as entirely independent phenomena, the present study conceptualises behavioural finance as a first-order reflective construct informed by three conceptual domains. The financial and information-processing domain comprises representativeness, price anchoring, attitude toward risk, and market response; the psychological domain comprises loss aversion, overconfidence, prospect-related evaluation, and investor awareness; and the social domain is represented by herding behaviour.

These nine indicators capture how investors process financial information, respond to gains and losses, evaluate their own knowledge and abilities, and react to the behaviour of other market participants. Importantly, the three domains provide a conceptual classification of the indicators rather than three separately estimated latent dimensions. Therefore, the present model does not treat behavioural finance as a hierarchical or second-order construct; instead, the nine indicators are directly associated with a single behavioural finance construct. This specification is consistent with the empirical model employed in this study and allows behavioural finance to represent a broader set of behavioural tendencies rather than a single isolated bias.

Previous literature provides substantial evidence that behavioural tendencies can influence financial judgements, although their effects are not necessarily uniform across biases and investor populations. Overconfidence, anchoring, representativeness, loss aversion, and herding have been associated with differences in how investors interpret information and make investment choices ([Dutta et al., 2020](#); [Sood et al., 2025](#)). Evidence from Indonesia similarly demonstrates that psychological and social factors are relevant to retail investment decision-making ([Fathin & Hersugondo, 2022](#)). These findings provide the basis for examining behavioural finance not only as a direct predictor of investment decisions but also as a potential antecedent of investors' subjective perceptions of risk.

Behavioural Finance and Risk Perception

Risk perception represents an investor's subjective assessment of uncertainty and potential adverse outcomes associated with investment. In the present study, risk perception

encompasses financial, liquidity, regulatory, systemic, and psychological risk, reflecting the multidimensional nature of perceived investment uncertainty. Unlike objective risk, perceived risk depends on how investors interpret and evaluate uncertainty and therefore may be affected by behavioural tendencies.

Prospect Theory provides an important theoretical explanation for this relationship because investors evaluate uncertain outcomes relative to reference points and respond asymmetrically to potential gains and losses ([Kahneman & Tversky, 1979](#)). Behavioural tendencies may therefore alter subjective risk assessments even when investors face similar objective market conditions. Loss aversion can increase sensitivity to potential losses, anchoring can cause risk assessments to remain attached to initial information, and herding can modify perceived uncertainty when the actions of other investors are interpreted as informational signals. Conversely, overconfidence may reduce perceived uncertainty because investors place excessive confidence in their own knowledge or predictive ability. These different mechanisms indicate that risk perception is psychologically constructed rather than determined exclusively by objective market conditions.

Previous empirical evidence supports the relationship between behavioural tendencies and risk perception, although the magnitude and direction of individual effects remain heterogeneous. Earlier studies have associated psychological and behavioural characteristics with differences in investor risk perception ([Moueed & Hunjra, 2020](#)). More recent evidence provides a stronger basis for the proposed mechanism. [Jain et al. \(2023\)](#), using 432 individual equity investors, demonstrated that heuristic biases were related to investors' risk perceptions and subsequent investment decisions. Risk perception partially mediated the effects of overconfidence, availability, gambler's fallacy, and anchoring and fully mediated the effect of representativeness. [Chaudhary et al. \(2025\)](#) similarly found that heuristic biases influence investment decisions through investors' perceptions of risk.

Taken together, these studies support the proposition that behavioural tendencies can shape subjective assessments of investment uncertainty. However, the heterogeneous effects of individual biases also suggest that this relationship should be examined using a broader behavioural framework rather than assuming that every behavioural tendency affects risk perception identically. Therefore, the following hypothesis is proposed:

H1. Behavioural finance significantly influences risk perception.

Behavioural Finance and Investment Decisions

Investment decisions involve investors' choices regarding the allocation of financial resources to investment alternatives in anticipation of future benefits. In the present study, the construct reflects investment intention, satisfaction with investment decisions, readiness to invest, emotional influences, and dependence on external information. These components indicate that investment decision-making involves not only financial evaluation but also cognitive, psychological, and informational considerations.

Behavioural finance predicts that such decisions may systematically depart from purely rational evaluation because investors can rely on cognitive shortcuts, emotional responses, previous experiences, and social information ([Barberis & Thaler, 2003](#)). Overconfidence may increase reliance on personal judgement, anchoring may create excessive dependence on reference information, loss aversion may generate asymmetric responses to gains and losses, and herding may encourage investors to follow other market participants rather than rely exclusively on independent analysis. TPB provides a complementary explanation by recognising that individual attitudes and subjective norms can contribute to behavioural intentions and subsequent actions ([Ajzen, 1991](#)).

