

Financial Literacy, Risk Tolerance, and Financial Inclusion on Investment Decisions: Investor Behavior Mediation

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Abstract

Purpose: This study examines the implementation of the 5C+1S Principles in Islamic Financial Institutions, focusing on its effectiveness in financing decisions and contributing new insights to enhance the financing process within this context.

Methods: A descriptive research approach was employed, utilizing a comprehensive literature review and data triangulation. By combining primary and secondary data sources, this study ensures a thorough and reliable analysis of the 5C+1S principles in the Islamic finance sector.

Results: The findings revealed that each of the 5C+1S principles plays a crucial role in financing decisions. The Character principle highlights the importance of debtor discipline, capacity evaluates whether the customer owns a business, and capital considers the funds the debtor has invested. Collateral refers to the guarantee provided by the debtor, and the Condition of Economy assesses the debtor's ability to handle future economic challenges. The Sharia principle ensures that a customer's business complies with Islamic law and the DSN fatwa.

Conclusions: This study confirms that applying the 5C+1S Principles effectively enhances responsible financing and minimizes the risk of bad debts in Islamic Financial Institutions. It offers valuable insights into how these principles can be tailored to improve financing decisions in Sharia-compliant settings.

Limitations: This study acknowledges its limitations, particularly the brief exploration of the 5C+1S principles in financing. Future research should delve deeper into their specific impacts.

Contributions: This study provides practical insights for Islamic Financial Institutions, guiding them to refine their decision-making processes for more robust financing models aligned with both financial and ethical standards.

Keywords: *Islamic Financial Institutions, Implementation of 5C+1S Principles, Provision of Financing*

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1. Introduction

In recent years, investment activity in Indonesia has grown rapidly, driven by advances in information technology and increased access to financial data. The pursuit of long-term financial well-being and future returns has become a key motivation for individuals to participate in investment markets (Afriani, Isnurhadi, & Yuliani, 2023). This trend is reflected in the sharp increase in the number of registered investors on the Indonesia Stock Exchange, as evidenced by the steady growth of Single Investor Identification (SID) accounts (Lindananty & Angelina, 2021).

Investment is generally defined as the allocation of capital to financial or real assets with the expectation of future returns while accounting for varying levels of risk (Destina Paningrum, 2022). A wide range of investment instruments, such as equities, bonds, mutual funds, and alternative assets, are available, and the selection of appropriate instruments depends on investors' objectives, time horizons, and risk

profiles. Therefore, effective investment outcomes require not only access to financial products but also adequate financial literacy, risk awareness, and informed decision-making ([Nagari et al., 2024](#)).

Financial literacy plays a critical role in shaping investment behavior because it enhances individuals' ability to understand financial instruments, evaluate risks, and respond to market volatility ([Jusman & Lestari, 2024](#)). Prior studies consistently show that investors with higher levels of financial literacy tend to make more rational and sustainable investment decisions, while those with limited knowledge are more vulnerable to speculative behavior and financial losses ([Perwito, Nugraha, & Sugiyanto, 2020](#); [Safitri & Dewa, 2022](#)). In parallel, financial inclusion—defined as access to and usage of formal financial services—remains an important enabler of investment participation, particularly in emerging economies such as Indonesia.

These issues are particularly salient for Generation Z, a demographic cohort that constitutes a substantial proportion of Indonesia's population and is increasingly active in the financial markets. Data from the Indonesian Central Securities Depository indicate that investors under the age of 30 account for nearly 60% of new market participants, highlighting the growing engagement of younger generations in investment. Despite this growth, empirical evidence suggests that many Generation Z investors exhibit limited financial literacy, low risk preparedness, and inconsistent long-term financial planning, which may lead to suboptimal investment decisions ([Dewi & Apriyati, 2023](#)).

Existing studies provide mixed findings on the determinants of investment decisions among young investors. While some studies report that financial literacy and risk tolerance significantly influence investment behavior ([Budiman et al., 2023](#); [Islama & Amalia, 2024](#)), others ([Budiman et al., 2023](#); [Islama & Amalia, 2024](#)) find that financial inclusion and literacy alone do not necessarily translate into active investment participation ([Ghoravira, Pujianto, & Nasution, 2023](#)). Moreover, behavioral factors, such as overconfidence and speculative tendencies, have been shown to mediate the relationship between financial knowledge and investment decisions, particularly in high-risk asset classes ([Nathanael & Budisantoso, 2022](#)).

These inconsistent findings indicate the need for a more integrated approach that simultaneously examines financial literacy, risk tolerance, and financial inclusion while accounting for investor behavior as a mediating mechanism. Accordingly, this study investigates how these factors interact to influence the investment decisions of Generation Z in Indonesia. By adopting a behavioral finance perspective, this study aims to contribute to the literature by providing a more comprehensive explanation of investment decision-making among young investors and offering insights for policymakers and financial educators seeking to promote sustainable and informed investment participation.

2. Review of literature and Hypothesis Development

2.1 Conceptual Framework

The conceptual framework of this study explains Generation Z's investment decisions through the joint effects of financial literacy, risk tolerance, and financial inclusion, with individual investor behavior acting as a mediating mechanism. Grounded in behavioral finance, the framework assumes that investment decisions are shaped not only by rational evaluation but also by psychological tendencies and information-processing behaviors that influence how individuals perceive risk, interpret market signals, and act under uncertainty ([Almansour, Elkrghli, & Almansour, 2023](#); [Seraj, Alzain, & Alshebami, 2022](#)).

Financial literacy reflects an individual's capability to understand financial concepts, evaluate investment alternatives, and manage risk. Recent evidence suggests that financial literacy strengthens decision quality by improving financial judgment and enhancing the ability to process investment information, especially in technology-driven markets ([AlSuwaidi & Mertzanis, 2024](#); [Wang, Zhang, & He, 2024](#)). However, behavioral research also shows that financial knowledge may not automatically translate into prudent decisions when investors are affected by cognitive biases or emotionally driven behavior ([Almansour et al., 2023](#); [Seraj et al., 2022](#)).

Risk tolerance refers to the degree of willingness to accept uncertainty and potential losses in exchange for the expected returns. In highly volatile contexts, differences in risk tolerance shape risk-taking patterns and portfolio choices, and the way risk tolerance is measured can meaningfully affect conclusions about investor decision-making (Kwak & Grable, 2024; Nguyen, Gallery, & Newton, 2016). Thus, risk tolerance is positioned as a core psychological driver within the framework that influences both investor behavior and investment decisions.

