Journal of Management and Business Review
Volume 22, Number 2 (2025) Page: 144-162
ISSN: 2503-0736 (Online); ISSN: 1829-8176 (Print)
doi: https://doi.org/10.34149/jmbr.v22i2.820

Investor Risk Behavior as a Mediator in the Influence of Financial Literacy on Millennial Investment Decisions: Evidence from Makassar, Indonesia

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Received: 22-02-2024 | Accepted: 05-10-2024 | Published: 30-08-2025

How to cite: Mongan, C.J., Halik, J.B., Lambe, K.H.P., & Irdawati, I. (2025). Investor risk behavior as a mediator in the influence of financial literacy on millennial investment decisions: Evidence from Makassar, Indonesia. *Journal of Management and Business Review*, 22(2), 144–162. https://doi.org/10.34149/jmbr.v22i2.820

ABSTRACT

This study examines how investor risk behavior influences the relationship between millennials' investment choices and financial literacy in Makassar, Indonesia. A structured survey with 96 respondents chosen by purposive sampling was used in a quantitative way. The data was analyzed using Structural Equation Modeling-Partial Least Squares (SEM-PLS). The findings show that financial literacy has no direct impact on investment choices. Nonetheless, it greatly influences investment decisions by having a considerable favorable impact on investor risk behavior. Additionally, the association between financial literacy and investing decisions is positively mediated by investor risk behavior. These findings indicate that financial knowledge alone is insufficient to induce sensible investment behavior unless integrated with risk tolerance. The study enhances behavioral finance by illustrating the interplay of cognitive and behavioral elements in millennial investing. Practical implications include a need for financial literacy initiatives that combine risk management training to strengthen the ability to make decisions in digital investment environments.

Keywords:
Financial literacy, investment decisions, investor behavior, millennials, risk tolerance, SEM-PLS

ABSTRAK

Studi ini mengkaji bagaimana perilaku risiko investor memengaruhi hubungan antara pilihan investasi dan literasi keuangan generasi milenial di Makassar, Indonesia. Survei terstruktur dengan 96 responden yang dipilih secara purposive sampling digunakan secara kuantitatif. Data dianalisis menggunakan Structural Equation Modeling-Partial Least Squares (SEM-PLS). Temuan menunjukkan bahwa literasi keuangan tidak memiliki dampak langsung terhadap pilihan investasi. Meskipun demikian, literasi keuangan sangat memengaruhi keputusan investasi dengan memberikan dampak positif yang cukup besar terhadap perilaku risiko investor. Selain itu, hubungan antara literasi keuangan dan keputusan investasi dimediasi secara positif oleh perilaku risiko investor. Temuan ini menunjukkan bahwa pengetahuan keuangan saja tidak cukup untuk mendorong perilaku investasi yang bijaksana kecuali diintegrasikan dengan toleransi risiko. Studi ini meningkatkan perilaku keuangan dengan menggambarkan interaksi antara elemen kognitif dan perilaku dalam investasi generasi milenial. Implikasi praktisnya mencakup perlunya inisiatif literasi keuangan yang menggabungkan pelatihan manajemen risiko untuk memperkuat kemampuan pengambilan keputusan dalam lingkungan investasi digital.

Kata Kunci:
Generasi milenial, keputusan investasi, literasi keuangan, perilaku investor, SEM-PLS, toleransi risiko

INTRODUCTION

Investment decisions are a fundamental aspect of financial management, particularly for the millennial generation, which has become a dominant force in contemporary financial markets. Millennials are known for their rapid adoption of technology, openness to investment opportunities, and willingness to take risks. The rise of digital investment platforms has made it easier for millennials to interact with a diverse variety of financial instruments, such as shares, mutual funds, and digital currencies. However, this rising involvement is not accompanied by a sufficient level of financial literacy. According to the Financial Services Authority of Indonesia (Otoritas Jasa Keuangan (OJK), 2022), the national financial literacy rate is 49.68%, while financial inclusion is 85.10%. This disparity underscores a critical disconnect between access to financial services and the ability to make intelligent financial decisions. This discrepancy raises concerns about the quality of investment decisions made by millennials, as inadequate financial knowledge may lead to suboptimal or even detrimental investment choices.

Previous research has continually identified an important correlation between financial literacy and better financial decision-making. Lusardi & Mitchell (2014) as well as Klapper *et al.* (2020) emphasize that an in-depth comprehension of financial terms increases people's capacity to gauge risks and engage in effective long-term financial planning. Nevertheless, emerging studies suggest that financial knowledge does not automatically translate into rational investment behavior. For instance, Bawalle *et al.* (2024) found that emotional and behavioral factors often override financial knowledge, especially among young investors. Similarly Annapurna & Basri (2024) revealed that millennial investors are prone to herd behavior and overconfidence, limiting the influence of financial literacy alone.