Although behavioural effects on investment decisions are widely documented, empirical evidence does not suggest that every behavioural bias has an identical influence. This inconsistency is also evident among Indonesian investors. [Fathin and Hersugondo \(2022\)](#) found that psychological and social factors collectively influenced investment decision-making among 105 retail investors on the Indonesia Stock Exchange. [Tahir and Danarsari \(2023\)](#) examined overconfidence, representativeness, and loss aversion in app-based investment decision-making in Indonesia and found that overconfidence had a significant positive effect, whereas representativeness and loss aversion were not significant.

Evidence from Bali further illustrates this heterogeneity. [Gama et al. \(2023\)](#), examining 267 stock investors in Bali using PLS-SEM, found that overconfidence positively influenced investment decisions, whereas herding had no significant effect. The study also examined financial knowledge and financial attitude as moderators, although neither moderated the relationships; both nevertheless showed significant direct effects on investment decisions. More recently, [Budiman et al. \(2025\)](#) found that herding significantly influenced investment decisions among Indonesian retail investors, whereas loss aversion, overconfidence, and risk perception showed no significant direct effects.

Thus, previous findings agree that behavioural factors are relevant to retail investment decisions but disagree regarding which particular tendencies exert significant effects. Rather than interpreting these inconsistencies as evidence against behavioural finance, they suggest that behavioural influences depend on the type of bias, investor population, and model specification. The present study therefore examines behavioural finance as a broader construct incorporating financial/information-processing, psychological, and social tendencies.

Based on behavioural finance and supported by the behavioural propositions of Prospect Theory and TPB, the following hypothesis is proposed:

H2. Behavioural finance significantly influences investment decisions.

Risk Perception and Investment Decisions

Risk perception is theoretically relevant to investment decision-making because financial decisions involve uncertainty regarding future outcomes. Investors assess the possibility of financial losses, liquidity constraints, market instability, regulatory changes, and psychological consequences before making investment choices. Prospect Theory suggests that individuals are particularly sensitive to potential losses and that subjective evaluation of uncertain outcomes can therefore affect financial choices ([Kahneman & Tversky, 1979](#)).

Previous research generally recognises the relevance of risk perception but remains inconclusive regarding the strength of its direct effect on investment decisions. Earlier evidence suggests that perceived risk can influence investors' willingness to undertake investment decisions and that subjective risk evaluation varies according to individual beliefs and experiences ([Weber et al., 2013](#); [Moueed & Hunjra, 2020](#)). [Jain et al. \(2023\)](#) further demonstrated the relevance of risk perception within behavioural investment decision-making, although much of its explanatory role operated as a mediator between specific heuristic biases and investment decisions.

Evidence from Indonesia also suggests that perceived risk does not necessarily translate directly into investment choices. [Budiman et al. \(2025\)](#), for example, found that risk perception had no significant direct effect on investment decisions, whereas herding remained significant and FOMO mediated the relationship between loss aversion and investment decisions. This evidence suggests that investors may recognise investment uncertainty while continuing to make choices based on behavioural tendencies, social influences, previous experience, or other psychological mechanisms. Accordingly, the theoretical relevance of risk perception is well established, but its empirical role as a direct determinant of investment decisions remains unsettled. Rather than

assuming that perceived risk necessarily dominates behavioural considerations, the present study empirically evaluates whether investors' subjective assessment of uncertainty contributes significantly to their investment decisions.

H3. Risk perception significantly influences investment decisions.

Mediating Role of Risk Perception and Research Gap

The preceding relationships lead to the central theoretical issue examined in this study: whether behavioural tendencies influence investment decisions primarily through a direct behavioural pathway or whether their influence is transmitted through investors' subjective perceptions of risk. Behavioural finance and Prospect Theory jointly provide the theoretical foundation for this mediation mechanism. Behavioural tendencies may first alter how investors interpret uncertainty, potential losses, and market signals; these subjective evaluations may subsequently affect investment choices. Under this mechanism, risk perception functions as a psychological transmission mechanism rather than merely as another independent predictor of investment decisions.

International evidence supports the possibility of this risk-mediated pathway. [Jain et al. \(2023\)](#) found that risk perception partially mediated the relationships between overconfidence, availability, gambler's fallacy, and anchoring and investment decisions, while fully mediating the relationship between representativeness and investment decisions. [Chaudhary et al. \(2025\)](#), studying stock-market investors in Nepal, similarly found a mediating role of investors' risk perceptions in the relationship between heuristic biases and investment decisions. These findings support the theoretical proposition that behavioural tendencies may first affect subjective risk evaluation before influencing investment behaviour.

