

## YOUNG WOMEN'S INVESTMENT DECISIONS: BEHAVIORAL BIASES AND FINANCIAL LITERACY

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### Abstract

This quantitative study analyzed the influence of behavioral biases (overconfidence, representativeness, anchoring, and availability) on investment decision-making, with financial literacy as a mediating variable. The sample used 200 female investor respondents in North Sumatra, selected through purposive sampling. Primary data were obtained through a questionnaire distributed via Google Forms and analyzed using the SEM-PLS method with SmartPLS 4 software. The results showed that only representativeness bias had a significant effect on investment decisions. Meanwhile, overconfidence bias, anchoring bias, and availability bias had no significant effect. Another important finding was that financial literacy did not mediate the relationship between behavioral biases and investment decision-making and did not have a significant direct effect on investment decisions. The conclusion of this study is that representativeness bias is a dominant factor in investment decision-making among respondents, while the mediating role of financial literacy is not significant.

Keywords: Overconfidence bias, representativeness bias, availability bias, financial literacy, investment decision making.

### Abstrak

Penelitian kuantitatif ini menganalisis pengaruh behavioral biases (overconfidence, representativeness, anchoring, dan availability) pada pengambilan keputusan investasi, dengan financial literacy sebagai variabel mediasi. Menggunakan 200 responden investor perempuan di Sumatera Utara sebagai sampel, yang dipilih melalui teknik purposive sampling. Data primer diperoleh melalui kuesioner daring yang disebar melalui Google Form dan dianalisis menggunakan metode SEM-PLS melalui perangkat lunak SmartPLS 4. Hasilnya menunjukkan bahwa hanya representativeness bias yang berpengaruh signifikan pada keputusan investasi. Sementara itu, overconfidence bias, anchoring bias, dan availability bias tidak berpengaruh. Temuan penting lainnya adalah financial literacy tidak terbukti memediasi hubungan antara bias perilaku dengan pengambilan keputusan investasi dan tidak memiliki pengaruh signifikan secara langsung pada keputusan investasi. Kesimpulan dari penelitian ini adalah representativeness bias menjadi faktor dominan dalam pengambilan keputusan investasi di kalangan responden, sedangkan peran mediasi financial literacy tidak signifikan.

Kata kunci: Overconfidence bias, representativeness bias, availability bias, literasi keuangan, pengambilan keputusan investasi.

### Introduction

In an era of rapid technological advancement, individuals are increasingly required to possess adequate financial knowledge and skills to adapt to ongoing changes, one of which is through investment activities. Investment refers to the allocation of funds into specific financial instruments with the objective of generating returns, enhancing future welfare, and protecting assets from depreciation (Tandelilin, 2017). One of the most prominent investment vehicles is the capital market, which functions not only as a source of funding for companies to support business expansion and development but also

as a platform for individuals to invest in various financial instruments, such as stocks, bonds, and mutual funds (Direktorat Jenderal Kekayaan Negara, 2021).

In practice, investment decisions are influenced by the consideration of return and risk, which exhibit a positive relationship: higher expected returns are generally associated with greater levels of risk (Tandelilin, 2017). However, investment risks can be managed effectively when investors possess a sound understanding of fundamental investment concepts. In addition, individual factors, including experience, preferences, and personal characteristics, contribute to variations in investment decision-making, although investors generally share the common objective of maximizing returns (Budiarto & Susanti, 2017). Therefore, investment decision-making can be defined as a process of evaluating financial instruments by considering expected returns, associated risks, and financial planning horizons to achieve optimal investment outcomes (Kusumawati, 2022).

The investment decision-making process is often influenced by psychological and cognitive factors, particularly behavioral biases. These biases are widely discussed within the framework of the Heuristic Behavioral Theory introduced by Amos Tversky and Daniel Kahneman (1974), who argue that individuals rely on mental shortcuts, or heuristics, when making decisions in complex and uncertain situations. Although heuristics facilitate faster decision-making, they frequently result in cognitive biases, including overconfidence bias, representativeness bias, anchoring bias, and availability bias. These biases significantly influence investment decision-making, particularly among individuals with limited financial literacy (Iram et al., 2023). Consequently, behavioral biases may lead investors to make less rational investment decisions, especially women who have limited financial knowledge and restricted access to reliable financial information.

This issue becomes increasingly relevant in Indonesia due to the growing participation of women in investment activities. According to the Indonesian Stock Exchange (IDX, 2023), approximately 38% of individual investors in Indonesia are women, with the majority belonging to the productive age group of 25–40 years. Despite this encouraging growth, women's financial literacy levels remain relatively low. Data from the Financial Services Authority (OJK, 2022) indicate that only 36% of women in Indonesia demonstrate adequate financial literacy, compared with 44% of men. This gap in financial literacy potentially increases women's susceptibility to behavioral biases, which may reduce the quality of their investment decisions and affect their ability to manage investment risks effectively.