Multiple research projects have systematically examined financial literacy (Daud *et al.*, 2023; Halik *et al.*, 2023, 2025), risk behavior (Risqina *et al.*, 2023), and investment decision-making (Sawitri, 2022; Yolanda & Tasman, 2020). Nonetheless, there is a scarcity of empirical studies focusing on the mediating role of investor risk behavior in the connection between financial literacy and decision-making regarding investments, particularly in the context of emerging economies such as Indonesia. This interaction remains underexplored despite its relevance in behavioral finance. Accordingly, this research seeks to address the gap by exploring investor risk behavior both as a direct determinant and as an intervening variable in the relationship.

This study bridges a gap in knowledge by examining whether investor risk behavior mediates the relationship among financial literacy and investment decisions among millennials. Grounded in Prospect Theory (Kahneman & Tversky, 1979), which demonstrates how individuals evaluate possible earnings and losses asymmetrically under conditions of uncertainty, the study investigates whether financial literacy alone can drive investment decisions, or if risk-related behavior exerts a more influential effect. Additionally, the Theory of Planned Behavior (Ajzen, 1991) indicates that financial

knowledge shapes investment attitudes, while risk perception influences whether individuals act on this knowledge. Thus, this research hypothesizes that investor risk behavior not only affect investment-making decisions directly but also mediates the impact of financial literacy upon those decisions.

Considering this theoretical framework, the following presumptions have been put forward:

H1: Financial literacy has a beneficial and substantial effect upon investing decisions.

H2: Financial literacy has a beneficial and substantial effect upon investor risk behavior.

H3: Investor risk-taking has a beneficial and substantial effect upon investment decisions.

H4: Investor risk behavior mediates the relationship between financial literacy and investment decisions among millennials.

Through the examination of these hypotheses, this study enriches the topic of behavioral finance by illustrating the interplay between cognitive aspects, namely financial literacy, and psychological dimensions, especially risk behavior. Conducted within the specific setting of Makassar, Indonesia, the research adds a localized empirical lens to the broader discourse on millennial financial decision-making. The findings are intended to assist policymakers, financial instructors, and investment platform providers in establishing more comprehensive financial literacy initiatives that not only increase knowledge but also incorporate risk management components to promote more informed and responsible investor behavior. Figure 1 depicts the conceptual foundation for this research.

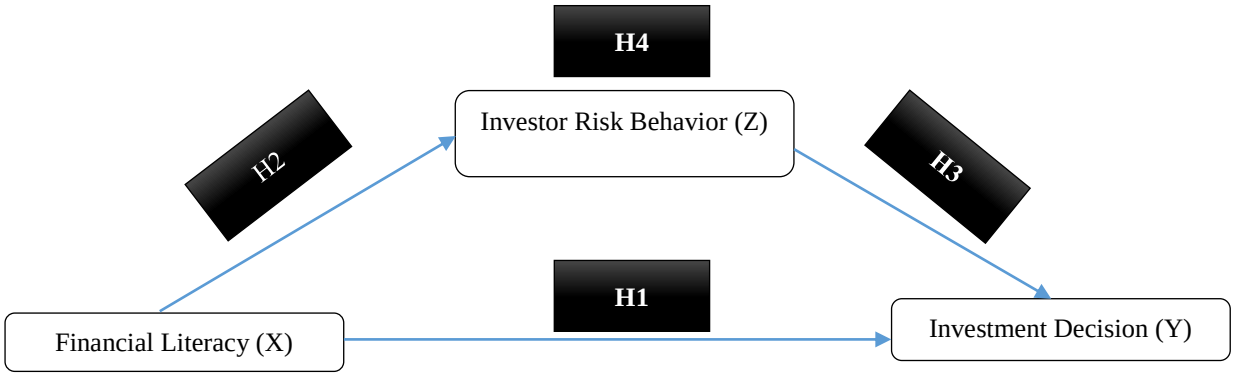

Figure 1. Research Model Framework
Source: Authors' work (2025)

RESEARCH METHODS

This study investigates how investor risk behavior affects the link between financial literacy and investing decisions among millennials Employing a quantitative survey-based method, the study adopts an explanatory research design to explore causal links between variables. Additionally, it investigates the mediating role of investor risk behavior (Z) in the relationship between the independent variable—Financial Literacy (X)—and the dependent variable—Millennial Investment Decisions (Y)—through a statistical modeling approach.

This study's target population comprises Indonesian millennials aged 25 to 40 years, in line with the definition provided by the Pew Research Center, who are actively engaged in financial market

investments such as stocks, mutual funds, or digital assets. Respondents were selected using a purposive sampling method based on specific criteria: a minimum of one year of investment experience, active use of digital platforms for investment activities, and a willingness to complete the questionnaire in full.

Given the absence of precise data on the millennial population size, the researchers employed the Lameshow Formula for determining the best possible sample size. The Lameshow formula is important for researchers to calculate samples if the number of populations in the research sample is unknown or the number of populations is unlimited (Santosa, 2018).

$$n = \frac{z^2 \times P(1-P)}{d^2} \quad \text{.....(1)}$$

To calculate the necessary sample size (n) for this study, the formula in **Equation 1** was applied, assuming a 95% confidence level, a prevalence rate of 50% (P = 0.500), and a margin of error of 10% (d = 0.100).