However, two unresolved issues remain. First, international mediation studies have predominantly examined specific heuristic biases separately, rather than conceptualising behavioural finance as a broader construct integrating financial/information-processing, psychological, and social tendencies. Second, evidence from Indonesia has focused more strongly on direct behavioural effects, moderating mechanisms, or alternative mediators. [Fathin and Hersugondo \(2022\)](#) examined psychological and social influences on Indonesian retail investment decisions, while [Tahir and Danarsari \(2023\)](#) examined individual perception biases in app-based investment decisions. [Budiman et al. \(2025\)](#) identified FOMO rather than risk perception as a mediator for a particular behavioural relationship.

The regional evidence from Bali likewise leaves the risk-mediated pathway unresolved. [Gama et al. \(2023\)](#) examined overconfidence and herding among stock investors in Bali and incorporated financial knowledge and financial attitude as moderating variables, rather than examining risk perception as a mediator. Thus, previous Indonesian and Balinese studies confirm the relevance of behavioural factors but do not establish whether risk perception transmits the influence of a broader behavioural finance construct to retail investment decisions.

Accordingly, the research gap lies not merely in determining whether behavioural finance, risk perception, and investment decisions are related, but in clarifying the mechanism through which these relationships operate. Existing international evidence supports risk-perception mediation for particular heuristic biases, whereas Indonesian and Balinese evidence has largely examined direct behavioural relationships, moderators, or alternative mediating mechanisms. It therefore remains insufficiently established whether a broader behavioural finance construct influences retail investment decisions primarily through a direct behavioural pathway or indirectly through investors' subjective risk perceptions.

The present study addresses this gap by simultaneously testing both pathways among retail investors in Bali. Consistent with the revised positioning of the study, Bali is treated as the

empirical setting and population context rather than as a measured cultural construct. Therefore, the proposed relationships are not attributed to specific Balinese cultural characteristics that are not operationalised in the research design. This positioning enables the study to extend Indonesian and Balinese evidence without making unsupported claims regarding cultural causality. Based on the theoretical proposition that behavioural tendencies may alter subjective risk assessments and that such assessments may subsequently influence investment choices, the following mediation hypothesis is proposed:

H4. Risk perception significantly mediates the relationship between behavioural finance and investment decisions.

METHODOLOGY

This study employed a quantitative explanatory design with a cross-sectional survey to examine the direct and indirect relationships among behavioural finance, risk perception, and investment decisions of retail investors in Bali, Indonesia. The target population comprised 140,708 capital-market investors registered in Bali based on Single Investor Identification (SID) data as of November 2024, as reported by the Financial Services Authority (OJK, 2025). Respondents were selected using purposive sampling based on predefined eligibility criteria: being domiciled in Bali, aged at least 17 years, and registered as an Indonesian capital-market investor. Investor participation was further verified through ownership of an Investor Fund Account (RDI) and actual participation in capital-market investment. The final sample consisted of 153 eligible retail investors. Because purposive sampling is a non-probability technique, sample adequacy was evaluated according to PLS-SEM considerations rather than Slovin's formula. Given the parsimonious structural model, with a maximum of two predictors directed toward an endogenous construct, 153 observations were considered adequate in terms of model complexity and statistical-power considerations (Hair et al., 2022; Kock & Hadaya, 2018).

Primary data were collected from April – July 2025 using a structured self-administered questionnaire. The questionnaire was administered primarily through online channels and distributed with the support of securities-company channels and retail-investor networks to facilitate access to eligible respondents. Screening information on domicile, age, investor status, RDI ownership, and investment participation was used to verify eligibility. Only complete responses satisfying the predefined criteria were retained for analysis.

The instrument comprised 19 items relevant to the present model, measured on a five-point Likert scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Behavioural finance was measured using nine indicators conceptually grouped into financial/information-processing, psychological, and social domains: representativeness (X1.1), price anchoring (X1.2), attitude toward risk (X1.3), market response (X1.4), loss aversion (X1.5), overconfidence (X1.6), prospect (X1.7), investor awareness (X1.8), and herding behaviour (X1.9). Risk perception comprised five indicators: financial risk (Y1.1), liquidity risk (Y1.2), regulatory risk (Y1.3), systemic risk (Y1.4), and psychological risk (Y1.5). Investment decision was measured through investment intention (Z1.1), satisfaction with investment decisions (Z1.2), readiness to make investment decisions (Z1.3), emotional influence (Z1.4), and dependence on external information (Z1.5). The items were adapted from the established measures identified in the operational definitions of the original dissertation. The detailed item sources are reported in Table 1. The questionnaire and its five-point response scale correspond to the instrument administered to respondents.

