Analysis of Risk Tolerance, Overconfidence, Loss Aversion, and Herd Behavior on Investment Decisions Mediated by Financial Literacy

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ABSTRACT

This study examines the influence of risk tolerance, overconfidence, loss aversion, and herd behavior on investment decisions mediated by financial literacy. The conceptual framework is based on behavioral finance, prospect, and planned behavior theories. Data were collected from 256 university students who participated in this study. The research instrument was a structured questionnaire designed to measure risk tolerance, overconfidence, loss aversion, herd behavior, financial literacy, and obtain information related to respondents' investment decisions. After the primary data were collected, SmartPLS analysis was conducted to generate a feasible model. PLS-SEM analysis determined its validity and reliability. Two sub-models were also used: a measurement model (outer model) and a structural model (inner model), both of which play a crucial role in understanding the interactions between the variables in the study. The main finding of this study is that risk tolerance, overconfidence, and loss aversion significantly influence investment decisions, both directly and indirectly through financial literacy as a mediating variable, thereby confirming the four proposed hypotheses. This study shows that the level of risk tolerance, overconfidence, loss aversion, and group behavior partially increase their role in shaping investment preferences and decisions when mediated by financial literacy.

Keywords: *Financial Literacy, Herd Behavior, Investment Decisions, Loss Aversion, Overconfidence, Risk Tolerance.*

ABSTRAK

Penelitian ini mengkaji pengaruh toleransi risiko, kepercayaan diri berlebihan, penghindaran kerugian, dan perilaku kawanan terhadap keputusan investasi yang dimediasi oleh literasi keuangan. Kerangka konseptual didasarkan pada teori keuangan perilaku, prospek, dan perilaku terencana. Data dikumpulkan dari 256 mahasiswa yang berpartisipasi dalam penelitian ini. Instrumen penelitian berupa kuesioner terstruktur yang dirancang untuk mengukur toleransi risiko, kepercayaan diri berlebihan, penghindaran kerugian, perilaku kawanan, literasi keuangan, dan memperoleh informasi terkait keputusan investasi responden. Setelah data primer dikumpulkan, analisis SmartPLS dilakukan untuk menghasilkan model yang layak. Analisis PLS-SEM menentukan validitas dan reliabilitasnya. Dua sub-model juga digunakan: model pengukuran (model luar) dan model struktural (model dalam), yang keduanya memainkan peran penting dalam memahami interaksi antar variabel dalam penelitian. Temuan utama penelitian ini adalah bahwa toleransi risiko, kepercayaan diri berlebihan, dan penghindaran kerugian secara signifikan memengaruhi keputusan investasi, baik secara langsung maupun tidak langsung melalui literasi

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keuangan sebagai variabel mediasi, sehingga mengkonfirmasi keempat hipotesis yang diajukan. Studi ini menunjukkan bahwa tingkat toleransi risiko, kepercayaan diri yang berlebihan, penghindaran kerugian, dan perilaku kelompok sebagian meningkatkan peran mereka dalam membentuk preferensi dan keputusan investasi ketika dimediasi oleh literasi keuangan.

***Kata kunci**: Literasi Keuangan, Perilaku Kelompok, Keputusan Investasi, Penghindaran Kerugian, Kepercayaan Diri Berlebihan, Toleransi Risiko.*

INTRODUCTION

The development of the Indonesian financial market over the past decade has shown a positive trend, with increasing participation of the younger generation in investment. Data from the Indonesian Central Securities Depository shows the number of retail investors growing rapidly, with the under-30 age group dominating at over 55% (KSEI, 2024). This confirms that students are a strategic segment in developing national financial inclusion. However, students' investment decisions are often not based entirely on rational considerations but rather influenced by psychological factors and financial literacy levels. In classical finance, investment decisions are explained through Expected Utility Theory Von Neumann and Morgenstern (1953) and the Efficient Market Hypothesis by Fama (1970), which assumes that investors are rational.

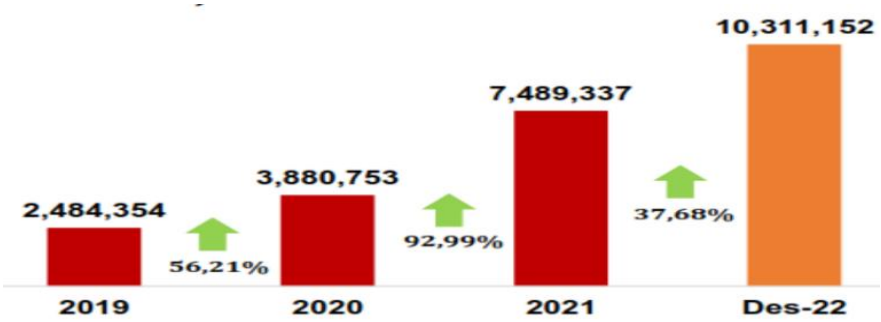

Figure 1. The Number of Capital Market Investors

However, actual data indicate that investors are frequently impacted by psychological biases, which has led to widespread criticism of these views. Behavioral finance explains that psychological factors such as risk tolerance, overconfidence, loss aversion, and herd behavior play a significant role in investment decision-making (Tversky & Kahneman, 1979; Barber & Odean, 2001). A key component of financial decision-making is financial literacy. High financial literacy enables people to recognize dangers, comprehend financial concepts, and efficiently manage portfolios. Conversely, low financial literacy can actually strengthen the influence of psychological biases, resulting in suboptimal investment decisions (Lusardi & Messy, 2023). Therefore, financial literacy has the potential to act as a mediating variable, bridging the influence of psychological factors on students' investment decisions.

