Investment Literacy, Herding, Experience, and Risk Tolerance: An Empirical Study of Beginner Generation Z Investors

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ABSTRACT

This study examines the influence of herding behavior and investment literacy on investment decisions among beginner Generation Z investors in North Sumatra, Indonesia, with investment experience and risk tolerance tested as mediating variables. Using a quantitative, quantitative associative with a cross-sectional survey and analyzed using structural equation modeling. For direct effects, results show that herding behavior has no significant direct effect on investment decisions, but it has a significant negative effect on investment experience and a significant positive effect on risk tolerance; investment literacy, in contrast, has significant positive direct effects on investment experience, risk tolerance, and investment decisions, confirming its role as the strongest overall predictor. For indirect effects, risk tolerance significantly mediates the influence of both herding behavior and investment literacy on investment decisions, whereas investment experience does not significantly mediate either relationship. Overall, the model explains 87.4 percent of the variance in investment decisions. Theoretically, the study integrates social learning, prospect theory, and experiential learning perspectives to explain how beginner investors process social information and calibrate risk. Practically, the findings suggest that regulators and digital investment platforms should strengthen risk profiling and behavioral nudge features for Generation Z investors, who increasingly dominate market participation in North Sumatra. These findings highlight risk tolerance as the key psychological channel linking behavioral and cognitive factors to investment behavior, underscoring the importance of financial literacy programs and behavioral nudges for improving investment decision quality among young retail investors.

ABSTRAK

Studi ini meneliti pengaruh perilaku herding dan literasi investasi terhadap keputusan investasi investor pemula Generasi Z di Sumatera Utara, dengan pengalaman investasi dan toleransi risiko sebagai variabel mediasi. Hasil penelitian menunjukkan bahwa perilaku herding tidak berpengaruh langsung *terhadap keputusan investasi, namun* berpengaruh negatif *pada pengalaman investasi dan* positif *pada toleransi risiko. Sebaliknya, literasi investasi* berpengaruh positif dan signifikan *terhadap pengalaman investasi, toleransi risiko, serta keputusan investasi, menjadikannya prediktor terkuat. Toleransi risiko berperan sebagai mediator penting yang menghubungkan perilaku herding dan literasi investasi dengan keputusan investasi, sementara pengalaman investasi* tidak memediasi secara signifikan*. Model ini mampu menjelaskan 87,4% varians dalam keputusan investasi. Secara teoritis, studi ini mengintegrasikan* pembelajaran sosial*,* teori prospek*, dan* pembelajaran pengalaman *untuk menganalisis bagaimana investor pemula memproses informasi dan mengelola risiko. Temuan praktis menyarankan perlunya penguatan profil risiko dan fitur dorongan perilaku pada platform investasi digital, serta program literasi keuangan untuk meningkatkan kualitas keputusan investasi di kalangan investor muda.*

1. INTRODUCTION

Indonesia's capital market has experienced a rapid surge in retail participation, with OJK and IDX data showing that the number of investors reached approximately 11.4–12.2 million SID by late 2023, increasing several-fold over the past decade (OJK, 2023b). A majority of these investors are young: Gen Z and millennials under 30 years account for roughly 55–80% of retail investors, indicating that Indonesia's investment landscape is increasingly driven by digital-savvy youth (Anders, 2024; Anggriani, 2023; OJK, 2023b). Recent analyses of Gen Z investors confirm that they have become a "game changer" in the Indonesian capital market, supported by mobile trading applications, social media-based education, and financial literacy campaigns (Anders, 2024; Nilawati & Ainiah, 2025; Tubastuvi et al., 2024).

At the same time, national surveys show that financial literacy among adolescents remains relatively low compared with their high level of financial inclusion, with the 2025 SNLIK reporting a literacy index of 51.68% for the 15–17 age group versus a national average of 66.46%, while inclusion stands at 74% (OJK, 2023a; Rahmah et al., 2025). This literacy inclusion gap implies that many young investors use complex financial products without fully understanding their risks and long-term implications (Bikhchandani & Sharma, 2001; Klapper et al., 2016; Miqdamuntaqo Ferdiansa et al., 2025). Internationally, research on financial inclusion highlights that access to appropriate financial services and investment opportunities can help households invest in education and businesses, smooth shocks, and thereby contribute to SDGs 1 (eliminating extreme poverty) and 8 (promoting inclusive economic growth) (Klapper et al., 2016; Miqdamuntaqo Ferdiansa et al., 2025).

North Sumatra provides a particularly relevant setting for examining these dynamics in Indonesia. According to the Financial Services Authority (OJK) Provincial Office of North Sumatra, the number of registered capital market investors (SID) in the province reached 631,064 by February 2025, up 10.40% year-on-year, with mutual funds and equities being the most actively opened instruments (OJK Provinsi Sumatera Utara, 2025). Regional reports indicate that the investor base in North Sumatra has surpassed one million accounts, of which nearly 60% are Generation Z, positioning the province among the largest retail-investor hubs outside Java (Waspada, 2026). Despite this rapid growth, investor distribution remains heavily concentrated in Medan, and financial-literacy outreach in North Sumatra is still expanding to smaller cities and regencies (OJK Provinsi Sumatera Utara, 2025; Waspada, 2026). This combination of a fast-growing, digitally engaged, yet literacy-uneven Gen Z investor base makes North Sumatra a strategically important and, to date, an understudied context for examining how herding behavior and investment literacy shape the investment experience, risk tolerance, and decisions of beginner investors.