Data were analysed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 3.0, following measurement and structural-model assessment procedures (Hair et al., 2022). For the reflective measurement model, indicator reliability was evaluated using outer loadings, internal consistency using Cronbach's alpha and composite reliability (≥ 0.70), convergent

validity using average variance extracted (AVE ≥ 0.50), and discriminant validity using the heterotrait-monotrait ratio (HTMT < 0.90) (Henseler et al., 2015). Indicators with loadings below 0.40 were considered for removal, while indicators between 0.40 and 0.70 were evaluated based on their effects on reliability, AVE, and theoretical content before deletion. The structural model was subsequently evaluated using collinearity (VIF), path coefficients, coefficient of determination (R^2), effect size (f^2), and predictive relevance (Q^2). Direct and indirect effects were assessed using 5,000 bootstrap resamples, a two-tailed test, and a 5% significance level ($p < 0.05$). Mediation was determined from the significance of the specific indirect effect of behavioural finance on investment decisions through risk perception (Hair et al., 2022; Nitzl et al., 2016).

No separate pilot sample was employed; therefore, measurement adequacy was assessed on the main sample before structural-model evaluation. To minimise potential common method bias, participation was voluntary, questionnaire wording was kept neutral, and respondents were assured of confidentiality and the academic use of their responses (Podsakoff et al., 2003). Only eligible and complete responses were analysed. Participants provided informed consent before questionnaire completion, and no personally identifiable information is reported in this study.

Table 1. Measurement Constructs and Sources

Construct	Indicators	Supporting Sources
Behavioural Finance	X1.1–X1.9: Representativeness, Price Anchoring, Attitude toward Risk, Market Response, Loss Aversion, Overconfidence, Prospect, Investor Awareness, Herding Behaviour	Kahneman & Tversky (1979); Gama et al. (2023); Jain et al. (2023)
Risk Perception	Y1.1–Y1.5: Financial, Liquidity, Regulatory, Systemic, Psychological Risk	Moueed & Hunjra (2020); Jain et al. (2023); Hirdinis (2024)
Investment Decision	Z1.1–Z1.5: Investment Intention, Satisfaction, Readiness, Emotional Influence, External Information Dependence	Fathin and Hersugondo (2022); Tahir & Danarsari (2023); Gama et al. (2023); Jain et al. (2023)

Source: Data processed by the author, 2025

FINDINGS AND DISCUSSION

Respondent Characteristics

A total of 153 valid responses from retail investors in Bali were included in the analysis. All respondents reported ownership of an Investor Fund Account (*Rekening Dana Investor*, RDI), consistent with the eligibility criteria established for the study. The sample was relatively balanced by gender, although male respondents accounted for a slightly larger proportion (53.6%). More than half of the respondents were aged 30–40 years (51.6%), followed by those aged 17–29 years (26.8%). Most respondents held an undergraduate degree (47.7%), while their occupational backgrounds were diverse, with entrepreneurs (25.5%) and private-sector employees (22.2%) representing the largest groups. Geographically, 42.5% of respondents were domiciled in Denpasar, while the remaining respondents were distributed across the other regencies of Bali.

The demographic composition indicates that the findings predominantly reflect economically active adult investors with relatively diverse educational, occupational, and income backgrounds. However, demographic characteristics were not included as predictors or control variables in the structural model. Therefore, the estimated relationships should not be interpreted as evidence of behavioural differences attributable to gender, age, income, occupation, or place of residence.

Measurement Model Assessment

The measurement model was evaluated sequentially to establish indicator reliability, internal consistency, convergent validity, and discriminant validity before evaluating the structural relationships. The questionnaire contained 19 measurement items: nine behavioural-finance indicators, five risk-perception indicators, and five investment-decision indicators.

The initial model demonstrated substantial variation in indicator loadings. Behavioural-finance loadings ranged from 0.046 to 0.757, risk-perception loadings from 0.362 to 0.945, and investment-decision loadings from 0.319 to 0.872. Consequently, the initial model did not satisfy convergent-validity requirements uniformly. Following Hair et al. (2022), indicators with loadings below 0.40 were considered for elimination, while indicators between 0.40 and 0.70 were evaluated by considering their contribution to reliability and AVE together with their theoretical relevance.

Indicator refinement was therefore undertaken in stages. Indicators with particularly low loadings (<0.40), including X1.3, X1.7, X1.9, Y1.5, Z1.1, Z1.4, and Z1.5, were removed. Indicators with intermediate but inadequate contributions to the measurement model X1.1, X1.2, X1.4, X1.5, and Y1.1 were subsequently excluded after re-estimation. The final model retained seven indicators: X1.6 and X1.8 for behavioural finance; Y1.2, Y1.3, and Y1.4 for risk perception; and Z1.2 and Z1.3 for investment decisions. Their final outer loadings ranged from 0.727 to 0.957, indicating satisfactory indicator reliability.