Accordingly, the resulting sample size is calculated as follows:

$$n = \frac{(1{,}96)^2 \times 0{,}5(1-0{,}5)}{(0{,}10)^2} = 96{,}04 \quad \text{.....(2)}$$

Table 1. Measurement Item

Construct	Item Code	Items	References
Financial Literacy (X)	X1	I understand the concept of compound interest in investing.	(Daud *et al.*, 2023; Halik *et al.*, 2023, 2025)
	X2	I know the impact of inflation on the future value of money.	
	X3	I understand the importance of diversification in investing.	
	X4	I have knowledge of investment risks in various assets	
	X5	I have the ability to calculate potential investment profits.	
Investor Risk Behavior (Z)	Z1	I am willing to take high risks in investing to gain the potential for large profits.	(Ikram *et al.*, 2023; Risqina *et al.*, 2023; Shefrin & Statman, 2000)
	Z2	I am not easily affected by fluctuations in asset values in the market.	
	Z3	I tend to hold onto investment assets even if they experience a temporary decline in value.	
	Z4	I prefer to diversify assets to reduce risk rather than focusing on one type of asset.	
	Z5	I am comfortable with market volatility over a period of time.	
Millennial Generation Investment Decisions (Y)	Y1	I make investment decisions based on relevant market information.	(Mahmood *et al.*, 2024; Sawitri, 2022; Yolanda & Tasman, 2020)
	Y2	I utilize applications or technology to support my investment decisions.	
	Y3	I make sure my investment portfolio is diversified	
	Y4	I consider the risks and benefits in balance before investing.	
	Y5	I have a clear financial plan to support investment decisions.	

Source: Authors' work (2025)

The data obtained from respondents via surveys were analyzed using Partial Least Squares (PLS), which is well-suited for investigating complex route models and can handle small sample sizes and multicollinearity difficulties. Version 4 of the Smart-PLS software was used for hypothesis testing. All measurement constructs employed in this study were adapted from established prior research. The Financial Literacy variable (X) is assessed using five indicators adapted from the works of (Daud *et al.*, 2023) and (Halik *et al.*, 2023, 2025). Investor Risk Behavior (Z) is evaluated through five items derived from (Ikram *et al.*, 2023; Risqina *et al.*, 2023; Shefrin & Statman, 2000). Meanwhile, Investment Decisions among Millennials (Y) are measured using five indicators based on studies by (Mahmood *et al.*, 2024; Sawitri, 2022; Yolanda & Tasman, 2020). All measurement items in the questionnaire were A 5-point Likert scale was used to assess replies, which ranged from, with responses ranging from "strongly disagree" (1) to "strongly agree" (5). A detailed overview of the measurement items utilized in this study is presented in Table 1.

Hypothesis Development

Financial Literacy and Investment Decisions

Financial literacy has been widely accepted as an essential component in shaping rational and informed investment decisions, particularly among younger generations navigating increasingly complex financial environments (Nogueira & Almeida, 2025). For millennials, who are digital natives exposed early to financial technologies, literacy plays a dual role—not only in enhancing comprehension of financial instruments but also in fostering investment confidence.

Recent research have shown that financial literacy has a significant influence on investing decision-making among millennial individuals. For example, (Choudhary *et al.*, 2024) found that Indian millennial investors with higher levels of financial knowledge were more likely to make deliberate and diversified investment choices, especially in volatile markets. Similarly, (Pham & Toan Le, 2023) reported that in Vietnam, financial literacy significantly shaped millennial investors' ability to evaluate risk and make forward-looking decisions, reducing reliance on peer influence and speculation. In the Indonesian context, empirical evidence also supports this relationship. (Rahayu *et al.*, 2022) observed that millennial participants with adequate financial literacy were more confident in allocating their capital across multiple asset classes. The same study noted that financial literacy mitigated impulsive behavior by fostering a clearer understanding of risk-reward dynamics.

Another important dimension is the psychological confidence that comes from being financially literate. According to (Sunarko & Sutrisno, 2025), higher financial literacy correlates with better investment self-efficacy, enabling millennial investors to act independently of market hype or social pressures. This finding is aligned with behavioral finance theories, which emphasize that informed investors likely to display more rationality in decision-making. However, it is also important to acknowledge that financial literacy alone may not guarantee sound investment behavior unless accompanied by experiential learning or behavioral interventions (Katnic & Katnic, 2024).

Nevertheless, the consensus across recent empirical studies strongly indicates that financial literacy remains a critical driver of investment decisions, especially for younger, tech-savvy investors like millennials.

Based on the empirical data stated above, it can be deduced that financial literacy serves as a crucial determinant in molding investment decisions among millennials. The recurring evidence across diverse cultural and economic settings supports a positive link between financial knowledge and prudent investment behavior. Accordingly, the following hypothesis is proposed in this study:

H_1: Financial literacy has a beneficial and substantial impact upon investing decisions.

Financial Literacy and Investor Risk Behavior

Financial literacy extends beyond understanding financial products; it also significantly influences individuals' risk preferences and tolerance. Within the framework of behavioral finance, investor risk behavior is closely linked to cognitive competencies, competencies include understanding financial risk and evaluating investment options effectively (Almansour *et al.*, 2023).