Financial inclusion captures access to and use of formal financial services, which reduces the structural barriers to investing and expands participation opportunities. Recent research emphasizes that digitalization and financial technology can strengthen financial inclusion across emerging markets, which may subsequently facilitate broader engagement in investment activities and influence decision-making pathways (Del Sarto & Ozili, 2025; Lin, Yan, & Yang, 2023). Additionally, cross-country evidence suggests that financial inclusion shapes the broader investment environment and interacts with technology-based financing and investor protection mechanisms (Hu, Hua, Li, Wang, & Zhang, 2025).

To address the inconsistent findings in prior studies—particularly where literacy and inclusion do not consistently predict investment decisions—this study proposes individual investor behavior as a mediating construct. Investor behavior represents psychological responses and action tendencies (e.g., herding, overconfidence, speculative inclination, and responsiveness to social/digital signals) through which knowledge and access translate into actual investment actions (Almansour et al., 2023; Seraj et al., 2022). Behavioral pathways are increasingly relevant for Generation Z, whose investment decisions are often shaped by fast-moving information environments and digital communication ecosystems (Mladenović et al., 2024).

Accordingly, the framework proposes that financial literacy, risk tolerance, and financial inclusion influence investment decisions directly and indirectly through investor behavior. This integrated structure provides a more comprehensive explanation of Generation Z’s investment decision-making by combining rational determinants (knowledge and access) with behavioral mechanisms (psychological and action-based responses), forming a coherent basis for hypothesis development and empirical testing.

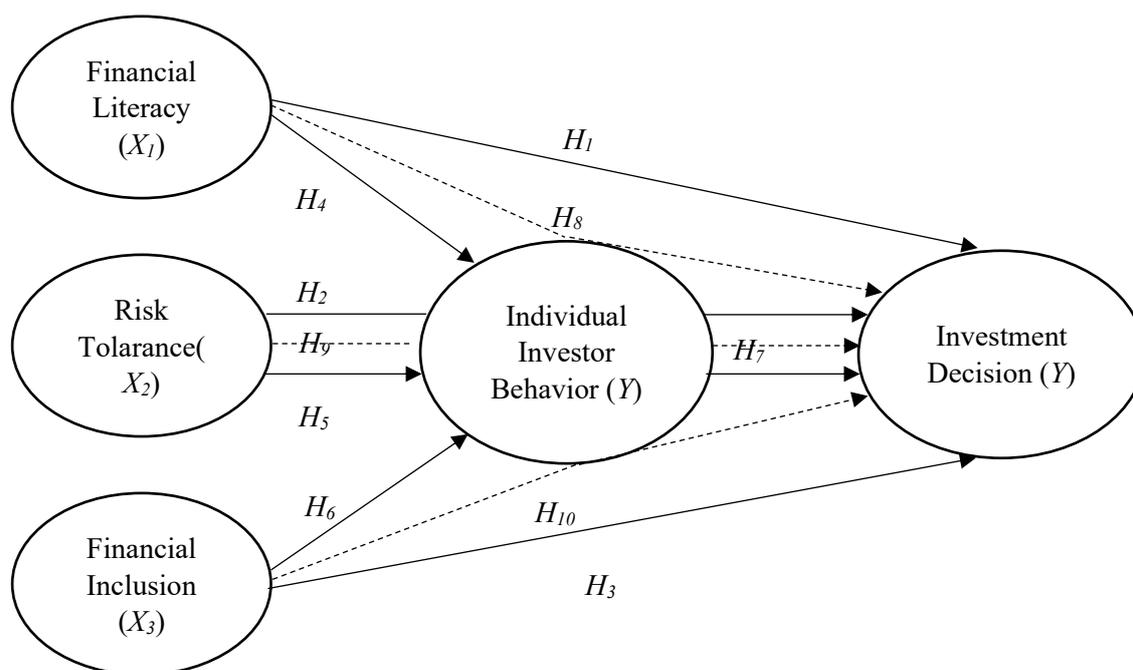


Figure 1. Conceptual Framework

2.2 Hypothesis Development

Research hypotheses are tentative propositions regarding the relationships among variables, formulated based on established theories and prior empirical evidence, and subsequently subjected to empirical testing. Drawing on behavioral finance theory and financial decision-making literature, this study develops hypotheses examining the relationships among financial literacy, risk tolerance, financial inclusion, individual investor behavior, and investment decisions, with a particular focus on the Generation Z.

2.2.1 Financial Literacy and Investment Decision

Financial literacy reflects an individual's ability to understand fundamental financial concepts, such as saving, investing, inflation, and the trade-off between risk and return. Extensive empirical evidence indicates that financial literacy enhances investors' ability to evaluate financial information, assess risk, and make rational investment decisions ([Bongini, Ferrando, Rossi, & Rossolini, 2021](#)). Recent studies focusing on younger investors show that financially literate individuals are more likely to participate in financial markets and make informed investment choices ([Klapper & Lusardi, 2020](#); [Pratama & Artini, 2024](#)). Given that Generation Z has broad access to digital financial information but uneven financial knowledge, financial literacy is expected to play a critical role in shaping their investment decision-making.

H_1 : Financial literacy (X_1) significantly affects investment decisions (Y).

2.2.2 Risk Tolerance and Investment Decision

Risk tolerance refers to the degree to which individuals are willing to accept uncertainty and potential losses in the pursuit of higher returns. Prior research has consistently demonstrated that risk tolerance is a key psychological determinant of investment behavior, influencing asset selection, portfolio composition, and market participation. Empirical studies show that individuals with higher risk tolerance tend to engage more actively in investment activities and select riskier instruments ([Kannadhasan, Aramvalathan, Mitra, & Goyal, 2016](#); [Pinaring, Yuniningsih, & Wikartika, 2023](#)). Given Generation Z's relatively high exposure to digital and innovative investment products, risk tolerance is expected to significantly influence their investment decisions.

H_2 : Risk tolerance (X_2) significantly affects investment decisions (Y).

2.2.3 Financial Inclusion and Investment Decision

Financial inclusion refers to individuals' access to and use of formal financial services, including banking facilities, investment platforms and digital financial products. Access to financial services reduces structural barriers and facilitates participation in financial markets ([Demirgüç-Kunt & Torre, 2022](#)). Empirical evidence suggests that higher levels of financial inclusion are associated with greater investment participation and improved financial decision-making, particularly in emerging economies ([Allen, Demirguc-Kunt, Klapper, & Peria, 2016](#); [Wahbi & Unga, 2024](#)). For Generation Z, digital financial inclusion is pivotal in enabling investment engagement.