Table 2. Initial and Final Measurement Model

Construct	Indicator	Initial Loading	Decision	Final Loading
Behavioural Finance	X1.1 Representativeness	0.417	Removed	–
	X1.2 Price anchoring	0.568	Removed	–
	X1.3 Attitude toward risk	0.046	Removed	–
	X1.4 Market response	0.435	Removed	–
	X1.5 Loss aversion	0.554	Removed	–
	X1.6 Overconfidence	0.726	Retained	0.893
	X1.7 Prospect	0.283	Removed	–
	X1.8 Investor awareness	0.757	Retained	0.927
	X1.9 Herding behaviour	0.121	Removed	–
Risk Perception	Y1.1 Financial risk	0.662	Removed	–
	Y1.2 Liquidity risk	0.735	Retained	0.727
	Y1.3 Regulatory risk	0.945	Retained	0.957
	Y1.4 Systemic risk	0.920	Retained	0.939
	Y1.5 Psychological Risk	0.372	Removed	–
Investment Decision	Z1.1 Investment intention	0.384	Removed	–
	Z1.2 Decision satisfaction	0.872	Retained	0.907
	Z1.3 Decision readiness	0.812	Retained	0.939
	Z1.4 Emotional influence	0.394	Removed	–
	Z1.5 External information	0.319	Removed	–

Source: SmartPLS output, 2025.

The indicator reduction has an important implication for construct interpretation. Behavioural finance was theoretically conceptualised through financial/information-processing, psychological, and social domains, but the final empirical construct retained only overconfidence (X1.6) and investor awareness (X1.8), both primarily representing psychological/cognitive characteristics. Consequently, the final empirical construct should not be interpreted as fully representing all three originally conceptualised behavioural-finance domains. The structural findings therefore refer specifically to the retained behavioural-finance measurement, an issue that should also be recognised as a limitation of the study.

Reliability, Convergent Validity, and Discriminant Validity

The final measurement model demonstrated satisfactory internal consistency and convergent validity. Cronbach's alpha ranged from 0.794 to 0.852, while composite reliability (rho_c) ranged from 0.906 to 0.920, exceeding the recommended threshold of 0.70. AVE values ranged from 0.775 to 0.852, exceeding the recommended threshold of 0.50 (Hair et al., 2022). Discriminant validity was evaluated using HTMT. All HTMT values were below the conservative threshold of 0.90, ranging from 0.446 to 0.799, indicating adequate empirical distinction among the three constructs (Henseler et al., 2015).

Table 3. Reliability and Validity of the Final Measurement Model

Construct	Cronbach's α	rho_A	Composite Reliability (rho_c)	AVE
Behavioural Finance	0.794	0.812	0.906	0.828
Risk Perception	0.852	0.908	0.911	0.775
Investment Decision	0.829	0.854	0.920	0.852
HTMT				
Construct	BF		RP	ID
Behavioural Finance	–			
Risk Perception	0.641		–	
Investment Decision	0.799		0.446	–

Source: SmartPLS output, 2025.

These results indicate that the final reduced measurement model satisfies internal consistency, convergent validity, and discriminant-validity requirements. This conclusion applies to the final seven-indicator model and should not be applied retrospectively to the initial model, which failed several measurement-quality criteria.

Structural Model Assessment

After measurement-model evaluation, the structural model was assessed using inner VIF, R^2 , f^2 , and SRMR. Inner VIF values ranged from 1.000 to 1.408, well below conventional critical levels, indicating that collinearity among the predictor constructs was not a concern.