Numerous empirical studies indicate that individuals with greater financial literacy are more likely to engage in consistent and deliberate risk-taking behavior. For example Molina-garcía *et al.* (2023) observed that young investors in Spain with strong financial knowledge were more inclined to diversify their investment portfolios and adopt long-term risk management approaches compared to their less financially literate counterparts. Similarly, research by Ambarwati & Yoga (2025) in Indonesia revealed that financial literacy significantly contributes to risk awareness and decreases impulsive or speculative investment tendencies among novice investors. Moreover, financial literacy influences how individuals perceive and respond to market volatility. According to (Katnic & Katnic, 2024), millennial investors with adequate financial understanding showed greater composure during market downturns, suggesting that literacy enhances psychological resilience in the face of financial uncertainty. This supports the view that knowledge reduces emotional reactivity, thereby encouraging more rational responses to risk.

A recent study by (Tulcanaza-prieto *et al.*, 2025) in Ecuador also confirmed that financial literacy directly increases investors' willingness to accept calculated risks. The authors argued that financial knowledge increases confidence in decision-making, leading to more measured but not overly conservative behaviors. This aligns with (Shefrin & Statman, 2000) earlier findings on behavioral portfolio theory, which state that informed investors are more likely to balance risk and return effectively. Taken together, these findings suggest that financial literacy is instrumental in shaping investor risk behavior, helping individuals not only understand but also manage risk in a more structured and confident manner.

The empirical evidence discussed above clearly suggests that financial literacy plays a vital role in shaping investor risk behavior. Individuals with a deeper grasp of financial principles tend to respond

to investment risks in a more rational and controlled manner. Based on this reasoning, the following hypothesis is proposed:

H_2: Financial literacy has a beneficial substantial impact upon investor risk behavior.

Investor Risk Behavior and Investment Decisions

Behavioral finance focuses on investor risk behavior, which refers to a person's psychological predisposition to endure uncertainty in exchange for better profits. This behavioral trait influences not only the willingness to participate in financial markets but also the types of assets selected and the timing of investment decisions.

Recent empirical research has highlighted the effect of risk behavior on investment decisions, particularly for younger, tech-savvy investors. (Bajwa, 2025), for instance, discovered that persons with a higher risk tolerance are more prone to diversify their portfolios and allocate funds to high-volatility assets such as shares and cryptocurrencies. Similarly, research by (Parmitasari *et al.*, 2022) in Indonesia found that investors with a high risk tolerance approach investment ideas with greater confidence and proactiveness.

In a study involving millennial investors, (Ul Islam *et al.*, 2024) found that those who displayed a higher propensity to accept risk were more inclined to explore long-term investment products rather than rely solely on savings or low-yield instruments. This behavior was also linked to frequent monitoring of financial markets and readiness to adjust portfolios based on market trends—characteristics often absent in risk-averse individuals.

Moreover, (Brooks & Williams, 2022) argue that investor risk behavior is not static but evolves based on education, financial experience, and market exposure. These findings indicate that individuals with a high threshold for risk are better capable of making confident and potentially profitable investing judgments., particularly in times of market uncertainty and fluctuation.

From a theoretical standpoint, Prospect Theory (Kahneman & Tversky, 1979) also supports this relationship by asserting that investors evaluate potential outcomes differently under conditions of risk. Those with higher risk tolerance tend to focus on potential gains, thus engaging more actively in investment decision-making. Taken together, the evidence suggests that investor risk behavior plays a decisive role in determining how, when, and where individuals invest. It influences both the propensity to invest and the strategic choices made in managing financial resources.

Given the supporting evidence, it is possible to conclude that persons with higher degrees of risk tolerance are more likely to make well-structured and secure investment decisions. Thus, the following theory is proposed:

H_3: Investor risk behavior positively and significantly influences investment decision-making.

The Mediating Role of Investor Risk Behavior

Financial literacy has been identified as a key factor influencing personal financial behavior. Nevertheless, empirical findings on its direct impact on investment decision-making have yielded

mixed results. This variation has led scholars to investigate the influence of behavioral and psychological variables as mediating factors, with investor risk behavior emerging as a key construct. Risk tolerance and perception are considered psychological pathways through which financial knowledge may be converted into concrete investment actions.

An increasing body of empirical evidence highlights the mediating function of risk behavior within this relationship. (Murhadi *et al.*, 2023), for example, found that financially literate millennials in Indonesia were more inclined to adopt risk-tolerant attitudes, subsequently leading to greater engagement in investment activities. These findings imply that while financial knowledge improves risk comprehension, it is the individual's behavioral response to perceived risk that ultimately drives investment decisions. A study by (Tavares & Tavares, 2020) in Portugal also demonstrated that financial literacy improves investment decisions indirectly through its influence on risk perception. Respondents who scored higher in financial knowledge were not only better at assessing financial risks but also more willing to engage in long-term, diversified investment strategies—indicating an internalization of risk as a manageable factor rather than a barrier.