H_3 : Financial inclusion (X_3) significantly affects investment decisions (Y).

2.2.4 Financial Literacy and Individual Investor Behavior

Financial literacy not only affects final investment outcomes but also shapes investors' behavioral patterns, such as information processing, self-control, and long-term financial planning. Prior studies have indicated that financially literate individuals tend to exhibit more disciplined and rational financial behavior ([Fadillah & Lubis, 2024](#)). In the context of behavioral finance, financial knowledge reduces susceptibility to cognitive biases and improves behavioral consistency in investment decision-making processes.

H_4 : Financial literacy (X_1) significantly affects individual investor behavior (Z).

2.2.5 Risk Tolerance and Individual Investor Behavior

Risk tolerance influences not only investment preferences but also behavioral tendencies, including confidence, activity, and responsiveness to market opportunities. Psychological characteristics related to risk have been shown to significantly shape financial behavior and investment styles ([Firman &](#)

[Wijaya, 2025](#)). Investors with higher risk tolerance are more likely to exhibit proactive and opportunistic behavior.

H_5 : Risk tolerance (X_2) significantly affects individual investor behavior (Z).

2.2.6 Financial Inclusion and Individual Investor Behavior

Access to formal financial services enables individuals to gain experience, learn from market participation and develop positive financial habits. Financial inclusion enhances financial engagement and encourages responsible financial behavior ([Grohmann, Klühs, & Menkhoff, 2018](#); [Wahbi & Unga, 2024](#)). For Generation Z, digital access to financial services may foster more informed and confident investment behavior.

H_6 : Financial inclusion (X_3) significantly affects individual investor behavior (Z).

2.2.7 Individual Investor Behavior and Investment Decision

Individual investor behavior manifests as financial knowledge, risk attitudes, and psychological responses in actual investment actions. The behavioral finance literature emphasizes that investor behavior plays a central role in translating financial attributes into investment decisions ([Muhammad & Febri, 2024](#)). Therefore, rational, disciplined, and information-based behavior is expected to lead to more optimal investment decisions.

H_7 : Individual investor behavior (Z) significantly affects investment decisions (Y).

2.2.8 The Mediating Role of Individual Investor Behavior

Although financial literacy, risk tolerance, and financial inclusion are important determinants of investment decisions, their effects may not always be direct or linear. Investor behavior serves as a critical mediating mechanism through which financial knowledge, access, and psychological traits are transformed into concrete investment action. Prior studies have highlighted the mediating role of behavioral factors in financial decision-making processes ([Pratama & Artini, 2024](#)). Accordingly, the following mediation hypotheses are proposed:

H_8 : Individual investor behavior (Z) mediates the relationship between financial literacy (X_1), and investment decisions (Y).

H_9 : Individual investor behavior (Z) mediates the relationship between risk tolerance (X_2) and investment decision (Y).

H_{10} : Individual investor behavior (Z) mediates the relationship between financial inclusion (X_3) and investment decisions (Y).

3. Research Methodology

3.1 Research Design and Unit of Analysis

This study employs a quantitative explanatory survey design to test the proposed relationships among financial literacy (X_1), risk tolerance (X_2), financial inclusion (X_3), individual investor behavior (Z), and investment decision-making (Y) among Generation Z investors in Indonesia. Generation Z is defined as individuals born between 1997–2012, who have increasingly engaged with both conventional and digital investment products.

3.2 Population, Sampling, and Sample Size

The target population comprised Indonesian Generation Z individuals with investment experience. Because the total number of Gen Z investors cannot be precisely enumerated, this study applies non-probability purposive sampling with the following inclusion criteria: (1) age 18–27, (2) prior or current experience investing (e.g., stocks, mutual funds, gold, crypto, or other digital financial instruments), and (3) voluntary consent to complete the questionnaire. The minimum sample size follows the established PLS-SEM guidelines, recommending at least 5–10 observations per indicator and sufficient power for estimating structural paths and mediation effects ([J. Hair & Alamer, 2022](#)). With 20 indicators, the minimum requirement was ≥ 100 respondents, while the target sample was 150–200 to enhance the stability and generalizability of the estimates.

3.3 Measures and Operationalization

All constructs were measured using multi-item reflective indicators adapted from previously validated scales and contextualized for Gen Z investing. Items were rated on a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). The study operationalizes financial literacy (X_1) as the knowledge and capability to manage personal finances and evaluate investment products.

1. Risk tolerance (X_2): willingness to accept investment uncertainties and potential losses.
2. Financial inclusion (X_3): access to and use of formal financial services and products; this aligns with global inclusion frameworks that emphasize usage and access dimensions (Demirgüç-Kunt et al., 2022).
3. Individual investor behavior (Z): behavioral biases and tendencies (e.g., overconfidence, herding, loss aversion, and emotional bias) that shape investment actions.
4. Investment decision (Y): informed choice of investment actions based on the information quality, risk–return evaluation, and goal clarity.

3.3.1 Data Collection Procedure

Primary data were collected using an online questionnaire distributed to eligible respondents. To reduce common method bias, the survey design emphasizes anonymity, clear item wording, and procedural separation of predictor and criterion constructs where feasible, consistent with current best-practice recommendations (Podsakoff, Podsakoff, Williams, Huang, & Yang, 2024).

3.3.2 Data Analysis (PLS-SEM)

Hypotheses were tested using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS. PLS-SEM is appropriate for predictive, theory-testing models with multiple constructs and mediation paths and is widely recommended in contemporary SEM scholarship (J. Hair & Alamer, 2022; Sarstedt et al., 2022). The analysis proceeded in three stages.

1. Measurement model assessment
 - a. Convergent validity: indicator loadings and average variance extracted (AVE).
 - b. Reliability: composite reliability (CR).
 - c. Discriminant validity was assessed using the HTMT, which has become the dominant recommended criterion (Henseler, Ringle, & Sarstedt, 2015).
 - d. Where appropriate, this study acknowledges updated discriminant validity guidance (e.g., HTMT+ refinements) (Ringle, Sarstedt, Sinkovics, & Sinkovics, 2023).
2. Structural model assessment
Structural relationships were evaluated using path coefficients, R^2 , and predictive relevance indicators, following current reporting standards (J. F. Hair, Sharma, Sarstedt, Ringle, & Liengaard, 2024).
3. Hypothesis testing and mediation analysis
Statistical significance was assessed via bootstrapping to test direct and indirect effects (including mediation), consistent with contemporary PLS-SEM practice (J. Hair & Alamer, 2022).