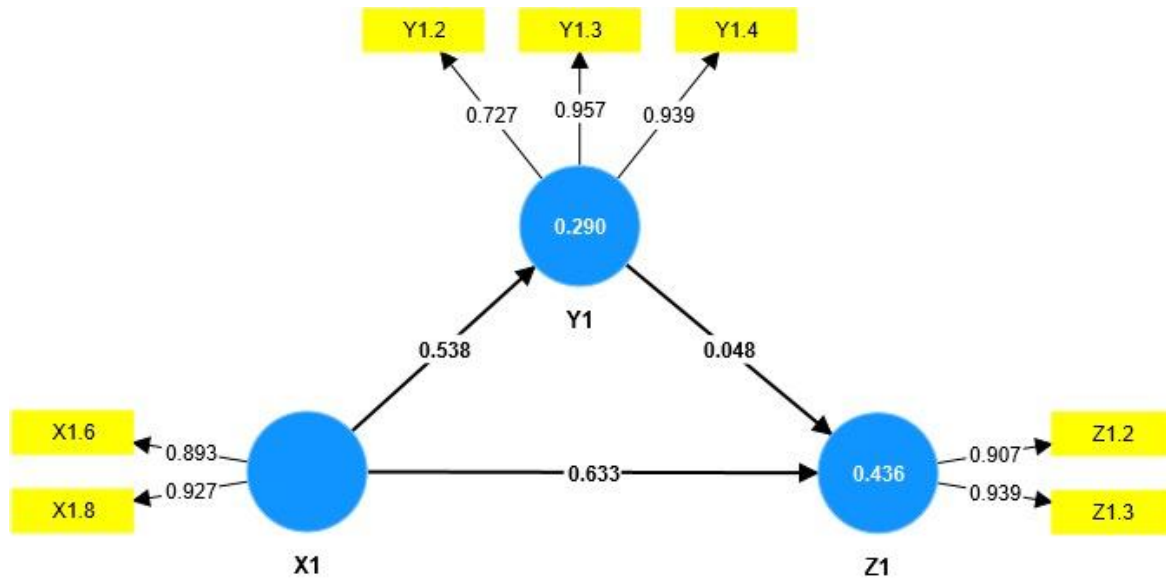


Figure 1. Path analysis of the coefficient

(Note: X1, Y1, and Z1 represent Behavioural Finance, Risk Perception, and Investment Decision)

As shown in Figure 1, the R^2 value for risk perception was 0.290, indicating that the retained behavioural finance construct accounted for 29.0% of its variance. The R^2 value for investment decisions was 0.436, indicating that behavioural finance and risk perception jointly accounted for 43.6% of the variance in investment decisions. These values represent in-sample explanatory capacity and should not be interpreted as evidence of causality or out-of-sample predictive accuracy.

Effect-size analysis provides further clarification. Behavioural finance showed a substantial contribution to risk perception ($f^2 = 0.408$) and investment decisions ($f^2 = 0.504$), whereas risk perception contributed only a negligible incremental effect to investment decisions ($f^2 = 0.003$). The estimated-model SRMR was 0.070, below the commonly used value of 0.08, indicating an acceptable approximate model fit.

Table 4. Structural Model Assessment

Criterion	Relationship/Construct	Value	Interpretation
R^2	Risk Perception	0.290	In-sample variance explained: 29.0%
R^2 adjusted	Risk Perception	0.289	—
R^2	Investment Decision	0.436	In-sample variance explained: 43.6%
R^2 adjusted	Investment Decision	0.434	—
f^2	BF $\rightarrow$ RP	0.408	Large
f^2	BF $\rightarrow$ ID	0.504	Large
f^2	RP $\rightarrow$ ID	0.003	Negligible
Inner VIF	BF $\rightarrow$ RP	1.000	No critical collinearity
Inner VIF	BF $\rightarrow$ ID	1.408	No critical collinearity
Inner VIF	RP $\rightarrow$ ID	1.408	No critical collinearity
SRMR	Estimated model	0.070	Acceptable

Source: SmartPLS output, 2025.

The provided SmartPLS outputs do not contain Q^2 , PLSpredict, or another out-of-sample prediction assessment. Therefore, no Q^2 or out-of-sample predictive claim is made here. This is

preferable to reporting or inferring a statistic that was not generated by the analysis.

Likewise, procedural measures were employed to reduce potential common method bias through voluntary participation, confidentiality, and neutral questionnaire administration, as explained in the Methodology. However, the available output does not contain a dedicated statistical common-method-bias test. Consequently, the absence of common method bias cannot be claimed statistically and should be acknowledged as a methodological limitation.

Hypothesis Testing

The structural relationships were tested using 5,000 bootstrap resamples, two-tailed testing, and a 5% significance level. Behavioural finance was positively associated with risk perception ($\beta = 0.538$, $SE = 0.063$, $t = 8.539$, $p < 0.001$). Its percentile bootstrap 95% confidence interval [0.410, 0.655] excluded zero; therefore, H1 was supported.

Behavioural finance was also positively associated with investment decisions ($\beta = 0.633$, $SE = 0.058$, $t = 10.898$, $p < 0.001$; 95% CI [0.513, 0.743]), supporting H2. In contrast, risk perception showed a small and statistically non-significant association with investment decisions ($\beta = 0.048$, $SE = 0.075$, $t = 0.636$, $p = 0.525$; 95% CI [-0.099, 0.196]). Accordingly, H3 was not supported.

Table 5. Hypothesis Testing Results

Hypothesis	Relationship	β	SE	t	p	95% Bootstrap CI	Decision
H1	BF $\rightarrow$ RP	0.538	0.063	8.539	<0.001	[0.410, 0.655]	Supported
H2	BF $\rightarrow$ ID	0.633	0.058	10.898	<0.001	[0.513, 0.743]	Supported
H3	RP $\rightarrow$ ID	0.048	0.075	0.636	0.525	[-0.099, 0.196]	Not supported
H4	BF $\rightarrow$ RP $\rightarrow$ ID	0.026	0.042	0.614	0.539	[-0.053, 0.113]	Not supported

Source: SmartPLS bootstrapping output, 2025.