Similarly Safitri *et al.* (2025) found that among Gen Y and Gen Z Indonesia investors, financial literacy was not a significant predictor of investment decisions unless risk tolerance was taken into account as a mediating variable. Their findings suggest that financial literacy may raise awareness of investment opportunities, but it is risk behavior that enables the practical execution of that knowledge. Furthermore, Ajzen (1991) Theory of Planned Behavior supports this logic by emphasizing that intention is shaped not only by knowledge and attitude but also by perceived behavioral control—in this case, the confidence to manage investment risks. As such, investor risk behavior bridges the cognitive and action-oriented aspects of financial decision-making.

Based on these empirical and theoretical findings, it is proposed that investor risk behavior acts as a significant mediator between financial literacy and investment decisions. Therefore, the study proposes the following hypothesis:

H_4: Investor risk behavior mediates the relationship between financial literacy and investment decisions among millennials.

RESULT AND DISCUSSION

Result

This section presents the statistical data from a study of the correlations between financial literacy, investor risk behavior, and investment decisions in the millennial population. Data were analyzed using Structural Equation Modeling with Partial Least Squares (SEM-PLS), and the outcomes are reported in terms of both direct and mediating effects.

Descriptive Statistics

The survey included 96 individuals from the millennial category who fulfilled the requirements set forth. The respondents' attributes include gender, age, levels of education, employment

circumstance, and holding investments preferences. The distribution of respondents indicates that 52.08% are female and 47.92% are male, with the majority aged 31–35 years (43.75%), followed by 25–30 years (37.50%) and 36–40 years (18.75%). Regarding investment preferences, gold (62.5%) was the most preferred asset, followed by cryptocurrencies (33.33%), stocks (22.92%), mutual funds (19.79%), and deposits/securities (15.63%). This reflects the growing interest of millennials in both traditional and digital investment instruments. For further clarity, the author presents respondent data in Table 2.

Table 2. Respondent Description (N = 96)

Variable	Frequency	Percentage
Gender		
Male	46	47.917
Female	50	52.083
Respondents age		
25 to 30 years	36	37.500
31 to 35 years	42	43.750
36 to 40 years	18	18.750
Level of Education		
High school/equivalent	12	12.500
D3 (Diploma)	23	23.958
Bachelor degree (S1)	52	54.167
Magister / Doctoral	9	9.375
Respondent's job		
Private employees	54	56.250
Government employees	22	22.916
Professional (doctor, lecturer, lawyer,etc)	14	14.583
Self-employed	6	6.250
Types of Investments Owned		
Gold	60	62.500
Crypto Assets	32	33.333
Stocks	22	22.917
Mutual funds	19	19.791
Deposits and Securities	15	15.625

Source: Authors' work (2025)

Data Quality Assessment

Table 3. Evaluation of Measurement Models

Construct	Code	Loading Factor	Cronbach's Alpha	CR	AVE
Financial Literacy (X)	X1	0.855	0.890	0.893	0.696
	X2	0.855			
	X3	0.895			
	X4	0.832			
	X5	0.727			
Investor Risk Behavior (Z)	Z1	0.844	0.907	0.909	0.729
	Z2	0.847			
	Z3	0.919			
	Z4	0.864			
	Z5	0.791			
Investment Decision (Y)	Y1	0.871	0.908	0.921	0.731
	Y2	0.894			
	Y3	0.872			
	Y4	0.862			
	Y5	0.769			

Source: Authors' work (2025)

Prior to hypothesis testing, the constructs were evaluated for convergent validity, discriminant validity, and reliability. All factor loadings above the recommended level of 0.70, indicating adequate convergent validity (Hair *et al.*, 2021). The average variance extracted (AVE) values for all constructs were greater than 0.50, indicating good discriminant validity. Furthermore, both Cronbach's Alpha and Composite Reliability (CR) scores exceeded the 0.70 threshold, indicating high internal consistency. Detailed results are presented in Table 3 and Table 4.

Table 4. Discriminant Validity Assessed Using the Fornell–Larcker Criterion

Variable	Financial Literacy	Investment Decision	Investor Risk Behavior
Financial Literacy	0.835		
Investment Decision	0.497	0.855	
Investor Risk Behavior	0.522	0.707	0.854

Source: Authors' work (2025)

Discriminant validity can be determined by measuring the correlations of latent variables to the square root of the Average Variance Extracted (AVE). Due to the Fornell-Larcker criterion, the sum of the square roots of each construct's AVE should be greater than its correlation with the other latent variables (Ghozali, 2021; Santosa, 2018). As shown in Table 4, the square root values of the AVE are consistently greater than the inter-construct connections, indicating that each measurement item in the questionnaire is both trustworthy and beneficial as an assessment tool.

Structural Model Analysis (R-Square & Effect Size)

R-Square (R^2) values represent the percentage of variable explained by the independent variables. The results show that 27.3% of investor risk behavior is explained by financial literacy (R^2 = 0.273), while 52.3% of investment decisions can be explained by financial literacy and investor risk behavior (R^2 = 0.523), indicating a moderate explanatory power (Hair *et al.*, 2019). (See **Table 5**)

Table 5. R-Square Results

Variable	R-Square	R-Square Adjusted
Investor Risk Behavior	0.273	0.265
Investment Decision	0.523	0.512

Source: Authors' work (2025)

The effect size (f^2) analysis provides additional support for the robustness of the structural model. The impact of financial literacy on investor risk behavior is considered substantial, with an effect size of f^2 = 0.375. Similarly, investor risk behavior has a significant impact on investing decisions (f^2 = 0.578). In contrast, the direct effect of financial literacy on investment decisions is minimal, with a relatively low effect size of f^2 = 0.047. (Refer to **Table 6** for detailed results.)