4. Results and Discussions

4.1 Analysis

4.1.1 Respondent Characteristics

This study involved 200 respondents who are part of Generation Z, aged between 18 and 27 years, and have experience in investment activities, both in traditional forms such as gold or property, as well as digital investments like stocks, mutual funds, or cryptocurrencies. The research instrument used was a questionnaire that was distributed to participants through Google Forms. The questionnaire was divided into two sections: respondent characteristics and statements related to the variables under study. The respondent characteristics section was included to ensure that the participants met the criteria for inclusion in the study (Devi, Arafat, & Maliah, 2025). The respondents' characteristics are presented below.

Table 1. Respondent characteristics

Description	Frequency	Percentage (%)
Gender		
Male	82	41.0
Female	118	59.0
Age		
18-20 years	22	11.0
21-23 years	65	32.5
24-27 years	113	56.5
Occupation		
Private Sector Employee	64	32.0
Freelancer	33	16.5
Student	25	12.5
Entrepreneur	78	39.0
Last Education Level		
High School or Equivalent	26	13.0
Diploma (D1/D2/D3/D4)	50	25.0
Bachelor's Degree (S1)	103	51.5
Master's Degree (S2)	21	10.5
Monthly Income		
Less than Rp. 4,000,000	37	18.5
Rp. 4,000,000 - Rp. 8,000,000	71	35.5
Rp. 9,000,000 - Rp. 19,000,000	61	30.5
Rp. 20,000,000 - Rp. 29,000,000	29	14.5
More than Rp. 30,000,000	2	1.0
Investment Experience		
Less than 1 Year	53	26.5
1 - 2 Years	59	29.5
3 - 5 Years	60	30.0
More than 5 Years	28	14.0
Types of Investments Owned		
Cryptocurrency	3	1.5
Gold	90	45.0
Bonds	8	4.0
Property	17	8.5
Mutual Funds	31	15.5
Stocks	51	25.5
Frequency of Investment Transactions		
Very Rarely	14	7.0
Rarely	48	24.0
Quite Often	46	23.0
Often	62	31.0
Very Often	30	15.0
Total	200	100

Table 1 presents the demographic characteristics of the 200 respondents involved in this study. The table summarizes the respondents' profiles based on gender, age, occupation, education level, monthly income, investment experience, types of investment owned, and frequency of investment transactions. This descriptive analysis provides an overview of the sample composition and helps ensure that the data used in the study adequately represent individuals with diverse socioeconomic and investment backgrounds. Based on gender distribution, most respondents were female, accounting for 59% of the total sample. To further examine the causal relationships among the variables under study, the theoretical framework developed from the proposed hypotheses is presented in the following flowchart.

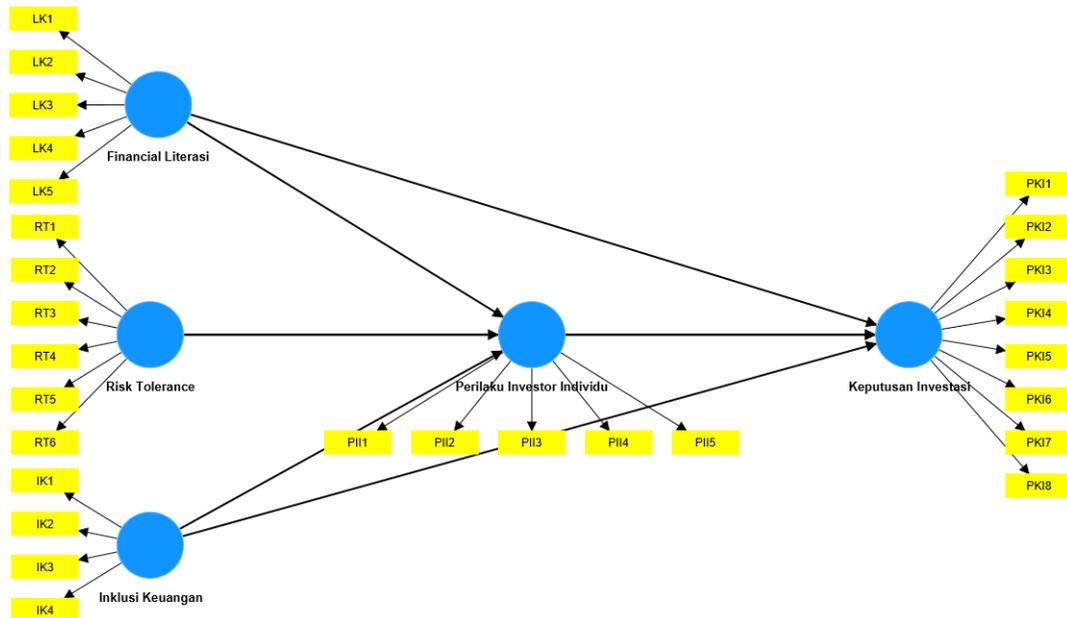


Figure 2. Research flow diagram

Figure 2 illustrates the research model as a structural flow diagram. The blue circles represent the latent (observed) variables examined in this study, and the yellow boxes indicate the measurement indicators associated with each construct. Each indicator reflects a specific statement item used to measure the corresponding latent variable. The directional arrows in the model depict the hypothesized causal relationships between variables, as analyzed using the Partial Least Squares (PLS) approach. This flowchart provides a visual representation of both the measurement model (the relationships between latent variables and their indicators) and the structural model (the relationships among latent variables). Through this framework, the study systematically and empirically examines the proposed causal linkages among the constructs ([Zabartih & Widhiarso, 2025](#)).

4.1.2 Evaluation of the Outer Model

The main goal of evaluating the measurement model is to assess the validity and reliability of the constructs and indicators involved.