Studies on investment behavior using a behavioral finance approach have been conducted at both the international and national levels. Tversky and Kahneman (1979), using Prospect Theory, emphasized the role of loss aversion in uncertain situations. Barber and Odean (2001) showed that overconfidence encourages excessive trading behavior, which actually reduces investment performance. Meanwhile, Sahi (2017) found that herd behavior makes novice investors tend to follow market trends without rational analysis. Research in Indonesia also shows consistent results. Anisa (2023) revealed that risk tolerance and overconfidence positively influence students' investment decisions. Kartini and Nugraha (2015) added that loss aversion and herd behavior tend to reduce the quality of investment decisions. However, these studies typically do not look at the function of financial literacy as a mediating variable, instead focusing primarily on the

direct association between psychological characteristics and investing decisions. This study is unique in two respects. First, it incorporates financial literacy as a mediator with psychological factors (risk tolerance, overconfidence, loss aversion, and herd mentality), a technique that is infrequently used with Indonesian university students. Second, it provides a practical contribution by offering a conceptual model that can support financial literacy programs in higher education, thus improving the quality of students' investment decisions. Thus, the purpose of this study is to investigate the direct impact of financial literacy on investment decisions, analyze the simultaneous effects of risk tolerance, overconfidence, loss aversion, and herd behavior on students' investment decisions, and empirically test the mediating role of financial literacy in the relationship between behavioral factors and students' investment decisions.

LITERATURE REVIEW & HYPOTHESIS DEVELOPMENT

The Effect of Risk Tolerance and Overconfidence on Investment Decision

Risk tolerance is a central concept in behavioral finance and is closely related to Prospect Theory, which explains how individuals evaluate risk and uncertainty, particularly under conditions of potential gains and losses (Kahneman & Tversky, 2013; Harrison & Swarthout, 2023; Afzal, 2025). Financial risk tolerance reflects a psychological dimension of decision-making under ambiguity, where individuals estimate both the likelihood and outcomes of uncertain events (Awais et al., 2016). Empirical evidence consistently shows that higher risk tolerance is strongly associated with investment in high-risk assets such as stocks and cryptocurrencies and is often the most powerful predictor of risky investment behavior. Risk tolerance is shaped by demographic and psychological factors, including age, employment status, and optimism (Kusmayadi et al., 2022). Nguyen et al. (2016) find a positive relationship between client risk tolerance and investment decision-making, indicating that individuals with higher risk tolerance tend to make bolder investment choices. Such investors are more willing to accept higher levels of uncertainty in pursuit of greater expected returns, whereas individuals with low risk tolerance prefer safer assets with lower potential returns.

Overconfidence is another prominent behavioral bias that significantly influences investment decisions. It is defined as an individual's tendency to overestimate personal knowledge, skills, and predictive abilities while underestimating investment risks (Pikulina et al., 2017). Overconfident investors often perceive their judgments as more accurate than they actually are, leading them to engage in aggressive trading strategies. Prior studies indicate that younger males and more experienced investors are more prone to overconfidence (Barber & Odean, 2001). Empirical findings by Seraj et al. (2022) demonstrate that overconfidence has a positive and significant effect on investment decision-making. However, recent evidence suggests that overconfidence is intensified by easy access to online trading platforms, which encourages excessive trading activity. This behavior frequently results in lower portfolio performance due to higher transaction costs and inadequate diversification (Yu & Kim, 2021; Saleem et al., 2022).

H1: Risk tolerance has a positive effect on investment decisions.
H2: Overconfidence has a positive effect on investment decisions.

The Influencing of Loss Aversion and Herd Behavior on Investment Decisions

Herd behavior represents another influential psychological bias affecting investment decisions, characterized by the tendency of individuals to follow the actions of others rather than relying on independent analysis (Chen, 2021; Ayoub & Balawi, 2022). This behavior is often driven by informational motives, where investors assume that others possess superior knowledge, as well as by psychological pressure to conform. Herding can amplify market inefficiencies, contributing to asset price bubbles and sudden market crashes (Bikhchandani et al., 1992; Song, 2025). Its impact becomes more pronounced during periods of crisis, such as the COVID-19 pandemic, and in markets dominated by retail investors who are highly active on social media platforms, highlighting the growing

role of social influence in modern investing (Mahendra & Santoso, 2023). Qasim et al. (2019) demonstrate that herd behavior exerts a strong effect on investment decisions. Moreover, the actions of institutional investors often intensify herding tendencies and can significantly shape individual investor behavior, reinforcing collective market movements (Wang & Nuangjamnong, 2022).