Table 6. F-Square Value

Variable	Financial Literacy	Investor Risk Behavior	Investment Decision
Financial Literacy		0.375	0.047
Investor Risk Behavior			0.578
Investment Decision			

Source: Authors' work (2025)

The research model also shows suitable model fit. As shown in Table 7, the Standardized Root Mean Square Residual (SRMR) value is 0.077, which is lower than the permitted threshold of 0.080, suggesting high model relevance (Hair *et al.*, 2019; Henseler *et al.*, 2015).

Table 7. Model Fit Result

	Saturated Model	Estimated Model
SRMR	0.077	0.077
d_ULS	0.704	0.704
d_G	0.400	0.400
Chi-square	206.578	206.578
NFI	0.822	0.822

Source: Authors' work (2025)

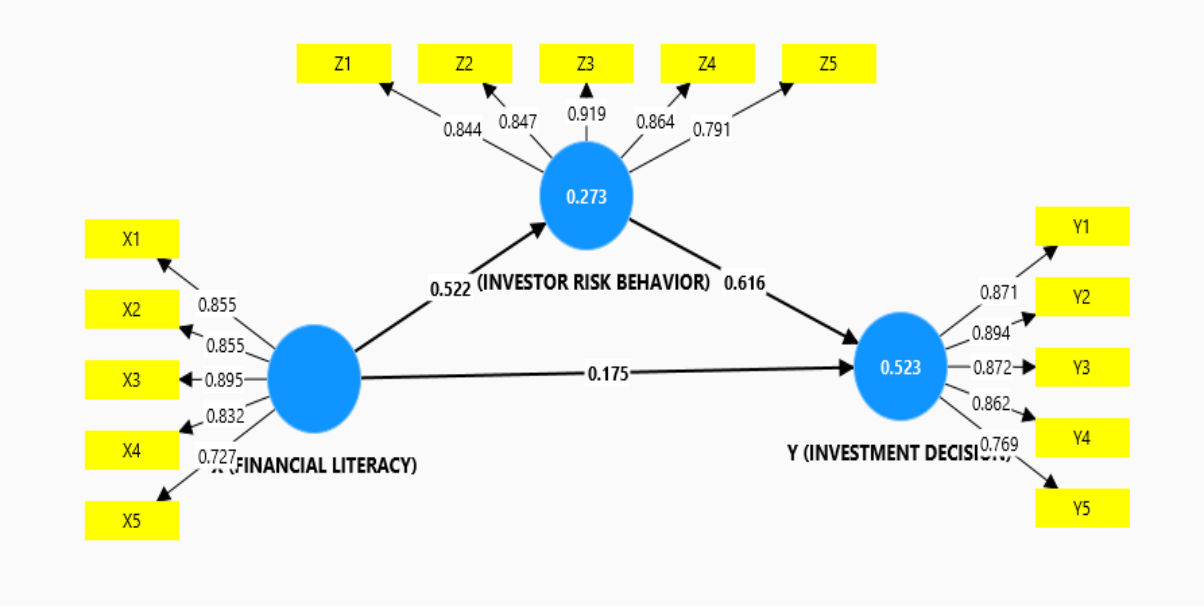

Figure 2. Structural Equation Modeling
Source: Authors' work (2025)

Hypothesis evaluation

The study tested four hypotheses using bootstrapping analysis in SEM-PLS. The results are summarized in Table 9.

Table 9: Path Coefficients and Hypothesis Testing

Hypothesis	Relation	Original Sample	Mean	SD	T-Statistics	P-Values	Description
H1	FL → ID	0.175	0.177	0.103	1.694	0.090	Not Supported
H2	FL → IRB	0.522	0.533	0.078	6.730	0.000	Supported
H3	IRB → ID	0.616	0.617	0.087	7.102	0.000	Supported
H4	FL → IRB → ID	0.322	0.328	0.065	4.925	0.000	Supported

Note: FL = Financial Literacy; IRB = Investor Risk Behavior; ID= Investment Decision

Source: Authors' work (2025)

Interpretation of Findings

The analysis indicates that Hypothesis 1 (H_1) is not supported, as the observed correlation between financial literacy and decisions regarding investments is not statistically noteworthy (p = 0.090). This finding suggests that financial knowledge alone may not substantially influence millennials' investment decisions, potentially due to intervening behavioral or contextual factors. In

contrast, Hypothesis 2 (H_2) is supported, revealing that financial literacy significantly improves investor risk behavior ($p < 0.001$). This means that persons with higher financial literacy are better equipped to identify and respond to investment risks in a more systematic approach. Hypothesis 3 (H_3) is also supported, with investor risk behavior exerting a strong and significant effect on investment decisions ($p < 0.001$), highlighting the importance of risk tolerance in investment activities. Lastly, Hypothesis 4 (H_4) is confirmed, revealing that investor risk behavior positively mediates the relation between financial literacy and decisions regarding investments, implying that financial literacy has a greater impact when combined with a greater degree of risk tolerance.