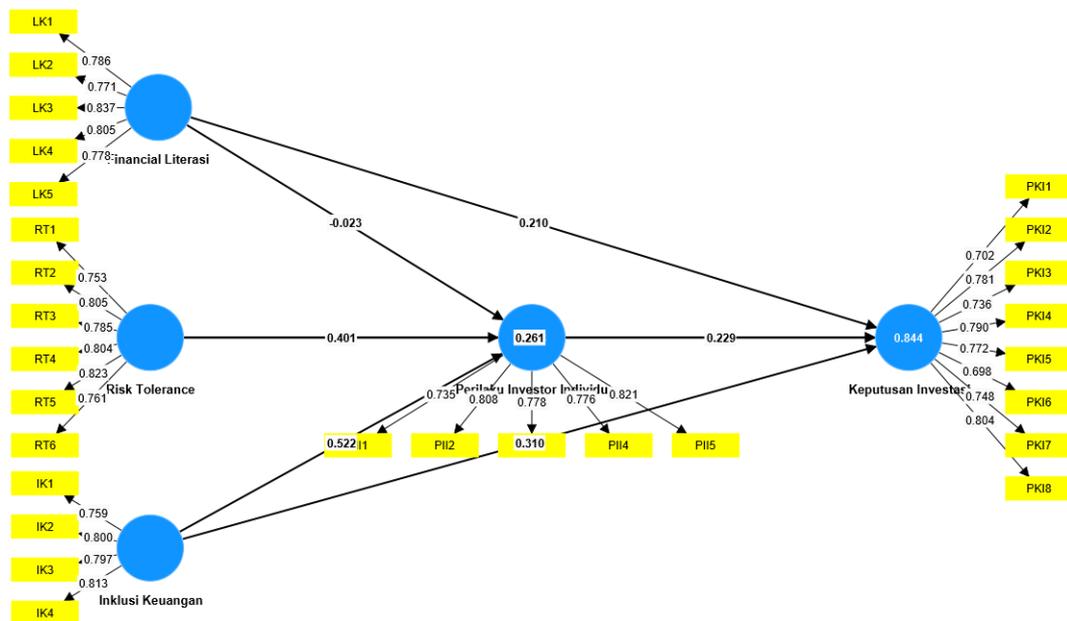


Figure 3. Outer model

Figure 3 presents the outer model evaluation results obtained from Partial Least Squares (PLS) analysis. The outer model assesses the relationship between latent constructs and their respective indicators, focusing on the validity and reliability of the measurement model. Convergent validity was evaluated based on the loading factor values of each indicator. An indicator is considered valid if its loading factor exceeds the minimum threshold of 0.50, with values above 0.70 indicating a strong convergent validity. The results shown in the figure demonstrate that all indicators met the acceptable loading criteria, confirming that they adequately represented their respective latent constructs. The validity assessment was based on data collected through questionnaires distributed to 102 respondents. Overall, the outer model results indicate that the measurement model satisfies the convergent validity requirement and is suitable for further structural model analyses.

Table 2. loading factor validity test

	Financial Literacy	Financial Inclusion	Investment Decisions	Individual Investor Behavior	Risk Tolerance
IK1		0.759			
IK2		0.800			
IK3		0.797			
IK4		0.813			
LK1	0.786				
LK2	0.771				
LK3	0.837				
LK4	0.805				
LK5	0.778				
PII1				0.735	
PII2				0.808	
PII3				0.778	
PII4				0.776	
PII5				0.821	
PKI1			0.702		

PKI2			0.781		
PKI3			0.736		
PKI4			0.790		
PKI5			0.772		
PKI6			0.698		
PKI7			0.748		
PKI8			0.804		
RT1					0.753
RT2					0.805
RT3					0.785
RT4					0.804
RT5					0.823
RT6					0.761

Table 2 presents the loading factor values for all indicators across the five constructs: Financial Literacy, Financial Inclusion, Investment Decisions, Individual Investor Behavior, and Risk Tolerance. All indicators showed loading factor values ≥ 0.50 , with most exceeding 0.70, indicating that each item validly represented its respective construct. Thus, the convergent validity requirement based on loading factors is fulfilled. The Average Variance Extracted (AVE) test further confirmed convergent validity, as all constructs had AVE values greater than 0.50. This indicates that each construct explains more than half of the variance in its indicators. Discriminant validity was assessed using a cross-loading analysis. Each indicator loaded higher on its respective construct than on other constructs, confirming that the discriminant validity criterion was satisfied. Overall, the measurement model met the required validity standards and was suitable for further structural analysis.

Table 3. Cross-loading validity test

	Financial Literacy	Financial Inclusion	Investment Decisions	Individual Investor Behavior	Risk Tolerance
IK1	0.579	0.759	0.633	0.602	0.564
IK2	0.597	0.800	0.674	0.631	0.572
IK3	0.589	0.797	0.688	0.684	0.602
IK4	0.689	0.813	0.709	0.640	0.651
LK1	0.786	0.552	0.607	0.509	0.582
LK2	0.771	0.597	0.626	0.500	0.627
LK3	0.837	0.699	0.719	0.624	0.664
LK4	0.805	0.642	0.643	0.566	0.592
LK5	0.778	0.580	0.640	0.566	0.668
PII1	0.478	0.578	0.618	0.735	0.568
PII2	0.659	0.664	0.716	0.808	0.704
PII3	0.539	0.608	0.663	0.778	0.587
PII4	0.488	0.619	0.600	0.776	0.545
PII5	0.556	0.691	0.644	0.821	0.630
PKI1	0.571	0.623	0.702	0.590	0.533
PKI2	0.608	0.671	0.781	0.655	0.688
PKI3	0.547	0.612	0.736	0.616	0.632

PKI4	0.626	0.703	0.790	0.694	0.689
PKI5	0.638	0.658	0.772	0.601	0.670
PKI6	0.603	0.581	0.698	0.568	0.587
PKI7	0.662	0.619	0.748	0.626	0.613
PKI8	0.664	0.681	0.804	0.646	0.636
RT1	0.580	0.526	0.636	0.592	0.753
RT2	0.625	0.586	0.634	0.569	0.805
RT3	0.652	0.651	0.706	0.606	0.785
RT4	0.583	0.570	0.654	0.622	0.804
RT5	0.687	0.642	0.717	0.692	0.823
RT6	0.595	0.588	0.610	0.588	0.761

Table 3 presents the cross-loading validity test. This is indicated by the fact that the cross-loading value for each item statement is higher for its corresponding variable than for items from other variables. Therefore, reliability testing of the research variables was conducted. Reliability testing is an indicator of the reliability of the research instrument and whether it accurately represents the results. To test reliability, both composite reliability and Cronbach's alpha were used. A composite reliability and Cronbach's alpha value greater than 0.7 is considered an indicator of a reliable instrument.

Table 4. Reliability test

	Cronbach's Alpha	Composite Reliability	Average variance extracted (AVE)
Financial Literacy	0.855	0.896	0.633
Financial Inclusion	0.802	0.871	0.628
Investment Decisions	0.892	0.914	0.570
Individual Investor Behavior	0.843	0.889	0.615
Risk Tolerance	0.878	0.908	0.622

Table 4 presents the reliability test results, indicating that both composite reliability and Cronbach's alpha values are above 0.7. This means that the research variables have a high level of accuracy in establishing their status as research variables, as they have proven to be reliable and dependable. Multicollinearity testing was conducted using the Variance Inflation Factor (VIF) statistic, where the value should be less than 5. If the value exceeds 5, the construct should be considered for removal or combined with other constructs. The VIF values obtained using the SmartPLS application are presented below.