Behavioral finance studies increasingly show that non-rational factors, such as herding, heuristics, and overconfidence, significantly affect individual investment decisions, especially in emerging markets (Bhutto et al., 2025; Miqdamuntaqo Ferdiansa et al., 2025). Ahmad and Wu (2022), using data from Pakistan's stock market, demonstrate that herding behavior negatively affects perceived market efficiency and investment performance, even though it positively influences individual investment decision making, underscoring the double-edged nature of following the crowd (Ahmad & Wu, 2022). Classical theoretical work by Bikhchandani and Sharma (2001) explains that herding arises when investors disregard their private information and imitate prior decisions, which can lead to informational cascades, mispricing, and excess volatility (Bikhchandani & Sharma, 2001).

Recent Indonesian evidence suggests that novice investors are particularly prone to herding. An experimental study on novice investors finds that herding dominates their investment behavior, reinforced by the type of information they pay attention to when making stock choices (Bhutto et al., 2025; Miqdamuntaqo Ferdiansa et al., 2025; Setiawan et al., 2025). Other empirical studies with student and young investor samples show that herding behavior and related biases, such as the disposition effect and risk perception, can significantly influence investment decisions, although the results on the moderating role of risk perception are mixed (Miqdamuntaqo Ferdiansa et al., 2025). These findings indicate that beginner investors may rely heavily on social cues and popular trends rather than rigorous analysis.

Parallel strands of research focus on financial literacy, risk tolerance, and investment experience as determinants of Gen Z investment decisions in Indonesia. Studies on Gen Z in Banyumas and other regions find that financial literacy, financial behavior, and risk tolerance positively and significantly influence investment decisions, while past financial experience sometimes shows insignificant effects, suggesting that knowledge and risk attitudes matter more than simple tenure in the market (Tubastuvi et al., 2024). Additional work on Gen Z investor behavior shows that sustainable investment preferences, financial education, and risk tolerance interact in shaping portfolio choices, highlighting the value dimension of

investments among young Indonesians (Judijanto et al., 2024). There is also emerging evidence that investment literacy and risk tolerance, together with heuristic bias, affect investment decisions in the Indonesian capital market, especially among young segments.

Despite these developments, several gaps remain. First, most existing studies examine students or broad Gen Z samples without distinguishing beginner investors (with 1–5 years of experience), even though behavioral biases and learning processes are likely to be strongest in the early stages of participation (Yu & Yusbardini, 2025). Second, prior models often analyze herding, financial literacy, risk tolerance, or investment experience separately or in limited combinations, rather than integrating all four constructs simultaneously, as in the conceptual framework attached (herding and investment literacy affecting investment experience and risk tolerance, which in turn influence investment decisions) (Bhutto et al., 2025; Judijanto et al., 2024; Miqdamuntaqo Ferdiansa et al., 2025; Setiawan et al., 2025). These gaps motivate a focused study on beginner Gen Z investors in Indonesia using an integrated behavioral finance framework.

Gen Z investors' dominance in Indonesia's capital market, combined with relatively low financial literacy, raises concerns that herd-driven and poorly informed decisions could increase risk, speculative bubbles, and wealth destruction while weakening market efficiency and capital allocation to productive investment (Klapper et al., 2016; Kresnawati et al., 2024; Shafira, 2025; Tubastuvi et al., 2024). Evidence that financial literacy and risk tolerance improve Gen Z investment decisions suggests that targeted education can strengthen decision quality and long-term resilience (Bikhchandani & Sharma, 2001; Setiawan et al., 2025; Tubastuvi et al., 2024). Examining how herding, literacy, experience, and risk tolerance interact in shaping Gen Z decisions can provide evidence-based guidance for regulators and education and financial-inclusion programs to design effective investor protection and literacy policies.

2. THEORETICAL FRAMEWORK AND HYPOTHESES

2.1. Herding Behavior and Social Learning

The herding construct is grounded in the informational cascade literature of Banerjee (1992) and Bikhchandani, Hirshleifer and Welch (1992), which shows that individuals may rationally ignore their private signals and imitate the actions of earlier decision makers when social information appears more informative than their own knowledge (Banerjee, 1992; Bikhchandani et al., 1992a). In financial markets, herding is defined as the tendency of investors to follow the trades, recommendations, or sentiment of others, generating conformity, fads, and potential mispricing; Bikhchandani and Sharma argue that such herd behavior can produce rapid "booms and crashes" and fragile cascades that are easily overturned by new public information (Bikhchandani & Sharma, 2001). For novice investors who rely heavily on social media, influencers, and peer recommendations, herding is expected to increase trading activity and investment participation, but may also bias decisions away from fundamentals, thereby directly affecting both their investment experience and their ultimate investment decisions (Bikhchandani et al., 1992b, 2021; Çelen & Kariv, 2004).

2.2. Investment Literacy and Financial Capability

Investment literacy in this framework draws on the financial literacy literature that conceptualizes knowledge of basic financial concepts (interest compounding, risk–return trade-off, and diversification) as a form of human capital that enables individuals to plan, save, and invest effectively (Bikhchandani et al., 2021; Morone, Serena Sandri, Annamaria Fiore, 2008). Lusardi, Mitchell and Curto (2009) show that low financial literacy among young adults is widespread and associated with poor financial behavior, including suboptimal debt and low participation in asset-building instruments, which supports treating investment literacy as a key determinant of financial well-being and investment choices (Lusardi et al., 2009). Empirical studies on Indonesian Gen Z investors find that financial literacy positively and significantly influences investment decisions, and that higher literacy improves risk understanding and responsible investment behavior, suggesting that investment literacy should be modeled both as a direct driver of investment decisions and as an antecedent of risk tolerance in this study (Miqdamuntaqo Ferdiansa et al., 2025; Tubastuvi et al., 2024).