Loss aversion is a fundamental concept in behavioral finance, describing the tendency of investors to experience the discomfort of financial losses more intensely than the satisfaction derived from equivalent gains (Kahneman & Tversky, 1913; Shah & Malik, 2021). As a result, investors often exhibit biased decision-making patterns, such as selling profitable assets prematurely while retaining underperforming stocks for extended periods, a behavior commonly known as the disposition effect. Recent empirical studies in the 2020s continue to document the persistence of this phenomenon across various markets, particularly in emerging economies. Investors with high levels of loss aversion are more likely to respond emotionally to unfavorable market movements, which can lead to irrational actions such as panic selling during periods of heightened volatility (Hasan et al., 2021). Such behavior undermines rational portfolio management and may reduce long-term investment performance. Consistent with this view, Cherono et al. (2019) find that loss aversion has a significant influence on investment decisions, confirming its critical role in shaping investor behavior under conditions of uncertainty.

H3: Herd behavior has a positive effect on investment decisions.
H4: Loss aversion has a positive effect on investment decisions.

The Effect of Financial Literacy on Investment Decisions

Financial literacy refers to an individual's capacity to understand and apply essential financial knowledge and skills related to money management, financial planning, and the use of financial products (Kausar, 2025). It reflects the ability to make informed and effective decisions regarding the allocation and utilization of financial resources. Early evidence highlights that structured financial education programs significantly enhance individuals' financial decision-making quality and saving behavior, enabling them to manage resources more efficiently over time (Lusardi, 2008). In increasingly volatile and uncertain financial markets, financial literacy plays a crucial role in protecting individuals from substantial losses by improving their ability to assess risk, evaluate alternatives, and respond appropriately to changing market conditions. Individuals with higher levels of financial knowledge are generally better equipped to use financial instruments responsibly and align financial choices with long-term objectives.

Beyond its technical role, financial literacy also contributes to mitigating behavioral biases that often distort investment decisions. Well-informed investors are more capable of recognizing and controlling tendencies such as herd mentality and overconfidence, which frequently lead to irrational investment behavior. Investors who combine higher risk tolerance with strong financial literacy tend to pursue diversified portfolios that align with their risk profiles, rather than engaging in speculative or impulsive decision-making (Samsuri et al., 2019; Harahap et al., 2022). Empirical evidence supports this relationship, as Seraj et al. (2022) demonstrate that financial literacy has a significant influence on investment decisions. Moreover, individuals with higher financial literacy consistently exhibit better financial behaviors, including systematic saving and retirement planning, while those with limited financial knowledge are more prone to poor investment choices that adversely affect their financial well-being (Gilenko & Chernova, 2021).

H5: Financial literacy has a positive effect on investment decisions.

Financial Literacy as a Mediating Variable

Investment decisions refer to the process by which investors select assets, determine capital allocation, and establish a timeframe for investing. In a behavioral context, these decisions often deviate from classical rationality models (such as Modern Portfolio

Theory). Early literature was dominated by theories that assumed rational investors. However, Behavioral Finance argues that psychological and emotional factors significantly influence investment choices (Shefrin & Statman, 1985; Riyadi et al., 2024). Investment decisions are often measured by returns, portfolio selection, and trading frequency. In recent literature (2020–2024), the focus has shifted to how behavior interacts with the digital and post-pandemic investment environment, using more sophisticated methodologies.

The mediating role of financial literacy represents a critical pathway through which behavioral biases are transformed into actual investment outcomes. Research has demonstrated that financial literacy plays a significant mediating role between behavioral biases and investment decisions, suggesting that individuals with higher financial knowledge can better process information and mitigate the negative effects of psychological biases (Hussain & Rasheed, 2022). Evidence from Generation Z investors shows that financial literacy mediates the impact of both financial knowledge and overconfidence on investment decisions, with risk tolerance serving as a complementary mediating mechanism (Sutejo et al., 2024). Furthermore, financial literacy amplifies financial risk tolerance, which ultimately leads to improved financial behavior, indicating that the educational component of financial literacy strengthens investors' capacity to make sound decisions under uncertainty (Song et al., 2023).

Most research focuses on the direct influence of behavior on investment decisions. The extent to which financial literacy functions as a mediation mechanism for this impact is the main gap that this study attempts to fill. By investigating whether financial literacy might be a useful tool for enhancing the quality of investing decisions, this study will significantly contribute to the studies on risk tolerance, overconfidence, herd behavior, and loss aversion.

H6: Financial literacy mediated the effect of risk tolerance on investment decisions.
H7: Financial literacy mediated the effect of overconfidence on investment decisions.
H8: Financial literacy mediated the effect of herd behavior on investment decisions.
H9: Financial literacy mediated the effect of loss aversion on investment decisions.