Table 5. VIF values

	VIF
Financial Literacy -> Investment Decisions	3.295
Financial Literacy -> Individual Investor Behavior	3.293
Financial Inclusion -> Investment Decisions	3.863
Financial Inclusion -> Individual Investor Behavior	2.896
Individual Investor Behavior -> Investment Decisions	3.543
Risk Tolerance -> Investment Decisions	3.627
Risk Tolerance -> Individual Investor Behavior	3.056

The results indicate that the VIF values for all variables are below 5. This means that none of the research variables need to be removed or excluded from the structural model, as they meet the minimum requirement.

4.1.3 Inner Model Evaluation

In SEM analysis, the coefficient of determination (R^2) is used to determine the extent to which exogenous variables contribute to endogenous variables. R^2 represents the effectiveness of the model in representing the variation in the dependent variable.

Table 6. Coefficient of determination (R-Square) test

	R-square
Investment Decisions	0.844
Individual Investor Behavior	0.718

Table 6 presents the R^2 value for investment decisions, which is 0.844, meaning that financial literacy, risk tolerance, financial inclusion, and individual investor behavior account for 84.4% of the variation in investment decisions, and the remaining variation is explained by other elements not included in the model. Similarly, the R^2 value for individual investor behavior was 0.718, meaning that financial literacy, risk tolerance, and financial inclusion accounted for 71.8% of the variation in individual investor behavior, with the rest explained by other factors. The Q-square evaluates how well the model represents its predictive ability. A Q^2 value greater than zero indicates that the reconstructed values are effectively performed and have relevant predictive capability.

Table 7. Q-square test

	SSO	SSE	Q²
Financial Literacy	1000.000	1000.000	0.000
Financial Inclusion	800.000	800.000	0.000
Investment Decisions	1600.000	862.651	0.461
Individual Investor Behavior	1000.000	572.118	0.428
Risk Tolerance	1200.000	1200.000	0.000

Table 7 shows that the Q^2 values of 0.461 and 0.428 are greater than zero (DP-60). This confirms that the research model has predictive relevance. Hypothesis testing was conducted using the bootstrapping method, a resampling technique used to estimate the stability of model parameter estimates and test the significance of relationships based on the empirical distribution of sample data. The significance level in this study was set at 0.05 (5%). The decision criteria for hypothesis testing are based on the p-value and the t-statistics. If the p-value is greater than 1.96, the hypothesis is accepted, indicating a significant effect between the variables.

Table 8. hypothesis testing

Hypothesis	Original sample	T statistics	P values
Financial Literacy -> Investment Decisions	0.210	2.751	0.006
Risk Tolerance -> Investment Decisions	0.261	3.681	0.000
Financial Inclusion -> Investment Decisions	0.310	4.084	0.000
Financial Literacy -> Individual Investor Behavior	-0.023	0.221	0.825
Risk Tolerance -> Individual Investor Behavior	0.401	3.898	0.000
Financial Inclusion -> Individual Investor Behavior	0.522	4.825	0.000
Individual Investor Behavior -> Investment Decisions	0.229	2.862	0.004

Financial Literacy -> Individual Investor Behavior -> Investment Decisions	-0.005	0.211	0.833
Risk Tolerance -> Individual Investor Behavior -> Investment Decisions	0.092	2.230	0.026
Financial Inclusion -> Individual Investor Behavior -> Investment Decisions	0.120	2.946	0.003

Table 8 presents the results of the structural model hypothesis tests. The findings indicate that Financial Literacy has a positive and significant effect on Investment Decisions ($\beta = 0.210$; $t = 2.751$; $p = 0.006$). This suggests that higher levels of financial knowledge contribute to rational and informed investment decisions. Similarly, Risk Tolerance significantly influences Investment Decisions ($\beta = 0.261$; $t = 3.681$; $p < 0.001$), indicating that investors with higher risk tolerance are more likely to engage in investment activities. Financial Inclusion also demonstrates a significant positive effect on Investment Decisions ($\beta = 0.310$; $t = 4.084$; $p < 0.001$), suggesting that access to financial services plays an important role in shaping investment behavior.

Regarding the determinants of Individual Investor Behavior, the results show that Financial Literacy does not significantly affect Individual Investor Behavior ($\beta = -0.023$; $t = 0.221$; $p = 0.825$). In contrast, Risk Tolerance ($\beta = 0.401$; $t = 3.898$; $p < 0.001$) and Financial Inclusion ($\beta = 0.522$; $t = 4.825$; $p < 0.001$) both have strong and significant positive effects on Individual Investor Behavior. Furthermore, Individual Investor Behavior significantly influences Investment Decisions ($\beta = 0.229$; $t = 2.862$; $p = 0.004$), confirming its mediating role within the model. In terms of indirect effects, the mediation analysis reveals that Financial Literacy does not have a significant indirect effect on Investment Decisions through Individual Investor Behavior ($\beta = -0.005$; $t = 0.211$; $p = 0.833$). However, Risk Tolerance ($\beta = 0.092$; $t = 2.230$; $p = 0.026$) and Financial Inclusion ($\beta = 0.120$; $t = 2.946$; $p = 0.003$) demonstrated significant indirect effects through Individual Investor Behavior. Overall, the results indicate that Risk Tolerance and Financial Inclusion influence Investment Decisions both directly and indirectly through Individual Investor Behavior, while Financial Literacy primarily exerts a direct effect without significant mediation.