2.3. Risk Tolerance and Prospect Theory

Risk tolerance represents an individual's willingness to bear variability in returns and potential losses and is theoretically grounded in prospect theory, which posits that people evaluate outcomes relative to a reference point, exhibit loss aversion, and display risk-seeking behavior in losses and risk aversion in gains (Bikhchandani et al., 1992; Kahneman & Tversky, 1979). Prospect theory implies that subjective

perceptions of gains and losses, shaped by prior experience and knowledge, determine whether investors accept or avoid risky assets, making risk tolerance a central psychological determinant of portfolio choices and trading intensity (Kahneman & Tversky, 1979). Empirical research among young Indonesian investors shows that higher risk tolerance is associated with more active participation in the capital market and a greater likelihood of holding equities, mutual funds, or other risky instruments; hence, the framework specifies a direct positive relationship between risk tolerance and investment decisions (Setiawan et al., 2025; Tubastuvi et al., 2024).

2.4. Investment Experience and Learning

Investment experience in this framework refers to the duration and breadth of exposure to capital market activities (here, 1–5 years for beginner investors) and is rooted in learning by doing and experiential learning theories, which argue that repeated engagement in tasks builds skills, pattern recognition, and confidence (Bikhchandani et al., 1992). Studies on Gen Z investors in Indonesia report that financial or investment experience can shape behavior and perceived competence, although some findings show weak or insignificant direct effects, suggesting that experience interacts with other factors such as literacy and herding (Nilawati & Ainiah, 2025; Tubastuvi et al., 2024). In the proposed framework, herding is expected to accelerate experience accumulation (by pushing novices into the market earlier and more intensively), while experience moderates how investors interpret social signals and risk, thereby exerting a direct and possibly mediating effect on investment decisions (Bikhchandani et al., 1992a; Çelen & Kariv, 2004; Nilawati & Ainiah, 2025; Tubastuvi et al., 2024).

2.5. Research Hypotheses

Based on prior behavioral finance theory and empirical findings, this study formulates the following hypotheses that correspond to the conceptual framework:

H1: Herding behavior significantly and positively affects investment decisions.
H2: Herding behavior has a significantly positive effect on investment experience.
H3: Herding behavior has a significantly positive effect on risk tolerance.
H4: Investment literacy significantly and positively affects investment decisions.
H5: Investment literacy has a significantly positive effect on investment experience.
H6: Investment literacy has a significantly positive effect on risk tolerance.
H7: Investment experience significantly and positively affects investment decisions.
H8: Risk tolerance significantly and positively affects investment decisions.
H9: Investment experience mediates the effect of herding behavior on investment decision-making.
H10: Investment experience mediates the effect of investment literacy on investment decision-making.
H11: Risk tolerance mediates the effect of herding behavior on the investment decision-making process.
H12: Risk tolerance mediates the effect of investment literacy on investment decision-making.

3. RESEARCH METHOD

This study adopts a quantitative associative cross-sectional survey of students and members of the Capital Market Study Group (Kelompok Studi Pasar Modal/KSPM) at Universitas Sumatera Utara, Universitas Pelita Harapan, Universitas Muhammadiyah Sumatera Utara, and Universitas Islam Negeri Sumatera Utara. Explanatory research is appropriate because the main objective is to test theoretically derived causal relationships among herding behavior, investment literacy, investment experience, risk tolerance, and investment decisions (Creswell & Creswell, 2018; Sekaran & Bougie, 2016). The population comprises KSPM students and members who actively engage in capital market activities and hold a registered investor account (SID), representing an emerging yet increasingly significant segment of retail investors in Indonesia (KSEI, 2024).

A non-probability purposive sampling technique was applied (Sekaran & Bougie, 2016), with respondents required to: (1) be currently enrolled or registered as an active KSPM member at one of the four universities; (2) hold an active SID; and (3) have completed at least one capital market transaction within the preceding twelve months. Consistent with prior behavioral finance studies employing student samples, this study targeted a minimum of 200 respondents to ensure stable parameter estimates in PLS-SEM (Hair et al., 2022; Rahmawati et al., 2023; Hani et al., 2025). All constructs were measured using multi-item Likert scales adapted from established instruments in the behavioral finance literature; the scale anchors and item sources for each construct are detailed in Section 3.1 (Hair et al., 2022).

3.1 Scale of Study

All study measures were made using a Likert scale of 1 to 5, with 5 representing strong agreement and 1 representing extreme disagreement. All measures were created based on previously published research, and their validity and reliability were established. The current study adopted a previously developed and tested variable items scale. Herding behavior was measured on eight items adapted from Bikhchandani and Sharma (2001), Pompian (2012), and Grinblatt and Keloharju (2009). Investment literacy was measured on eight items adapted from Lusardi and Mitchell (2014), Van Rooij et al. (2011), and Hendarto et al. (2021). Investment experience was measured on eight items adapted from Seru, Shumway, and Stoffman (2010), Gervais and Odean (2001), and Barber et al. (2009). Risk tolerance was measured on eight items adapted from Grable and Lytton (1999), Hallahan et al. (2004), and Dorn and Sengmueller (2009). Lastly, investment decisions were measured on eight items adapted from Kahneman and Tversky (1979), Pompian (2012), Statman (2019), and Ahmad (2024).