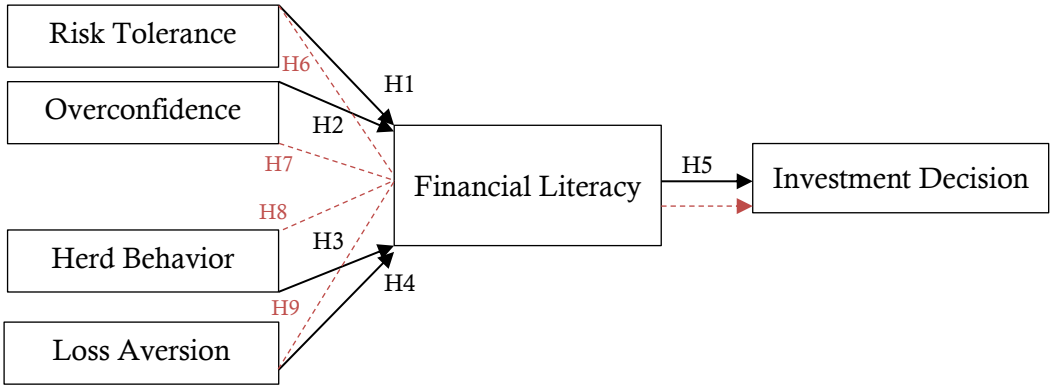

Figure 1. Research Model

Figure 1 illustrates the conceptual framework of this study, which proposes that risk tolerance, overconfidence, loss aversion, and herd behavior have direct effects on financial literacy as well as direct effects on investment decisions. financial literacy has a direct effect on investment decisions. In addition, financial literacy directly influences investment decisions. More importantly, the framework explicitly indicates that financial literacy mediates the relationship between behavioral factors and investment decisions, meaning that risk tolerance, overconfidence, loss aversion, and herd behavior also affect investment decisions indirectly through financial literacy. This model highlights financial literacy as a key mechanism that links investors' psychological characteristics with their final investment decisions.

RESEARCH METHODS

With financial literacy positioned as a mediating variable, this study uses a quantitative research design with an explanatory approach in order to methodically investigate and explain the causal linkages between psychological characteristics and students' investment decisions. The psychological variables investigated in this research consist of risk tolerance, overconfidence, loss aversion, and herd behavior, which are derived from behavioral finance perspectives and are expected to influence how individuals make investment decisions. By adopting an explanatory framework, this study seeks not only to identify relationships among variables but also to clarify the mechanism through which financial literacy transmits the effects of psychological traits on investment decision-making.

The population of this study comprises active university students in the Bekasi area who have prior experience or involvement in investment activities. These investment activities include participation in capital market instruments such as stocks, mutual funds, and bonds, as well as other types of financial assets. To ensure that respondents possess sufficient exposure and understanding of investment-related issues, a purposive sampling technique was applied. The sampling criteria required respondents to be active students who had completed at least three semesters of study and who had knowledge of, or practical experience in, investing. The minimum sample size was determined by referring to the guidelines proposed by Hair et al. (2018), which are commonly used in studies employing the Structural Equation Modeling–Partial Least Squares (SEM-PLS) approach.

Google Forms was used to distribute an online survey that was used to gather primary data for this study. A structured questionnaire with a Likert scale was used as the research tool to gauge respondents' opinions on each research variable. Only respondents who satisfied the predetermined criteria were allowed to participate in the study thanks to the effective data collection made possible by the use of an online questionnaire.

Using SmartPLS 4.0 software, the Structural Equation Modeling (SEM) method based on Partial Least Squares (PLS-SEM) was used to analyze the data. The assessment of the measurement model (outer model) to determine the validity and reliability of the indicators and the assessment of the structural model (inner model) to investigate the proposed relationships between variables and the mediating role of financial literacy comprised the two primary phases of the analysis process.

RESULTS

This section presents the empirical results obtained from the data analysis conducted in this study. The discussion begins with a descriptive overview of the respondents' profiles to provide a general understanding of the sample characteristics. As shown in Table 1, the respondents are described based on gender, monthly income level, and the number of investment products owned, which together reflect their demographic and investment-related backgrounds.

Table 1. Profile of Respondents

Characteristic	Items	Total	Percentage
Gender	Male	105	41%
	Female	151	59%
Income Per Month (IDR)	< 3.000.000	102	4%
	3.000.000 - 5.000.000	130	51%
	5.000.000 - 10.000.000	22	8%
	> 10.000.000	2	1%
Amount of Investment Product	no investment	35	14%
	1 investment	78	30%
	2 investment	97	38%
	> 2 investment	46	18%

The outer model analysis was conducted by examining the factor loading values of each indicator (Hair et al., 2018). Indicators are considered valid if they have a loading value > 0.70, while indicators with a loading value < 0.70 must be removed from the model because they cannot adequately represent the construct. The external model's results, as displayed in Table 2, reveal that the convergent validity conditions have been satisfied.