Mediation Analysis

The mediating role of risk perception was evaluated using the bootstrapped specific indirect effect, rather than manually multiplying or adding individual path coefficients (Nitzl et al., 2016; Hair et al., 2022). The indirect effect of behavioural finance on investment decisions through risk perception was $\beta = 0.026$ ($SE = 0.042$, $t = 0.614$, $p = 0.539$), with a 95% bootstrap confidence interval of [-0.053, 0.113]. Because the confidence interval included zero, the indirect effect was not statistically significant. Therefore, H4 was not supported.

By comparison, the total effect of behavioural finance on investment decisions was positive and statistically significant ($\beta = 0.659$, $SE = 0.046$, $t = 14.341$, $p < 0.001$; 95% CI [0.566, 0.746]). Thus, the results provide evidence of a substantial direct association between the retained behavioural-finance construct and investment decisions but do not support risk perception as a mediating mechanism.

Table 6. Direct, Indirect, and Total Effects

Effect	β	SE	t	p	95% Bootstrap CI	Interpretation
Direct: BF $\rightarrow$ ID	0.633	0.058	10.898	<0.001	[0.513, 0.743]	Significant
Indirect: BF $\rightarrow$ RP $\rightarrow$ ID	0.026	0.042	0.614	0.539	[-0.053, 0.113]	Not significant
Total: BF $\rightarrow$ ID	0.659	0.046	14.341	<0.001	[0.566, 0.746]	Significant

Source: SmartPLS bootstrapping output, 2025.

This finding indicates non-mediation rather than non-moderation. Risk perception did not statistically transmit the relationship between behavioural finance and investment decisions.

Discussion

Behavioural Finance and Risk Perception

The support for H1 indicates that the retained behavioural-finance construct is positively associated with investors' subjective perceptions of investment risk. This finding aligns with behavioural finance and Prospect Theory, which propose that evaluations under uncertainty are shaped by cognitive and psychological processes rather than determined exclusively by objective risk–return information (Kahneman & Tversky, 1979; Barberis & Thaler, 2003). The result also corresponds with Jain et al. (2023) and Chaudhary et al. (2025), who demonstrated relationships between behavioural or heuristic tendencies and investors' risk perceptions.

The result therefore supports the first research objective by demonstrating that behavioural characteristics are relevant to how investors evaluate uncertainty. However, this interpretation requires an important qualification. The final behavioural-finance construct retained only overconfidence and investor awareness. Accordingly, the significant relationship cannot be generalised to representativeness, anchoring, loss aversion, herding, or other indicators removed during measurement-model refinement. Rather, the evidence specifically reflects the behavioural characteristics represented by the retained indicators.

Behavioural Finance and Investment Decisions

The results also support H2, demonstrating a significant positive association between behavioural finance and investment decisions. This finding supports the central proposition of behavioural finance that investment judgements may systematically differ from decisions predicted solely by rational risk–return evaluation (Barberis & Thaler, 2003). It is broadly consistent with Fathin and Hersugondo (2022), who found that psychological and social factors were relevant to Indonesian retail investment decisions, and with Tahir and Danarsari (2023), who demonstrated a significant role of overconfidence in app-based investment decisions.

The finding is particularly consistent with evidence from Bali reported by Gama et al. (2023), where overconfidence positively influenced investment decisions. The present study extends this evidence by simultaneously examining behavioural finance, risk perception, and investment decisions within one structural model. Nevertheless, because the final behavioural-finance measurement is dominated by overconfidence and investor awareness, the finding should be interpreted as supporting the role of these retained behavioural characteristics rather than establishing that all behavioural biases have similar effects.

Risk Perception and Investment Decisions

In contrast, H3 was not supported. Although risk perception was significantly associated with behavioural finance, its direct association with investment decisions was small ($\beta = 0.048$), statistically non-significant ($p = 0.525$), and accompanied by a negligible effect size ($f^2 = 0.003$). This result differs from studies that identify perceived risk as an important determinant of investment decisions (Moueed & Hunjra, 2020; Jain et al., 2023), but is consistent with Indonesian evidence reported by Budiman et al. (2025), who likewise found no significant direct effect of risk perception on investment decisions.

This finding addresses the third research objective by showing that subjective perceptions of investment uncertainty do not necessarily correspond to differences in reported investment

decisions in this sample. Importantly, the result should not be interpreted as showing that Balinese investors ignore risk, have low risk literacy, rely on intuition, or are dominated by social influence. None of these mechanisms was directly tested in the present model. The empirical conclusion is narrower: after accounting for behavioural finance, risk perception did not provide a statistically significant additional association with investment decisions.

Mediating Role of Risk Perception

Finally, H4 was not supported. The specific indirect effect of behavioural finance on investment decisions through risk perception was not significant ($\beta = 0.026$, $p = 0.539$), and its bootstrap confidence interval included zero. Consequently, the findings do not support the proposed risk-mediated pathway.