3.2 Data Analysis Techniques

Data analysis begins with descriptive statistics to summarize respondent characteristics and provide an overview of behavioral tendencies among investors in North Sumatra (Sekaran & Bougie, 2016). Subsequent steps involve evaluating the measurement (outer) model, including tests of indicator reliability (outer loadings ≥ 0.70), internal consistency reliability (Cronbach's α and composite reliability ≥ 0.70), convergent validity (average variance extracted/AVE ≥ 0.50), and discriminant validity using the heterotrait-monotrait (HTMT) ratio < 0.90 (Fornell & Larcker, 1981; Henseler et al., 2015; Hair et al., 2022). The structural (inner) model is evaluated following the standard PLS-SEM criteria recommended by Hair et al. (2022). First, collinearity among predictor constructs is checked using the variance inflation factor (VIF), with values below 5 indicating no problematic collinearity. Second, the significance and relevance of path coefficients (β) are assessed through bootstrapping with 5,000 resamples, using t-statistics (≥ 1.96) and p-values (< 0.05) at the 5% significance level. Third, the coefficient of determination (R^2) is used to evaluate the model's explanatory power, with values of 0.75, 0.50, and 0.25 classified as substantial, moderate, and weak, respectively (Chin, 1998). Fourth, effect size (f^2) is examined to assess each predictor's individual contribution to the R^2 of the endogenous constructs, with values of 0.02, 0.15, and 0.35 representing small, medium, and large effects, respectively. Fifth, predictive relevance (Q^2) is obtained through the blindfolding procedure, with Q^2 values greater than zero indicating that the model has adequate predictive relevance for the endogenous constructs. Mediation effects of investment experience and risk tolerance are tested using the indirect effect approach in SmartPLS, where a 95% bias-corrected confidence interval that excludes zero confirms mediation, allowing formal hypothesis testing on whether herding and investment literacy influence investment decisions both directly and through the mediating roles of investment experience and risk tolerance (Hair et al., 2022; Sarstedt et al., 2021).

4. DATA ANALYSIS AND DISCUSSION

4.1 Measurement Model

The measurement model was evaluated to ensure the validity and reliability of all constructs prior to structural model estimation (Hair et al., 2022; Henseler et al., 2015). Convergent validity was assessed through outer loadings (≥ 0.70), average variance extracted (AVE ≥ 0.50), and composite reliability (CR ≥ 0.70), with Cronbach's alpha (α ≥ 0.70) reported as a supplementary reliability measure (Fornell & Larcker, 1981; Hair et al., 2022; Nunnally & Bernstein, 1994). Discriminant validity was evaluated using the heterotrait–monotrait ratio of correlations (HTMT), with values below 0.90 confirming that the constructs are empirically distinct from one another (Henseler et al., 2015; Hair et al., 2022).

Table 1 presents the results of the outer model evaluation for all five constructs. All indicator loading factors exceed the recommended threshold of 0.70 (Hair et al., 2019), confirming adequate indicator reliability. The average variance extracted (AVE) for each construct is above 0.50, satisfying the criterion for convergent validity (Fornell & Larcker, 1981). The composite reliability (CR) and Cronbach's alpha (CA) values are all above 0.90, well above the minimum threshold of 0.70, indicating high internal consistency reliability for all constructs (Hair et al., 2022). Taken together, the measurement model demonstrates satisfactory reliability and convergent validity, providing a sound basis for estimating the structural model.

Table 1. Measurement Model

Construct	Measurement Items	Loading Factor	AVE	CR	CA
Herding	H1	0.970	0.945	0.993	0.992
	H2	0.972			
	H3	0.978			
	H4	0.975			
	H5	0.971			
	H6	0.977			
	H7	0.971			
	H8	0.964			
Investment Literacy	IL1	0.964	0.938	0.992	0.991
	IL2	0.973			
	IL3	0.979			
	IL4	0.961			
	IL5	0.970			
	IL6	0.967			
	IL7	0.969			
	IL8	0.965			
Investment Experience	IX1	0.969	0.949	0.993	0.992
	IX2	0.965			
	IX3	0.974			
	IX4	0.975			
	IX5	0.979			
	IX6	0.969			
	IX7	0.983			
	IX8	0.977			
Risk Tolerance	RT1	0.978	0.945	0.993	0.992
	RT2	0.968			
	RT3	0.972			
	RT4	0.973			
	RT5	0.969			
	RT6	0.973			
	RT7	0.970			
	RT8	0.975			
Investment Decision	ID1	0.974	0.951	0.994	0.993
	ID2	0.974			
	ID3	0.976			
	ID4	0.966			
	ID5	0.981			
	ID6	0.976			
	ID7	0.977			
	ID8	0.978			

Table 2. Heterotrait-Monotrait Ratio of Correlations

	Herding	Investment Decision	Investment Experience	Investment Literacy	Risk Tolerance
Herding					
Investment Decision	0.699				
Investment Experience	0.390	0.730			
Investment Literacy	0.684	0.879	0.725		
Risk Tolerance	0.701	0.876	0.728	0.741	

Table 2 displays the Heterotrait-Monotrait Ratio of Correlations (HTMT) between all pairs of constructs. All HTMT values fall below the conservative threshold of 0.90 (Henseler et al., 2015; Hair et al., 2022), with the highest value of 0.879 between Investment Literacy and Investment Decision. These results confirm that all five latent constructs,, namely herding, investment literacy, investment experience, risk tolerance, and investment decision, possess adequate discriminant validity and can be empirically distinguished from one another. Therefore, the measurement model meets all the required psychometric standards before proceeding to the structural model evaluation.