Table 2. Convergent Validity

Variable	Risk Tolerance	Overconfidence	Loss Aversion	Herd Behavior	Financial Literacy	Investment Decisions
Risk Tolerance	0.713					
	0.815					
	0.768					
	0.722					
	0.767					
Overconfidence		0.919				
		0.910				
		0.878				
		0.776				
Loss Aversion			0.822			
			0.835			
			0.889			
			0.837			
Herd Behavior				0.721		
				0.754		
				0.733		
				0.778		
Financial Literacy					0.775	
					0.834	
					0.791	
					0.787	
Investment Decisions						0.768
						0.878
						0.798
						0.767

According to Table 3, the construct reliability test shows that every latent variable satisfies the necessary reliability requirements. The reliability of the indicators utilized in each construct is confirmed by the fact that all constructs have Cronbach's Alpha values over 0.70 and Composite Reliability values (rho_a and rho_c) exceeding 0.70. Additionally, all constructs have Average Variance Extracted (AVE) values greater than 0.50, showing acceptable convergent validity.

Table 3. Validity Test

Variable	Cronbach's Alpha	Composite Reliability (Rho_A)	Composite Reliability (Rho_C)	Average Variance Extracted (AVE)
Investment Decisions	0.823	0.830	0.897	0.691
Risk Tolerance	0.821	0.829	0.880	0.582
Overconfidence	0.901	0.909	0.912	0.757
Loss Aversion	0.811	0.821	0.832	0.731
Herd Behavior	0.792	0.802	0.810	0.697
Financial literacy	0.799	0.823	0.858	0.635

In particular, risk tolerance exhibits a Cronbach's Alpha of 0.821 and an AVE of 0.582, whereas the investment decisions construct has a Cronbach's Alpha value of 0.823 and an AVE of 0.691. With an AVE of 0.757 and a Cronbach's Alpha of 0.901, the overconfidence construct exhibits strong reliability. With an AVE of 0.731 and a Cronbach's Alpha value of 0.811, loss aversion also satisfies the validity and reliability

requirements. Herd behavior also has an AVE of 0.697 and a Cronbach's Alpha of 0.792. Finally, financial literacy has a Cronbach's Alpha score of 0.799 and an AVE of 0.635, indicating acceptable reliability and convergent validity. These findings attest to the validity and dependability of every construct employed in this investigation for additional structural model research.

Table 4. Path Coefficients between the Variables (Direct Effects)

Path Relationship	β	M	STDEV	T-Statistics	P-Values	Decisions
Risk Tolerance → Investment Decisions	0.524	0.527	0.531	9.12	0.000	Supported
Overconfident → Investment Decisions	0.356	0.358	0.361	7.33	0.000	Supported
Herd Behaviour → Investment Decisions	0.061	0.064	0.068	1.609	0.165	Not Supported
Loss Aversion → Investment Decisions	0.378	0.382	0.384	7.62	0.000	Supported
Financial Literacy → Investment Decisions	0.586	0.588	0.591	9.61	0.000	Supported

Table 4 shows that risk tolerance, overconfidence, and loss aversion influence investment decisions, while herd behavior does not. This is demonstrated by the analysis in Table 4. The p-values for risk tolerance, overconfidence, and loss aversion are less than 0.05. T-statistic risk tolerance: 9.12; t-statistic overconfidence: 7.33; T-statistic loss aversion: 7.62; t-statistic financial literacy: 9.61. Herd behavior does not influence investment decisions, as indicated by a p-value > 0.05 and a t-statistic of 1.609.

Table 5. Path Coefficients between the Variables (Indirect Effects)

Relationships	β	M	STDEV	T-Statistics	P-Values	Decisions
Risk Tolerance→ Financial Literacy → Investment Decisions	0.301	0.302	0.041	8.10	0.000	Partial Mediation
Overconfident→ Financial Literacy→ Investment Decisions	0.301	0.303	0.039	7.33	0.000	Partial Mediation
Herd Behaviour→ Financial Literacy→ Investment Decisions	0.30	0.032	0.034	6.895	0.000	Partial Mediation
Loss Aversion→ Financial Literacy→ Investment Decisions	0.301	0.303	0.084	7.62	0.000	Partial Mediation

According to Table 5, risk tolerance, overconfidence, herd behavior, and loss aversion, partially mediated by financial literature, can influence investment decisions. This is shown in Table 5 with p-values for all independent variables less than 0.05. T-statistic risk tolerance: 8.10; t-statistic overconfidence: 7.33; t-statistic herd behaviour: 6.895; t-statistic loss aversion: 7.62.

DISCUSSION

The analysis of the research results is supported by several previous researchers. For those looking for a simple way to make an investment decision, risk tolerance is a preference item that is stated to be effective (Kwak & Grable, 2024). Overconfidence, equipping individual investors for informed decision making (Maheshwari et al., 2025). These findings align with behavioral finance theory, which explains herding as a cognitive and emotional bias heightened by market uncertainty, thus preventing it from influencing investment decisions (Syukur et al., 2025). This study concludes that financial literacy influences investors' investment decisions. These findings will enable regulatory authorities to help investors prevent financial losses by providing adequate financial information (Uddin & Faruqi, 2024)

The findings of this study provide compelling evidence for the mediating role of financial literacy in the relationship between behavioral biases and investment decisions. Agarwal et al. (2025) demonstrate that financial literacy shows a notable positive correlation with investment decisions, suggesting that individuals with higher financial knowledge possess greater rational decision-making capabilities. This is consistent with the findings of Bhatia et al. (2024), who highlight the transformative power of financial education in transforming psychological tendencies into sound investment practices and substantiate the crucial role of financial literacy in enabling investors to make informed decisions through its mediating function.