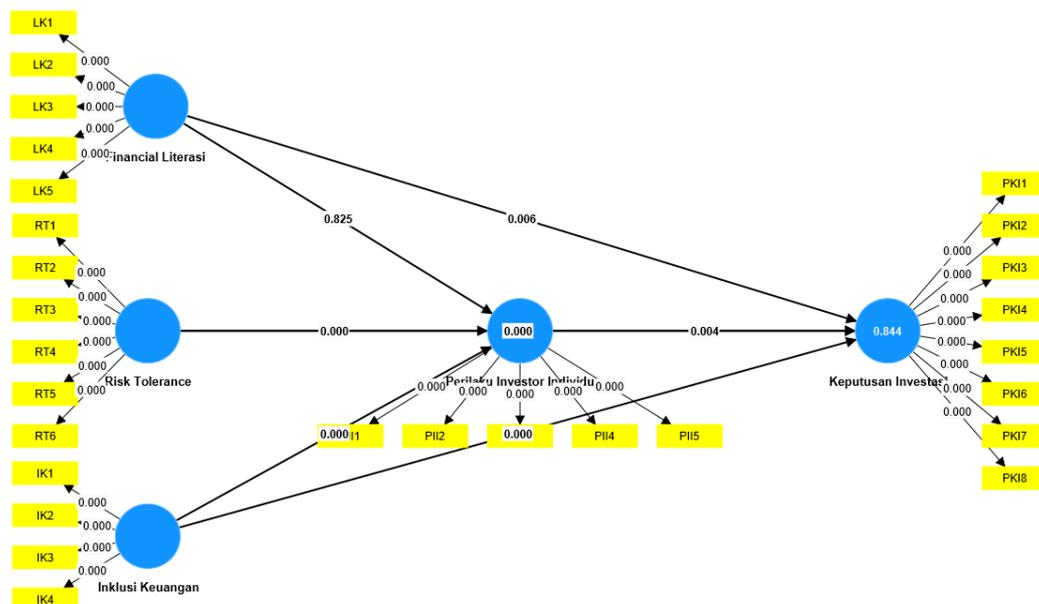


Figure 3. bootstrapping model output

Figure 3 presents the results of the bootstrapping analysis used to evaluate the significance of the structural paths in the PLS-SEM model. The bootstrapping procedure confirms the statistical robustness of several hypothesized relationships, as indicated by significant p-values ($p < 0.05$) on structural paths. The model shows that Financial Literacy, Risk Tolerance, and Financial Inclusion significantly

influence Investment Decisions, as evidenced by their significant bootstrapped p-values. Among these variables, Financial Inclusion appears to have the strongest direct contribution, as reflected in the structural coefficient and significance level.

Regarding the mediating variable, Individual Investor Behavior, the bootstrapping results indicate that Risk Tolerance and Financial Inclusion significantly affect Investor Behavior, while Financial Literacy does not show a statistically significant effect. Furthermore, Individual Investor Behavior significantly influences Investment Decisions, supporting its mediating role in the model. The R^2 value for Investment Decisions (0.844) suggests that approximately 84.4% of the variance in Investment Decisions is explained by the exogenous variables included in the model. This indicates strong explanatory power and suggests that the structural model has substantial predictive relevance ([Suganda & Aprianingsih, 2025](#)).

Additionally, the outer model results (shown by indicator loadings and p-values) demonstrate that all measurement indicators are statistically significant ($p < 0.05$), confirming the reliability and validity of the measurement model. Overall, the bootstrapping analysis confirms that the proposed structural model is statistically supported, with Risk Tolerance and Financial Inclusion playing dominant roles in influencing both Individual Investor Behavior and Investment Decisions. The data analysis results shown in the table suggest the following hypothesis-testing outcomes:

1. The T statistic > 1.96 and p-value < 0.05 (2.751 and 0.006), indicating that financial literacy influences investment decisions, with a significant impact of 0.210.
2. The T statistic > 1.96 , and p-value < 0.05 (3.681 and 0.000), indicate that risk tolerance influences investment decisions, with a significant impact of 0.261.
3. The T statistic > 1.96 , and p-value < 0.05 (4.084 and 0.000), indicate that financial inclusion influences investment decisions, with a significant impact of 0.310.
4. The T statistic was < 1.96 , and the p-value was > 0.05 (0.221 and 0.825), indicating that financial literacy does not significantly influence individual investor behavior.
5. The T statistic > 1.96 , and p-value < 0.05 (3.898 and 0.000), indicate that risk tolerance influences individual investor behavior, with a significant impact of 0.401.
6. The T statistic > 1.96 and p-value < 0.05 (4.825 and 0.000), indicating that financial inclusion influences individual investor behavior with a significant impact of 0.522.
7. The T statistic > 1.96 , and p-value < 0.05 (2.862 and 0.004), indicating that individual investor behavior influences investment decisions, with a significant impact of 0.229.
8. The T statistic < 1.96 , and p-value > 0.05 (0.211 and 0.833), indicate that individual investor behavior does not mediate the effect of financial literacy on investment decisions.
9. The T statistic > 1.96 and p-value < 0.05 (2.230 and 0.026), indicating that individual investor behavior mediates the effect of risk tolerance on investment decisions, with an impact of 0.092.
10. The T statistic > 1.96 , and p-value < 0.05 (2.946 and 0.003), indicating that individual investor behavior mediates the effect of financial inclusion on investment decisions with an impact of 0.120

4.2 Discussion

4.2.1 Financial literacy and investment decisions (H_1 supported; $\beta = 0.210$)

The results confirm that financial literacy is a positive and statistically significant predictor of Generation Z's investment decisions. This finding aligns with the view that financial literacy functions as an essential form of human capital, enabling individuals to evaluate risk–return trade-offs, compare instruments, and avoid systematic decision errors in increasingly complex financial markets. In digitally mediated environments, higher literacy is also associated with stronger engagement with fintech ecosystems and more confident navigation of investment platforms, which can translate into more deliberate investment decisions. Conceptually, this pattern is consistent with behavioral finance arguments that limited knowledge increases susceptibility to heuristics and biases, thereby degrading decision quality. Conversely, stronger knowledge improves information processing and reduces the impact of noise-driven choices.

4.2.2 Risk tolerance and investment decisions (H_2 supported; $\beta = 0.261$)

Risk tolerance has a direct, positive effect on investment decisions, indicating that Generation Z investors who are more comfortable with uncertainty are more likely to commit funds and select instruments with higher volatility or return dispersion. This result is theoretically coherent with domain-specific risk-taking frameworks that treat risk preference as a stable driver of financial behavior under uncertainty. Recent evidence also suggests that risk tolerance among younger adults is meaningfully related to cognitive and behavioral correlates, supporting the premise that risk orientation is not purely situational but reflects deeper predispositions that shape investment choices.

4.2.3 Financial inclusion and investment decisions (H_3 supported; $\beta = 0.310$)

Financial inclusion exhibited the strongest direct association with investment decisions among the three antecedents. This implies that access to formal financial services and digital channels reduces participation barriers (e.g., transaction costs, account ownership constraints, and information friction), enabling Gen Z investors to act on their preferences and intentions. This finding is consistent with global and emerging-economy evidence showing that greater inclusion, particularly digital financial inclusion, raises financial participation, including stock and fund investment. Related work further indicates that digital financial inclusion can shift household/individual engagement with formal finance, reinforcing the idea that inclusion is not merely “access,” but a mechanism that facilitates real market participation.