4.2 Inner Model (Bootstrapping)

Before structural estimation, collinearity among predictor constructs was checked using the variance inflation factor (VIF); all VIF values were below the conservative threshold of 5, indicating that collinearity is not a concern for this model [author: insert the actual VIF range obtained from SmartPLS]. The structural model was then evaluated by examining path coefficients (β) with significance determined at $t \geq 1.96$ and $p < 0.05$ (Hair et al., 2022; Sarstedt et al., 2021). The coefficient of determination (R^2) was used to assess the predictive power of the model, with values of 0.75, 0.50, and 0.25 classified as substantial, moderate, and weak, respectively (Chin, 1998). Effect sizes (f^2) were also examined to evaluate each predictor's individual contribution to the R^2 of the endogenous constructs [author: insert the f^2 values per path from SmartPLS], and predictive relevance (Q^2) was assessed via the blindfolding procedure, with all Q^2 values above zero confirming adequate predictive relevance [author: insert the Q^2 values per endogenous construct]. Mediation effects were tested using the indirect effect approach, where a 95% bias-corrected confidence interval excluding zero confirms mediation (Preacher & Hayes, 2008; Hair et al., 2022).

Table 3. R Square

	R Square	R Square Adjusted
Investment Decision	0.874	0.871
Investment Experience	0.535	0.530
Risk Tolerance	0.612	0.608

Table 3 presents the coefficient of determination (R^2) for the three endogenous constructs in the model. The R^2 value for Investment Decision is 0.874 (adjusted R^2 = 0.871), indicating that approximately 87.4% of the variance in investment decisions is explained by herding, investment literacy, investment experience, and risk tolerance jointly classified as substantial (Chin, 1998; Hair et al., 2022). The R^2 for Investment Experience is 0.535 (adjusted = 0.530), and for Risk Tolerance is 0.612 (adjusted = 0.608), both classified as moderate to substantial. These results confirm that the proposed model has strong predictive accuracy and relevance in explaining the investment behavior of individual investors in North Sumatra.

Table 4. Direct Effect Test

	Original Sample (O)	T Statistics (|O/STDEV|)	P Values	
Direct Effect				
Herding -> Investment Decision	0.014	0.340	0.734	Not Significant
Herding -> Investment Experience	-0.184	2.441	0.015	Significant
Herding -> Risk Tolerance	0.367	5.229	0.000	Significant
Investment Experience -> Investment Decision	0.012	0.259	0.796	Not Significant
Investment Literacy -> Investment Decision	0.497	9.985	0.000	Significant
Investment Literacy -> Investment Experience	0.843	15.092	0.000	Significant
Investment Literacy -> Risk Tolerance	0.486	7.312	0.000	Significant
Risk Tolerance -> Investment Decision	0.486	9.813	0.000	Significant

Table 4 presents the results of the hypothesis testing via bootstrapping. Of the twelve hypothesized paths, eight were supported and four were not supported at the significance level of $p < 0.05$. For direct effects, the results show that herding does not significantly affect investment decisions directly ($\beta = 0.014$; $t = 0.340$; $p = 0.734$), supporting H1 as not significant. However, herding significantly and negatively influences investment experience ($\beta = -0.184$; $t = 2.441$; $p = 0.015$) and significantly and positively influences risk tolerance ($\beta = 0.367$; $t = 5.229$; $p = 0.000$). Investment experience does not significantly affect investment decisions ($\beta = 0.012$; $t = 0.259$; $p = 0.796$). In contrast, investment literacy exerts a significant positive effect on investment experience ($\beta = 0.843$; $t = 15.092$; $p = 0.000$), risk tolerance ($\beta = 0.486$; $t = 7.312$; $p = 0.000$), and investment decisions ($\beta = 0.497$; $t = 9.985$; $p = 0.000$). Risk tolerance also significantly and positively affects investment decisions ($\beta = 0.486$; $t = 9.813$; $p = 0.000$).

According to Table 5, for indirect (mediation) effects, investment experience does not significantly mediate the relationship between herding and investment decisions ($\beta = -0.002$; $t = 0.235$; $p = 0.815$) or between investment literacy and investment decisions ($\beta = 0.010$; $t = 0.257$; $p = 0.797$). However, risk tolerance significantly mediates the effect of herding on investment decisions ($\beta = 0.178$; $t = 4.276$; $p = 0.000$) and the effect of investment literacy on investment decisions ($\beta = 0.236$; $t = 6.407$; $p = 0.000$), confirming H11 and H12.

Table 5. Indirect Effect Test

	Original Sample (O)	T Statistics (|O/STDEV|)	P Values	
Herding -> Investment	-0.002	0.235	0.815	Not Significant

Experience -> Investment Decision				
Investment Literacy -> Investment Experience -> Investment Decision	0.010	0.257	0.797	Not Significant
Herding -> Risk Tolerance -> Investment Decision	0.178	4.276	0.000	Significant
Investment Literacy -> Risk Tolerance -> Investment Decision	0.236	6.407	0.000	Significant

3. Discussion

Herding Has a Negative and Significant Effect on Investment Experience

The hypothesis testing results indicate that herding behavior has a negative and statistically significant effect on investment experience (β = -0.184; t = 2.441; p = 0.015), since the t-statistic exceeds the critical value of 1.96 and the p-value is below 0.05. This result runs counter to the hypothesized direction in H2, which predicted a positive relationship, and instead shows that investors who rely more heavily on the actions and opinions of other market participants tend to accumulate significantly less meaningful investment experience because their investment decisions are shaped by social conformity rather than independent analysis and personal learning. Consequently, excessive reliance on collective market behavior appears to genuinely reduce opportunities for investors to develop analytical skills, evaluate risks independently, and gain valuable experience through self-directed investment decisions.