Regarding risk tolerance, Yanti and Endri (2024) provide evidence that financial literacy mediates financial behavior, overconfidence, and risk perception in investment decisions among millennial investors. These findings suggest that financial literacy operates through dual pathways both directly influencing investment decisions and indirectly through enhancing investors' ability to appropriately assess and manage risk.

The overconfidence bias findings are particularly noteworthy. Maheshwari and Samantaray (2025) demonstrate that overconfidence acts as a significant mediator between financial literacy and investment behavior, noting that people with high confidence but limited knowledge bases tend to make poor investment decisions. However, Dinarjito (2023) provides contrasting evidence that financial literacy successfully mediates the relationship between overconfidence and investment decisions, indicating that adequate financial education can neutralize the negative effects of overconfidence by grounding investors' self-assurance in actual competence rather than unfounded optimism.

For herding behavior, Agarwal et al. (2025) show that financial literacy substantially reduces susceptibility to herding mentality, with higher literacy levels associated with decreased herding behavior. Adil et al. (2022) support this, demonstrating that more financially literate investors are better equipped to resist social pressure and market sentiment. This is especially relevant in contemporary digital markets where herding behavior manifests prominently during market turbulence.

Van Dolder and Vandenbroucke (2024) demonstrate that investment decisions are significantly influenced by loss aversion, with the pain of loss being felt more intensely than the pleasure of comparable gain. This study, however, shows that this strong psychological bias is mitigated by financial literacy. Loss aversion has a statistically negligible direct impact on investment choices, but when financial literacy acts as a mediator, its indirect impact through risk tolerance becomes statistically significant, indicating that financial education changes how investors perceive possible losses.

Comparing these results with classical finance theory reveals significant departures from traditional assumptions of investor rationality. Prabhakar and Varma (2025) note that while traditional finance theories, such as the Efficient Market Hypothesis, argue that investors are rational, evidence from financial crises demonstrates how investor psychology and biases are responsible for market actions. This study's identification of the mediating role of financial literacy provides a useful link between behavioral and classical finance frameworks, implying that although psychological biases are a part of human decision-making, their detrimental effects can be significantly reduced through focused financial education. These findings have important implications for both theoretical development and practical application in behavioral finance, particularly in understanding how financial literacy serves not merely as an information tool but as a cognitive framework that restructures the relationship between psychological biases and investment outcomes.

CONCLUSION

This study demonstrates that risk tolerance, overconfidence, herd behavior, and loss aversion are partially mediated by financial literacy, as financial literacy fundamentally influences how individuals process risk, manage confidence levels, and respond to fear in making investment decisions. The findings reveal that while these behavioral biases tend

to influence investment decisions directly and can emerge independently of financial literacy levels, the degree of financial literacy can significantly strengthen or reduce their influence on investment outcomes. From a theoretical perspective, these findings contribute to behavioral finance literature by providing empirical evidence that bridges classical finance assumptions of rationality with behavioral realities of psychological biases. Financial literacy emerges not merely as an information tool but as a cognitive framework that restructures the relationship between psychological biases and investment decisions, offering a practical mechanism through which irrational tendencies can be mitigated.

The practical implications are substantial for financial educators, policymakers, and investment advisors. Regulatory authorities can leverage these insights to design targeted financial education programs that specifically address behavioral biases, thereby helping investors prevent financial losses through adequate information provision. Investment professionals should incorporate financial literacy assessments into their client profiling processes, recognizing that education can transform potentially harmful biases like overconfidence and herding into more measured decision-making approaches. However, this study has limitations that warrant acknowledgment. The cross-sectional nature of the data limits causal inferences, and the sample may not fully represent diverse investor populations across different markets and cultural contexts. Future research should employ longitudinal designs to track how financial literacy development influences behavioral biases over time. Additionally, investigating the differential effects of specific financial literacy components (e.g., numerical skills versus conceptual understanding) on various behavioral biases would provide more granular insights for designing effective educational interventions. Exploring how digital platforms and fintech innovations interact with financial literacy in moderating behavioral biases represents another promising avenue for future investigation.

REFERENCES

[1] Adil, M., Singh, Y., & Ansari, M. S. (2022). How financial literacy moderate the association between behaviour biases and investment decision?. *Asian Journal of Accounting Research*, *7*(1), 17-30.

[2] Afzal, M. F. (2025). Loss aversion, risk perception, and household financial decisions in Pakistan: A prospect theory assessment. *Asian Finance Research Journal (AFRJ)*, *2*(4), 1-23.

[3] Agarwal, A., Rao, N. M., & Nogueira, M. C. (2025). Financially savvy or swayed by biases? The impact of financial literacy on investment decisions: a study on Indian retail investors. *Journal of Risk and Financial Management*, *18*(6), 322-324.