Discussion

The findings of this study provide important insight into the behavioral mechanisms that underpin investment decisions amongst millennial investors. Each tested hypothesis reflects a pivotal component in the overarching model, illustrating how financial literacy and individual behavioral traits interplay to influence financial decision-making.

Financial Literacy and Investment Decisions

The findings suggest that financial literacy has no substantial effect on investing decisions amongst millennial investors. This conclusion contradicts the generally held belief that those with more financial knowledge make better investing selections (Lusardi & Mitchell, 2014). Prior studies have frequently highlighted that financial literacy enhances individuals' capacity to assess financial risks and select suitable investment instruments (Klapper *et al.*, 2020). Nevertheless, this study indicates that possessing financial knowledge alone may be inadequate in driving real investment decisions, especially among millennials.

One possible explanation for this result is that millennials often rely on social trends, peer recommendations, and digital investment platforms rather than making investment decisions based on their financial knowledge. Studies have shown that this generation exhibits herding behavior, where investment decisions are influenced by the actions of others rather than an independent assessment of risk and return (Statman, 2014; Tavares & Tavares, 2020). Moreover, the accessibility of investment applications has made investment decisions more impulsive, reducing the influence of financial literacy as a decisive factor (Safitri *et al.*, 2025; Sawitri, 2022).

Another reason for this insignificant relationship could be the nature of financial literacy itself. Many financial education programs focus on theoretical knowledge rather than practical investment decision-making skills. Even if millennials possess basic financial knowledge, they may lack the experience or confidence to apply it in real-world investment scenarios (Halik *et al.*, 2023, 2025). As a result, the findings of this study are consistent with previous studies demonstrating that financial literacy, in isolation, is unlikely to contribute to increased financial behavior unless it is accompanied by additional behavioral or psychological factors (Sunarko & Sutrisno, 2025; Thaler, 2016).

Financial Literacy and Investor Risk Behavior

The findings confirm that financial literacy has a positive and significant influence on investor risk behavior, implying that persons with better financial savvy are more likely to participate in reasonable and measured risk-taking. This aligns with previous studies by (Ambarwati & Yoga, 2025; Daud *et al.*, 2023; Katnic & Katnic, 2024), which assert that financially literate individuals demonstrate superior risk assessment capabilities and adopt more prudent investment management strategies.

One possible explanation for this result is that financial literacy enhances an investor's ability to differentiate between high-risk and low-risk investments, enabling them to engage in risk-taking behavior in a more measured manner. Financially literate individuals are less prone to panic selling, overconfidence bias, or emotional decision-making, which are common among inexperienced investors (Shefrin & Statman, 2000). Furthermore, (Kahneman & Tversky, 1979) Prospect Theory supports the idea that well-informed investors assess risk differently compared to those with limited knowledge, allowing them to navigate financial markets more effectively.

Notwithstanding these results, prior studies have indicated that the connection between financial literacy and risk-taking may be non-linear in nature. Foundational financial knowledge may enhance one's awareness of investment risks; however, it does not automatically translate into greater risk tolerance unless accompanied by significant practical experience in managing financial assets (Halik *et al.*, 2023; Tulcanaza-prieto *et al.*, 2025). Future research could explore whether financial literacy interacts with investment experience to influence risk behaviour more profoundly.

Investor Risk Behavior and Investment Decisions

The outcomes of this study support the idea that investor risk behavior has a positive and significant impact on investing decisions. Individuals with higher risk tolerance are more likely to actively participate in financial activities. This outcome is consistent with earlier investigations (Sawitri, 2022; Ul Islam *et al.*, 2024; Yolanda & Tasman, 2020), which suggest that risk-tolerant investors are more likely to diversify their portfolios and engage more proactively in financial markets.

A possible explanation for this finding is that risk tolerance influences an investor's willingness to explore different financial instruments, including high-volatility assets such as stocks and cryptocurrencies. Millennials, in particular, have been observed to engage in risk-taking behaviour due to their exposure to digital investment trends and online financial communities (Statman, 2014).

However, this finding contrasts with research suggesting that excessive risk-taking may lead to suboptimal investment outcomes. (Bajwa, 2025; Shefrin & Statman, 2000) argue that overconfident investors often engage in speculative trading, leading to losses rather than long-term financial stability. The present study suggests that while risk tolerance is beneficial for investment participation, it must be accompanied by financial knowledge and strategic decision-making.

Another factor influencing this relationship is the role of behavioural biases. (Parmitasari *et al.*, 2022; Thaler, 2016) notes that investor decisions are not always rational, as emotions, cognitive biases,

and external influences often play a role. While risk-taking behaviour is necessary for investment participation, future research should examine whether millennials differentiate between calculated risks and impulsive financial decisions.