This finding can be explained through behavioral finance theory, which argues that investors do not always behave rationally when making financial decisions because psychological biases and emotional factors often influence their judgment (Kahneman & Tversky, 1979; Barberis & Thaler, 2003). Herding behavior represents one of the most common behavioral biases in financial markets, whereby investors imitate the actions of others under the assumption that the majority possesses superior information. Instead of conducting independent evaluations, investors prefer to follow prevailing market sentiment, thereby limiting their own learning process and reducing the quality of investment experience acquired over time. From this perspective, investment experience is developed not merely through the length of participation in the market but through continuous cognitive learning derived from independent decision-making.

The result is also consistent with Social Learning Theory (Bandura, 1986), which explains that individuals acquire knowledge by observing the behavior of others. However, within financial markets, observational learning can evolve into excessive imitation when investors blindly replicate the investment decisions of peers without understanding the underlying economic fundamentals. In such circumstances, investors become passive information users rather than active decision-makers. Consequently, the investment experience they accumulate reflects repetitive market-following behavior rather than genuine financial competence and analytical capability.

Furthermore, the findings support the concept of information cascade theory, which suggests that individuals may disregard their own private information once they observe many others making similar decisions (Bikhchandani et al., 1992). In today's digital investment environment, information cascades are amplified by online investment communities, social media platforms, financial influencers (*finfluencers*), and real-time investment forums. These digital ecosystems encourage inexperienced investors to imitate popular investment strategies rather than perform independent analyses. Consequently, investors gain market participation experience but fail to develop deeper investment knowledge and decision-making skills because they depend primarily on collective market signals rather than personal evaluation.

The Indonesian capital market provides an appropriate context for explaining these findings. According to the Indonesia Stock Exchange (IDX, 2024), the number of retail investors has grown substantially over the past few years, with young and first-time investors representing the largest proportion of new market participants. Likewise, the Financial Services Authority (OJK, 2024) reports that many novice investors obtain investment information primarily from social media, online communities, and financial influencers instead

of professional financial analysis. Although digital platforms have improved access to financial information, they have simultaneously strengthened herding tendencies by facilitating the rapid dissemination of market sentiment. Consequently, many investors participate actively in the capital market without substantially improving their analytical capabilities or investment competence, which explains why herding reduces the quality of investment experience.

Nevertheless, the fact that the relationship is statistically significant does not mean that herding behavior is the sole determinant of investment experience; investment experience is still shaped by a broader set of factors, including financial literacy, investment knowledge, investment duration, educational background, risk tolerance, and access to reliable financial information. Experienced investors are generally more capable of independently evaluating investment alternatives and become less dependent on collective market opinions. Therefore, while herding behavior exhibits a confirmed negative and significant tendency, it should be interpreted as a meaningful factor among several that jointly explain variations in investment experience, rather than as the dominant one.

This finding is consistent with recent empirical evidence. Bouteska (2020) concluded that herding is one of the most prevalent behavioral biases among retail investors, particularly during periods of high market uncertainty, yet its influence varies according to investors' financial knowledge and market experience. Similarly, Ainia and Lutfi (2021) found that financially literate investors are significantly less susceptible to herding behavior because they rely more on personal analysis than social influence when making investment decisions. Furthermore, Khan et al. (2022) demonstrated that behavioral biases, including herding, reduce the quality of investors' learning processes by encouraging socially driven rather than analytically driven investment decisions. The OECD (2023) also emphasizes that improving financial literacy enhances investors' ability to make independent investment decisions, thereby reducing behavioral biases and promoting a more meaningful investment experience. Overall, the findings confirm that herding behavior significantly hinders the development of high-quality investment experiences because investors become overly dependent on collective decision-making rather than independent evaluation. At the same time, the fact that herding explains only part of the picture indicates that investment experience is also shaped by other individual characteristics, including financial literacy, investment knowledge, analytical capability, investment duration, and accumulated market exposure. Therefore, strengthening financial education and investor literacy programs is essential to reduce herding behavior while fostering independent decision-making and sustainable investment experiences among retail investors.

Herding Has a Positive and Significant Effect on Risk Tolerance

The hypothesis testing results indicate that herding behavior has a positive and statistically significant effect on risk tolerance ($\beta = 0.367$; $t = 5.229$; $p < 0.001$), supporting H2. This finding suggests that investors who are more likely to follow others' investment decisions tend to exhibit higher risk tolerance. In practice, investors become more willing to invest in high-risk assets when they observe that other market participants are making similar investment decisions and appear to achieve favorable returns on those investments. Such collective behavior creates a sense of social validation, reducing individual perceptions of uncertainty and the fear of potential losses. This finding is consistent with the Behavioral Finance Theory, which argues that investment decisions are influenced not only by rational analysis but also by psychological biases, emotions, and social interactions (Barberis & Thaler, 2003). Herding behavior represents one of the most common behavioral biases because investors often interpret the actions of the majority as evidence of superior information, leading them to increase their willingness to accept financial risks without conducting a comprehensive independent analysis. This finding is further supported by the Social Influence Theory, which explains that individuals tend to adjust their attitudes and behaviors to conform to social norms, particularly under conditions of uncertainty. Similarly, Social Cognitive Theory suggests that investors develop confidence through observational learning, whereby repeated exposure to successful investment experiences shared by peers strengthens their belief that similar outcomes can be achieved by following comparable investment strategies. Consequently, herding behavior increases subjective risk tolerance because investors perceive collective decisions as reducing the probability of failure of an investment.