[4] Anisa, S., & Armin, R. (2023). *Pengaruh financial knowledge, financial attitude, locus of control dan income terhadap perilaku manajemen keuangan pada umkm sub sektor kuliner di Kecamatan Trawas*. Mojokerto: Universitas Islam Majapahit (Bachelor dissertation).

[5] Awais, M., Laber, M. F., Rasheed, N., & Khursheed, A. (2016). Impact of financial literacy and investment experience on risk tolerance and investment decisions: Empirical evidence from Pakistan. *International Journal of Economics and Financial Issues*, *6*(1), 73-79.

[6] Ayoub, A., & Balawi, A. (2022). Herd behavior and its effect on the stock market: An economic perspective. *Calitatea*, *23*(188), 285-289.

[7] Barber, B. M., & Odean, T. (2001). Boys will be boys: Gender, overconfidence, and common stock investment. *The Quarterly Journal of Economics*, *116*(1), 261–292.

[8] Bhatia, M., Arora, R., & Mehrotra, V. (2024). Interplay between financial literacy, firm's characteristics, behavioural biases and investment choices—a conditional mediation model. *Global Business Review*, *4*(5), 78-79.

[9] Bikhchandani, S., Hirshleifer, D., & Welch, I. (1992). A theory of fads, fashion, custom, and cultural change as informational cascades. *Journal of Political Economy, 100*(5), 992-1026.

[10] Chen, Z. (2021, March). Research and analysis on herd behavior of individual investors. In *6th International Conference on Financial Innovation and Economic Development (ICFIED 2021)* (pp. 190-194). Paris: Atlantis Press.

[11] Cherono, I., Olweny, T., & Nasieku, T. (2019). Investor behavior biases and stock market reaction in Kenya. *Journal of Applied Finance and Banking*, *9*(1), 147-180.

[12] Dinarjito, A. (2023). The influence of financial behavior on investment decisions with financial literacy as a mediation variable: Case study in PKN STAN learning assignment students. *Jurnal Pajak dan Keuangan Negara*, *5*(1), 128-143.

[13] Fama, E. F. (1970). Efficient capital markets: A review of theory and empirical work. *The Journal of Finance*, *25*(2), 383–417.

[14] Gilenko, E., & Chernova, A. (2021). Saving behavior and financial literacy of Russian high school students: An application of a copula-based bivariate probit-regression approach. *Children and Youth Services Review*, *127*(1), 106-122.

[15] Hair J. J.; Sarstedt M.; Ringle C. M., J. F. R. (2018). When to use and how to report the results of PLS-SEM. *European Business Review*, *31*(1), 2–24.

[16] Harahap, S., Thoyib, A., Sumiati, S., & Djazuli, A. (2022). The impact of financial literacy on retirement planning with serial mediation of financial risk tolerance and saving behavior: Evidence of medium entrepreneurs in Indonesia. *International Journal of Financial Studies*, *10*(3), 66-72.

[17] Harrison, G. W., & Swarthout, J. T. (2023). Cumulative prospect theory in the laboratory: A reconsideration. In *Models of risk preferences: Descriptive and normative challenges* (pp. 107-192). New York: Emerald Publishing Limited.

[18] Hasan, S., Hussain, F., & Al-Qudah, S. (2021). The influence of investor behavioural biases on investment decision-making during the covid-19 pandemic. *Jurnal Ekonomi Malaysia, 55*(2), 1-17.

[19] Hussain, S., & Rasheed, A. (2022). Empirical study on financial literacy, investors' personality, overconfidence bias and investment decisions and risk tolerance as mediator factor. *Jurnal Ilmiah Akuntansi Kesatuam, 4*(4), 56-59.

[20] Kahneman, D., & Tversky, A. (2013). *Prospect theory: An analysis of decision under risk. In Handbook of the fundamentals of financial decision making: Part I* (pp. 99-127). Singapore: World Scientific Publishing.

[21] Kartini, K., & Nugraha, N. F. (2015). Pengaruh illusions of control, overconfidence dan emotion terhadap pengambilan keputusan investasi pada investor di Yogyakarta. *AJIE (Asian Journal of Innovation and Entrepreneurship)*, *4*(2), 114–122.

[22] Kausar, A. (2025). Paylater adoption as a mediator between financial literacy, risk perception, and financial behavior. *Jurnal Ilmiah Manajemen Kesatuan, 4*(5), 67-69.

[23] Kusmayadi, K., et al. (2022). The effect of financial literacy, risk tolerance, and investment experience on investment decisions: the moderating role of overconfidence. *Journal of Risk and Financial Management, 15*(8), 350-358.

[24] Kwak, E. J., & Grable, J. E. (2024). A comparison of financial risk-tolerance assessment methods in predicting subsequent risk tolerance and future portfolio choices. *Risks*, *12*(11), 170-179.

[25] Lusardi, A. (2008). *Household saving behavior: The role of financial literacy, information, and financial education programs* (No. w13824). New York: National Bureau of Economic Research.