4.2.4 Financial literacy and individual investor behavior (H_4 not supported; $\beta = -0.023$)

Contrary to expectations, financial literacy does not significantly predict individual investor behavior in this sample. Substantively, this suggests a knowledge–action gap: cognitive understanding of financial concepts may improve *decision quality* without necessarily reshaping the *behavioral tendencies* (e.g., herding, overconfidence, loss aversion) that characterize how investors act under social influence and market emotion. Behavioral finance scholarship emphasizes that biases can persist even among informed agents because they are partly driven by psychological factors and context (peer effects, salient narratives, and market sentiment), not only by informational deficits. Thus, literacy may operate more as a “competence” resource that supports evaluation, while behavioral patterns are more strongly anchored in risk preferences, platform dynamics, and social reinforcement effects.

4.2.5 Risk tolerance and individual investor behavior (H_5 supported; $\beta = 0.401$)

Risk tolerance strongly predicts investor behavior, indicating that more risk-tolerant Gen Z investors display more active and assertive behavioral patterns in the market (e.g., greater willingness to trade, pursue higher-variance assets, and tolerate losses). This finding is consistent with risk-attitude theory, which states that risk preference shapes not only portfolio choice but also behavioral engagement with uncertain outcomes. The magnitude of this coefficient also implies that risk orientation may be a more proximal driver of “how investors behave” than financial knowledge.

4.2.6 Financial inclusion and individual investor behavior (H_6 supported; $\beta = 0.522$)

Financial inclusion has the largest effect on investor behavior, indicating that improved access to and usability of formal financial services are associated with more engaged and structured investing behavior. Digital inclusion can increase exposure to market information, reduce execution frictions, and normalize investing through frequent platform interaction, mechanisms that increase public financial participation. This helps explain why inclusion may shape not only *whether* Gen Z invests, but also *how* they behave as investors (e.g., more frequent monitoring, faster execution, and greater responsiveness to market signals).

4.2.7 Individual investor behavior and investment decisions (H_7 supported; $\beta = 0.229$)

Investor behavior significantly predicts investment decisions, supporting the argument that decisions are not solely the outcome of rational evaluation but are also shaped by behavioral responses to uncertainty, market narratives, and social data. This is directly aligned with behavioral finance, which explains why observed investment choices often deviate from fully rational benchmarks, even when information is available. In practical terms, behavioral tendencies function as transmission channels through which preferences and constraints are converted into concrete investment actions.

4.3 Mediation effects

4.3.1 *Financial literacy* → investor behavior → investment decisions (H_8 not supported; indirect $\beta = -0.005$)

The nonsignificant indirect effect reinforces the earlier interpretation that literacy primarily influences investment decisions *directly* (via improved evaluation and instrument understanding) rather than *indirectly* by altering behavioral tendencies. In behavioral finance terms, knowledge may reduce some errors but may be insufficient to neutralize bias-driven behavior without additional psychological, social, or institutional support.

4.3.2 *Risk tolerance* → investor behavior → investment decisions (H_9 supported; indirect $\beta = 0.092$)

Investor behavior partially transmits the influence of risk tolerance on investment decisions. This indicates that risk-tolerant individuals decide differently not only because they accept uncertainty but also because they adopt more active behavioral patterns that culminate in investment action.

4.3.3 *Financial inclusion* → investor behavior → investment decisions (H_{10} supported; indirect $\beta = 0.120$)

The significant mediation suggests that inclusion affects investment decisions by enabling participation directly and by shaping investor behavior (e.g., higher engagement and more frequent interaction with financial services), which then increases the likelihood and intensity of investing. This is consistent with the evidence that digital financial inclusion increases participation in formal financial activities, including securities investment.

5 Conclusions

5.1 Conclusion

This study investigates how financial literacy, risk tolerance, and financial inclusion influence the investment decisions of Generation Z investors in Indonesia, with individual investor behavior examined as a mediating mechanism. Using survey data from 200 Gen Z investors (aged 18–27) with experience in both traditional and digital investment instruments, the findings provide several important conclusions. First, financial literacy, risk tolerance, and financial inclusion directly and positively affect investment decision-making. These results indicate that Gen Z investors are more likely to make informed and proactive investment choices when they possess adequate financial knowledge, exhibit higher risk tolerance, and have access to formal financial services.

Second, risk tolerance and financial inclusion significantly shape individual investor behavior, whereas financial literacy does not directly influence investor behavior. This finding suggests the presence of a knowledge–behavior gap, in which financial knowledge improves decision quality without necessarily altering behavioral tendencies driven by psychological and contextual factors. Third, individual investor behavior significantly and positively affects investment decisions, confirming the relevance of behavioral finance perspectives in explaining Gen Z investment outcomes.

Finally, mediation analysis reveals that investor behavior mediates the effects of risk tolerance and financial inclusion on investment decisions but does not mediate the relationship between financial literacy and investment decisions. This implies that while psychological traits and access-related factors operate through behavioral channels, financial literacy primarily influences investment decisions through a direct cognitive pathway rather than through behavioral transformation.

Overall, this study underscores the importance of integrating financial capability, psychological characteristics, and institutional access to better understand investment decision-making among young investors in digital financial environments.

5.2 Research Limitations

Despite these contributions, this study has several limitations. First, the research relied on self-reported survey data, which may be subject to response bias and social desirability effects. Second, the cross-sectional design limits causal inference and does not capture changes in investor behavior over time. Third, the sample focuses exclusively on Generation Z investors in Indonesia, which may constrain the generalizability of the findings to other age groups or institutional contexts. Finally, this study examines

a limited set of behavioral biases and does not account for broader macroeconomic or market-specific conditions that may influence investment decisions.

5.3 Suggestions and Directions for Future Research

Based on these limitations, several avenues for future research are suggested. First, future studies should incorporate additional financial and market-related variables, such as expected returns, dividend expectations, market volatility, and macroeconomic uncertainty. Second, researchers may explore moderating variables, including financial technology usage, regulatory trust, and social influence, to better explain the heterogeneity in investment behavior. Third, extending the analysis to other generational cohorts (e.g., Millennials or Generation X) or employing longitudinal research designs would enhance comparative insights and causal relationships. Finally, combining experimental or qualitative approaches with survey methods may provide deeper insights into the psychological mechanisms underlying investor behavior.

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