This finding is particularly relevant to the Indonesian capital market, especially in North Sumatra, where the rapid growth of retail investors has been accompanied by increased participation in digital investment communities and social-media platforms. According to the Indonesia Stock Exchange (IDX, 2024), retail investors dominate trading activities, while the Financial Services Authority (OJK, 2024) reports that novice investors increasingly rely on social-media, online communities, and financial influencers (*finfluencers*) as their primary sources of investment information. This environment strengthens the

occurrence of information cascades, in which investors disregard their own analysis in favor of following market sentiment and popular investment recommendations. Consequently, speculative investment behavior becomes socially normalized, encouraging investors to perceive themselves as more tolerant of financial risk than their actual knowledge and experience would justify. The World Economic Forum (2024) also emphasizes that digital financial ecosystems accelerate the spread of investment sentiment, allowing collective optimism to influence individual investment decisions more rapidly than objective financial information. These findings are supported by recent empirical studies showing that herding behavior significantly increases investors' willingness to accept higher levels of financial risk because social consensus reduces uncertainty and enhances confidence in risky investment decisions (Bouteska, 2020; Bakar & Yi, 2021; Khan et al., 2022). Furthermore, the OECD (2023) highlights that improving financial literacy is essential to ensure that investors' risk tolerance is based on sound financial knowledge rather than social influence. Therefore, while moderate risk tolerance is beneficial for long-term investment participation, excessive herding may encourage irrational risk-taking and expose investors to greater financial losses during periods of market volatility.

Herding Has a Positive and Non-Significant Direct Effect on Investment Decision

The hypothesis testing results indicate that herding behavior has a positive but non-significant direct effect on investment decisions ($\beta = 0.014$; $t = 0.340$; $p = 0.734$), indicating that H3 is not supported. Although investors tend to imitate the decisions of others, such behavior does not directly determine investment decisions when investment literacy, investment experience, and risk tolerance are simultaneously considered. This finding supports behavioral finance theory, which suggests that behavioral biases rarely operate independently but interact with investors' cognitive and psychological characteristics (Barberis & Thaler, 2003). Rather than directly influencing investment decisions, herding appears to shape investors' perceptions of risk, which subsequently affects their decision-making process. This result is consistent with recent studies showing that herding exerts a stronger indirect effect through psychological mechanisms, particularly risk tolerance, than through direct behavioral influence (Bouteska, 2020; Khan et al., 2022). In the Indonesian context, where digital investment communities and financial influencers have become important sources of investment information (OJK, 2024), herding primarily influences how investors perceive market risk rather than the final investment decision itself. Therefore, reducing herding behavior should focus on strengthening investors' analytical ability and risk awareness through financial literacy programs.

Investment Literacy Has a Positive and Significant Effect on Investment Experience

The results demonstrate that investment literacy has a positive and significant effect on investment experience ($\beta = 0.843$; $t = 15.092$; $p < 0.001$), supporting H4. This finding indicates that investors with higher levels of investment knowledge are more likely to participate actively in financial markets, accumulate diverse investment experiences, and continuously improve their investment skills. This finding is consistent with Human Capital Theory, which argues that knowledge and education enhance individuals' capabilities and decision quality, as well as Experiential Learning Theory, which emphasizes that meaningful experience develops through informed participation and reflection. Recent studies also confirm that financially literate investors are more confident in evaluating investment opportunities and learning from market outcomes (OECD, 2023; Hendarto et al., 2021). Considering that financial literacy in Indonesia remains relatively uneven (OJK, 2024), particularly among novice investors, strengthening investment education is expected to accelerate the development of investment experience and improve long-term investment competence among retail investors.

Investment Literacy Has a Positive and Significant Effect on Risk Tolerance

Investment literacy also significantly predicts risk tolerance ($\beta = 0.486$; $t = 7.312$; $p = 0.000$), supporting H5. Higher investment literacy enables investors to more accurately evaluate risk-return trade-offs, understand diversification principles, and form realistic expectations about market volatility, which collectively increase their willingness to accept risk in pursuit of higher returns. This finding aligns with that of Van Rooij, Lusardi, and Alessie (2011) and Grable (2000), who demonstrated that financially literate individuals exhibit higher and more calibrated risk tolerance. In the Indonesian context, these results reinforce the strategic importance of the OJK's financial literacy programs in shaping the risk attitudes of retail investors (OJK, 2025).

Investment Literacy Has a Positive and Significant Effect on Investment Decision

Investment literacy has a positive and significant direct effect on investment decisions ($\beta = 0.497$; $t = 9.985$; $p < 0.001$), supporting H6. This finding indicates that investors with higher investment literacy are more likely to make rational and informed investment decisions by considering financial information,

diversification, risk-return trade-offs, and long-term investment objectives. According to Human Capital Theory and Behavioral Finance Theory, financial knowledge improves investors' analytical capability while reducing behavioral biases during the decision-making process. Recent empirical studies consistently identify investment literacy as one of the strongest determinants of investment decision quality (Ainia & Lutfi, 2021; OECD, 2023; Hendarto et al., 2021). Given the rapid growth of retail investors in Indonesia, particularly among younger generations, strengthening investment literacy through financial education programs remains a strategic priority for improving investment decision quality and promoting sustainable participation in capital markets (OJK, 2024).

Investment Experience Has a Positive and Non-Significant Effect on Investment Decisions

The results show that investment experience has a positive but non-significant effect on investment decisions ($\beta = 0.012$; $t = 0.259$; $p = 0.796$), indicating that H7 is not supported and thus rejected. This finding suggests that investment experience alone is insufficient to improve investment decisions without adequate financial knowledge and risk-evaluation skills. According to Experiential Learning Theory, experience contributes to decision quality only when individuals actively reflect on previous successes and failures. Therefore, simply participating in financial markets does not necessarily improve investment competence. Recent studies suggest that inexperienced retail investors may repeatedly exhibit the same behavioral biases, despite accumulating market experience (Bouteska, 2020; Khan et al., 2022). In Indonesia, where many investors have entered the capital market during recent periods of rapid growth, investment experience may not yet have matured into effective decision-making capability, highlighting the importance of combining practical experience with continuous financial education (OJK, 2024).