[26] Lusardi, A., & Messy, F.-A. (2023). The importance of financial literacy and its impact on financial wellbeing. *Journal of Financial Literacy and Wellbeing*, *1*(1), 1–11.

[27] Mahendra, S., & Santoso, A. (2023). The role of financial literacy in reducing herd behavior among retail investors in the indonesian stock market. *The Indonesian Accounting Review, 13*(1), 1-18.

[28] Maheshwari, H., & Samantaray, A. K. (2025). RETRACTED: Beyond instinct: the influence of artificial intelligence on investment decision-making among Gen Z investors in emerging markets. *International Journal of Accounting & Information Management*, *4*(6), 1-19.

[29] Nguyen, L. T., Gallery, G., & Newton, C. (2016). The influence of financial risk tolerance on investment decision-making in a financial advice context. *Australasian Accounting, Business and Finance Journal*, *10*(3), 13-25.

[30] Pikulina, E., Renneboog, L., & Tobler, P. N. (2017). Overconfidence and investment: An experimental approach. *Journal of Corporate Finance*, *43*(1), 175-192.

[31] Prabhakar, M., & Varma, S. (2025). The role of overconfidence and herding in stock market bubbles and crashes. *Academy of Marketing Studies Journal, 29*(6), 1-17.

[32] Qasim, M., Hussain, R., Mehboob, I., & Arshad, M. (2019). Impact of herding behavior and overconfidence bias on investors' decision-making in Pakistan. *Accounting*, *5*(2), 81-90.

[33] Riyadi, M. P., & Hadyarti, V. (2024). The effect of financial knowledge, financial literacy, and financial capability on MSME performance. *Jurnal Ilmiah Manajemen Kesatuan, 5*(6), 114-117.

[34] Saleem, A., et al. (2022). Behavioral biases, financial literacy and investment decisions in the stock market: a mediation and moderation approach. *Journal of Behavioral and Experimental Finance, 34*(4), 100-110

[35] Samsuri, A., Ismiyanti, F., & Narsa, I. M. (2019). Effects of risk tolerance and financial literacy to investment intentions. *International Journal of Innovation, Creativity and Change*, *10*(9), 40-54.

[36] Seraj, A. H. A., Alzain, E., & Alshebami, A. S. (2022). The roles of financial literacy and overconfidence in investment decisions in Saudi Arabia. *Frontiers in psychology*, *13*(1), 1005075.

[37] Shah, I., & Malik, I. R. (2021). Role of regret aversion and loss aversion emotional biases in determining individual investors' trading frequency: moderating effects of risk perception. *Humanities & Social Sciences Reviews*, *4*(6), 2395-6518.

[38] Shefrin, H., & Statman, M. (1985). The disposition to sell winners too early and ride losers too long: Theory and evidence. *The Journal of Finance, 40*(3), 777-790

[39] Song, C. L., Pan, D., Ayub, A., & Cai, B. (2023). The interplay between financial literacy, financial risk tolerance, and financial behaviour: the moderator effect of emotional intelligence. *Psychology Research and Behavior Management*, 535-548.

[40] Song, G. H. (2025). Unraveling stock market crashes: insights from behavioral psychology. *Review of Behavioral Finance*, *17*(2), 217-233.

[41] Sutejo, B. S., Sumiati, S., Wijayanti, R., & Ananda, C. F. (2024). Do Emotions influence the investment decisions of generation z Surabaya investors in the covid-19 pandemic era? does financial risk tolerance play a moderating role?. *Scientific Papers of the University of Pardubice, Series D: Faculty of Economics and Administration*, *31*(2), 17-25.

[42] Syukur, A., Amron, A., Riyanto, F., Putra, F. I. F. S., & Pangemanan, R. R. (2025). Generational insights into herding behavior: The moderating role of investment experience in shaping decisions among generations X, Y, and Z. *International Journal of Financial Studies*, *13*(3), 176-180.

[43] Tversky, A., & Kahneman, D. (1979). *Prospect theory: An analysis of decision under risk*. Paris: David K. Levine.

[44] Uddin, M., & Faruqi, S. S. (2024). Power of pardon in the shari'ah anda its applicability in common law. *Jurnal Syariah*, *32*(2), 246–274.

[45] Van Dolder, D., & Vandenbroucke, J. (2024). Behavioral risk profiling: Measuring loss aversion of individual investors. *Journal of banking & finance*, *168*(2), 107-113.

[46] Von Neumann, J., & Morgenstern, O. (1953). *Theory of games and economic behavior*. New Jersey: Princeton University Press.

[47] Wang, P., & Nuangjamnong, C. (2022). Determinant factors of overconfidence, herding behavior, and investor elements on investment decision making in China. *Universal Journal of Financial Economics*, *1*(1), 23-42.

[48] Yanti, F., & Endri, E. (2024). Financial behavior, overconfidence, risk perception and investment decisions: The mediating role of financial literacy. *International Journal of Economics and Financial Issues*, *14*(5), 289-293.

[49] Yu, H., & Kim, T. (2021). The effects of status on the performance of portfolio diversification strategies. *Journal of Strategy and Management*, *14*(2), 246-258.