This result contrasts with [Jain et al. \(2023\)](#), who reported partial or full mediation of risk perception for several individual heuristic biases, and [Chaudhary et al. \(2025\)](#), who similarly identified risk perception as a mediating mechanism. The difference may partly reflect differences in model specification. Those studies examined specific heuristic biases, whereas the present study initially conceptualised behavioural finance more broadly and ultimately retained only two behavioural indicators after measurement refinement. Thus, mediation relationships identified for individual biases in other investor populations cannot automatically be assumed to apply to a reduced behavioural-finance construct among Indonesian retail investors.

More importantly, the non-significant mediation result directly addresses the research gap identified in the Introduction. The evidence suggests that, within the final model and sample, behavioural finance is more strongly associated with investment decisions through a direct pathway than through the proposed risk-perception pathway. The significant total effect ($\beta = 0.659$, $p < 0.001$) alongside the non-significant indirect effect reinforces this interpretation.

CONCLUSIONS

This study examined the relationships among behavioural finance, risk perception, and investment decisions among retail investors in Bali. The findings address the four research objectives directly. H1 was supported, as behavioural finance was significantly associated with risk perception. H2 was also supported, showing a significant association between behavioural finance and investment decisions. In contrast, H3 was not supported, as risk perception was not significantly associated with investment decisions. Consequently, H4 was not supported, because the bootstrapped indirect effect through risk perception was not significant. Thus, within the estimated cross-sectional model, behavioural finance was associated with investment decisions primarily through the direct pathway rather than through risk perception.

The findings also have theoretical implications. They support behavioural finance and are consistent with Prospect Theory in showing that subjective behavioural tendencies are relevant to how investors evaluate uncertainty and make investment decisions. However, the non-significant relationship between risk perception and investment decisions indicates that subjective risk evaluation does not necessarily translate into reported investment choices, thereby qualifying the expected risk-mediated mechanism. From a TPB perspective, the results suggest that behavioural beliefs and evaluations may be associated with investment decisions without risk perception functioning as the intervening mechanism proposed in this study. Relative to EMH, the findings provide evidence that investor decision-making is associated with behavioural considerations beyond a purely rational information-processing benchmark; however, they do not constitute a direct test or rejection of market efficiency.

Practically, the significant associations involving behavioural finance suggest that investor education may benefit from greater attention to behavioural awareness alongside conventional

risk–return analysis. Nevertheless, these implications should be interpreted cautiously. The final measurement model retained only overconfidence and investor awareness for behavioural finance, three risk-perception indicators, and two investment-decision indicators. Consequently, the final behavioural-finance construct does not fully represent its originally proposed financial/information-processing, psychological, and social domains. Combined with the cross-sectional and non-probability sampling design, this measurement reduction limits construct coverage, causal interpretation, and generalisability. Future studies should therefore validate the broader measurement structure with larger and more diverse samples and examine whether the relationships remain stable across investor groups and over time.

LIMITATION & FURTHER RESEARCH

This study has several limitations that should be considered when interpreting its findings. First, the most important limitation concerns measurement refinement. Twelve of the original 19 indicators were removed during measurement-model evaluation, leaving behavioural finance represented only by overconfidence and investor awareness, risk perception by three indicators, and investment decisions by two indicators. Although the retained indicators satisfied the final measurement criteria, this substantial reduction narrows the conceptual coverage of the constructs, particularly behavioural finance, and may affect the stability and interpretation of the structural relationships. Consequently, the non-significant relationships observed for H3 and H4 should be interpreted cautiously, as measurement reduction represents a plausible alternative explanation rather than evidence that risk perception is universally irrelevant to investment decisions.

Second, the cross-sectional design permits the identification of statistical associations but does not establish causal relationships or temporal ordering. In addition, respondents were selected through purposive non-probability sampling. Although the final sample of 153 respondents was considered adequate for the estimated PLS-SEM model based on model complexity and statistical-power considerations, it was not a probability-based representation of the population. Therefore, the findings cannot be generalised to all retail investors in Bali or to investors in other Indonesian regions.

Third, the study relied on single-source, self-reported questionnaire data. Although procedural measures were applied to reduce potential common method bias, no separate statistical assessment of common method bias was conducted. Furthermore, Bali was used only as the empirical setting; specific Balinese cultural characteristics were not operationalised or measured. Accordingly, the findings cannot support cultural explanations of the observed behavioural relationships.

Future research should address these limitations by revalidating the original multidimensional measurement structure with larger and probability-based samples, employing longitudinal designs, and statistically assessing common method bias. Future models may also explicitly measure cultural constructs and incorporate expected return or other theoretically relevant mechanisms. Moderated-mediation designs could further examine when and for whom risk perception transmits behavioural influences into investment decisions.

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