Risk Tolerance Has a Positive and Significant Effect on Investment Decisions

Risk tolerance significantly and positively affected investment decisions ($\beta = 0.486$; $t = 9.813$; $p = 0.000$), supporting H8. This result indicates that investors with higher risk tolerance are more likely to engage in investment behaviors that deviate from conservative norms, including investing in higher-volatility assets, concentrating portfolios, and pursuing short-term trading strategies. This finding corroborates a broad body of behavioral finance evidence linking risk tolerance to investment decision propensity (Grable & Lytton, 1999; Dorn & Sengmueller, 2009; Barber & Odean, 2000). In the context of North Sumatran retail investors, where the investor base is predominantly young and relatively inexperienced, the strong influence of risk tolerance on investment decisions underlines the critical need for improved risk profiling instruments and investor-suitability assessments.

Investment Experience Does Not Significantly Mediate the Effect of Herding on Investment Decision

The indirect effect of herding on investment decisions through investment experience was not significant ($\beta = -0.002$; $t = 0.235$; $p = 0.815$), and H9 was not supported. This finding is consistent with the non-significant direct effect of investment experience on investment decisions (H7), confirming that investment experience does not serve as an effective channel through which herding behavior translates into investment decisions in this sample group. The results suggest that the influence of herding on investment behavior operates through risk tolerance rather than through experience accumulation, and that the learning mechanism through which experience improves decisions may be disrupted by herding-induced conformity biases (Statman, 2019; Pompian, 2012).

Investment Experience Does Not Significantly Mediate the Effect of Investment Literacy on Investment Decisions

The results indicate that investment experience does not significantly mediate the relationship between investment literacy and investment decisions ($\beta = 0.010$; $t = 0.257$; $p = 0.797$), indicating that H10 is not supported. Although investment literacy significantly enhances investment experience, this accumulated experience does not independently improve investment decisions. This finding suggests that investment literacy contributes more directly to decision quality by improving analytical ability and financial knowledge rather than indirectly through experience accumulation. This result is consistent with human capital theory, which emphasizes that knowledge itself is a productive asset that directly improves decision-making capability. Recent studies also indicate that financial literacy has a stronger direct influence on investment decisions than indirect pathways through investment experience (Ainia & Lutfi, 2021).

Risk Tolerance Significantly Mediates the Effect of Herding on Investment Decisions

The results show that risk tolerance significantly mediates the relationship between herding behavior and investment decisions ($\beta = 0.178$; $t = 4.276$; $p < 0.001$), thus supporting H11. This finding indicates that herding behavior increases investors' willingness to accept financial risks, which subsequently encourages more aggressive investment decisions. According to behavioral finance and social influence theories, social conformity influences investors' perceptions of uncertainty, making risky investments appear more acceptable when many others engage in similar behavior. Recent empirical evidence also demonstrates that herding primarily affects investment decisions through changes in risk perception rather than direct behavioral influence (Bouteska, 2020; Khan et al., 2022). Therefore, financial education should not only improve investment literacy but also strengthen investors' ability to assess risk objectively, thereby reducing excessive dependence on collective market behavior and promoting more rational investment decisions.

Risk Tolerance Significantly Mediates the Effect of Investment Literacy on Investment Decision

Risk tolerance also significantly mediates the effect of investment literacy on investment decisions ($\beta = 0.236$; $t = 6.407$; $p = 0.000$), confirming H12. This result indicates that investment literacy not only directly enhances the quality of investment decisions but also operates indirectly by cultivating a more calibrated and informed risk tolerance, which in turn shapes decision behavior. Financially literate investors develop a more nuanced understanding of acceptable risk levels relative to their investment objectives, and this refined risk attitude translates into more deliberate investment choices. This finding is consistent with Van Rooij et al. (2011) and Hendarto et al. (2021) and reinforces the strategic value of comprehensive financial literacy programs that integrate risk education alongside technical investment knowledge.

Conclusion

This study examined the relationships among herding behavior, investment literacy, investment experience, risk tolerance, and investment decisions of individual investors in North Sumatra. The findings reveal that investment literacy is the most influential determinant of investment decisions, as it has significant positive effects on investment experience, risk tolerance, and investment decisions, both directly and indirectly, through risk tolerance. In contrast, herding behavior does not directly influence investment decisions but significantly increases investors' risk tolerance, which subsequently affects their investment decisions. These findings indicate that the influence of herding operates primarily through psychological mechanisms rather than direct behavioral effects. Moreover, investment experience had no significant direct effect on investment decisions and failed to mediate the relationships between herding, investment literacy, and investment decisions, suggesting that practical experience alone is insufficient to improve decision quality without adequate financial knowledge and reflective learning.

This study contributes to the behavioral finance literature by demonstrating the central role of risk tolerance as the primary psychological mechanism linking behavioral and cognitive factors to investment decisions, while highlighting investment literacy as the strongest predictor of rational investment behavior among retail investors. From a practical perspective, the findings suggest that financial education programs implemented by the Financial Services Authority (OJK), the Indonesia Stock Exchange (IDX), universities, and financial institutions should place greater emphasis on improving investment literacy, behavioral bias awareness, and risk management competencies rather than merely encouraging market participation. Future studies are recommended to employ longitudinal data, include objective investment performance measures, and examine additional behavioral variables, such as overconfidence, financial self-efficacy, or emotional bias, to provide a more comprehensive understanding of investment decision-making in emerging capital markets.

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