The Mediating Role of Investor Risk Behavior

The findings show that investor risk behavior is a major and positive mediator in the link between financial literacy and investment decisions. This means that persons with greater financial knowledge are more likely to transform their literacy into actual investment behavior when combined with a higher level of risk tolerance (Molina-garcía *et al.*, 2023). This extends the findings of (Klapper *et al.*, 2020) and (Lusardi & Mitchell, 2014) by demonstrating that risk behaviour serves as a key mechanism in converting financial knowledge into tangible investment decisions.

This result aligns with the Theory of Planned Behavior (Ajzen, 1991), which states that financial literacy alone does not ensure action unless an individual's risk tolerance facilitates investment decision-making. Individuals who understand financial concepts but have a low risk tolerance may avoid investment opportunities due to fear of losses, whereas those who are both knowledgeable and risk-tolerant are more likely to act on their financial literacy.

Previous research has often examined financial literacy and risk behavior as distinct constructs, overlooking their interactive effects on investment decision-making. However, this study underscores the necessity of considering their interplay, revealing that risk tolerance significantly enhances the practical application of financial knowledge. These findings suggest that financial education programs should move beyond merely imparting knowledge; they must also foster individuals' psychological readiness—particularly their confidence and risk tolerance—to effectively translate financial understanding into informed investment actions.

Compared to prior studies that treat financial literacy and risk behavior as separate predictors (Daud *et al.*, 2023; Yolanda & Tasman, 2020), this research provides novelty by empirically validating the interaction between both variables, specifically within the context of Indonesian millennials, a segment underrepresented in previous behavioral finance literature. This dual-pathway insight—where knowledge influences behavior, and behavior enables action—marks a theoretical advancement in understanding investment psychology in digital-native populations.

This research extends to the developing behavioral finance literature by demonstrating how financial cognition and behavioral traits must interact to produce tangible financial outcomes. It validates the importance of modeling mediating and moderating mechanisms, showing that financial literacy alone is insufficient unless behavioral enablers such as risk tolerance are activated. The findings also support an integrated application of Prospect Theory and the Theory of Planned Behavior, offering a more comprehensive framework for future research on millennial investors.

For financial education programs targeting millennials, the findings suggest that training should move beyond theoretical modules and include practical exposure to risk scenarios, emotional

regulation under uncertainty, and real-time decision-making simulations. Policymakers and financial service providers should also recognize that millennial investors respond more effectively to tools that align with their behavioral profiles—such as interactive apps that visualize risk-return trade-offs or platforms offering personalized risk assessments. Emphasizing both knowledge and behavior could lead to more informed and confident millennial investors.

CONCLUSION AND RECOMMENDATION

Conclusion

This study explored into the relationship between financial literacy, investor risk behavior, and investment decisions among millennials in Makassar, Indonesia, with emphasis on the mediating and moderating effects of risk behavior. Using Structural Equation Modeling-Partial Least Squares (SEM-PLS), the findings show that financial literacy has no direct impact on investing decisions. Nonetheless, it greatly improves investor risk behavior, which has a powerful and favorable impact on investment decision-making. Furthermore, the study shows that investor risk behavior modifies the association between financial literacy and investment decisions, implying that financial education has a greater impact when combined with a higher level of risk tolerance. These findings emphasize the necessity of involving psychological and behavioral components into financial education programs for the purpose to better qualify individuals for good investing decision-making.

These findings suggest that millennials' investment behavior is shaped not only by what they know, but also by how they perceive and manage risk. The study contributes to the growing body of literature in behavioral finance by demonstrating that investor risk behavior functions both as a behavioral conduit and an enabling mechanism through which financial literacy is translated into practical investment decisions. This dual role underscores the significance of incorporating behavioral traits—particularly risk tolerance—into models of financial decision-making, especially within the millennial demographic.

Theoretical and Managerial Implications

From a theoretical perspective, this research reinforces the importance of combining cognitive and behavioral constructs in understanding financial decision-making. It supports the integrated use of Prospect Theory and the Theory of Planned Behavior, emphasizing the significance of perceived control and risk interpretation as bridges between knowledge and action.

For practitioners and educators, the findings call for a shift in financial literacy programs from purely informational content to more behaviorally-oriented training. Programs targeting millennials should include risk-based simulations, decision-making exercises under uncertainty, and emotional competence in dealing with market volatility. Financial institutions and fintech platforms may also integrate risk profiling and personalized advisory tools to guide millennial investors based on both their literacy level and risk appetite.

Limitations and Future Research

Although this research provides useful information, numerous limitations should be considered. First, the small sample size and geographic concentration in Makassar could constrain the findings' generalizability for other populations. Second, the cross-sectional research approach shows behavioral relationships at a single point in time, and this restricts the ability to evaluate changes or causal dynamics over time. Third, relying on self-reported data may introduce biases, such as social desirability or overestimation of financial knowledge, affecting the accuracy of the measured constructs.

Future research should consider expanding the sample size and geographic coverage to capture broader behavioral patterns. A longitudinal study would allow for analysis of changes in investor behavior over time and during different market conditions. Moreover, incorporating additional variables such as emotional intelligence, peer influence, digital platform literacy, or financial anxiety could deepen the understanding of investment behavior in younger populations. Comparative studies between millennial and Gen Z investors may also provide valuable insights into generational shifts in financial behavior.

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