Empirical evidence further supports this phenomenon. Many women continue to make investment decisions based primarily on intuition or previous experiences rather than comprehensive financial analysis. Ahmad and Shah (2022) find that millennial women in Indonesia tend to invest in familiar instruments, such as gold and mutual funds, without fully understanding the associated risks. Their findings also suggest that improved financial literacy can mitigate behavioral biases by enabling investors to make more rational and informed decisions. Nevertheless, existing studies rarely examine the mediating role of financial literacy in the relationship between behavioral biases and investment decision-making. This gap highlights the need for further investigation.

By examining the relationship between behavioral biases, financial literacy, and investment decision-making, this study is expected to contribute both theoretically and practically. From a theoretical perspective, it enriches the literature on behavioral finance by providing a deeper understanding of how financial literacy influences the effects of behavioral biases on investment decisions. From a practical perspective, the findings may support the development of more inclusive financial education policies and programs. Furthermore, the results can provide valuable recommendations for governments, financial institutions, and capital market stakeholders in strengthening women's financial knowledge and confidence in investing. Given the increasing participation of women in Indonesia's investment sector, understanding the interplay between behavioral biases, financial literacy, and investment decision-making is becoming increasingly important. Therefore, this study is expected to offer new insights for developing more informed, rational, and sustainable investment strategies.

## Theoretical Study and Hypothesis

### *Heuristic Behavioral Theory*

This theory explains that under conditions of uncertainty, individuals more often use cognitive shortcuts (heuristics) rather than thorough rational analysis. This makes investors susceptible to biases such as overconfidence, representativeness, anchoring, and availability bias, which influence investment decision-making (Iram et al., 2023). Research shows that while financial literacy helps mitigate the influence of biases, its impact is not completely eliminated. In the context of the Indonesian capital market, investors often rely on intuition or past experience to expedite decision-making, but this increases the risk of systematic errors (Sudirman et al., 2023).

Various studies confirm the crucial role of financial literacy in controlling heuristic biases. Ahmad and Shah (2022) find that overconfidence leads investors to overtrade, thus reducing performance, while Hossain and Siddiqua (2024) show that anchoring causes investors to fixate on irrelevant initial information. Mubaraq et al. (2021) add that although heuristics simplify cognitive processes, in complex investment situations they lead to suboptimal decisions. Therefore, Heuristic Behavioral Theory becomes an important framework for explaining how cognitive biases operate and emphasizes the need for financial literacy and behavioral education in fostering more rational investment decisions.

### *Overconfidence Bias and Investment Decision Making*

Previous studies consistently show that overconfidence influences investor behavior in the capital market. Ahmad and Shah (2022) report that overconfidence encourages investors to be more active and willing to take risks in investment activities. Similar findings are documented by Hossain and Siddiqua (2024), who find that higher levels of confidence lead investors to engage more frequently in market transactions. Kartini and Nahda (2021) also find that high levels of self-confidence increase investment participation and intensity. Furthermore, investors who exhibit overconfidence tend to overestimate their knowledge and ability to predict market movements, leading them to make investment decisions more frequently and with greater certainty. This behavioral tendency reduces hesitation in decision-making and increases the likelihood of engaging in investment activities despite the presence of market uncertainty. Rahman and Gan (2020) emphasize that overconfidence strengthens investors' confidence in decision-making, even though it often leads them to overlook rational considerations. Overall, previous research indicates a positive relationship between overconfidence bias and investment decision-making. Therefore, the proposed hypothesis is:

*H<sub>1</sub>*: Overconfidence bias positively affects investment decision-making.

### *Overconfidence Bias and Financial Literacy*

Research by Iram et al. (2023) finds that overconfidence bias has a positive and significant effect on financial literacy. Overconfidence encourages individuals to feel and believe that they understand financial instruments well, thereby increasing their perceived financial literacy. These results are consistent with Ahmad and Shah (2022), who explain that overconfidence fosters motivation to learn more about financial markets and investment instruments, thereby expanding financial knowledge. Individuals with higher levels of confidence are generally more willing to seek financial information, explore investment opportunities, and engage in financial decision-making processes. This greater involvement contributes to the acquisition of financial knowledge and improves their understanding of financial concepts and products. Therefore, the proposed hypothesis is:

*H<sub>2</sub>*: Overconfidence bias positively affects financial literacy.

### *Representativeness Bias and Investment Decision-Making*

Representativeness bias influences investment decision-making because investors tend to assess investment prospects based on historical patterns or past experiences without adequately considering new information. This finding is supported by Sudirman et al. (2023), who find that investors often make quick decisions based on trends or popular recommendations that are perceived as representing profitable opportunities. Similarly, Cao et al. (2021) explain that this bias encourages investors to overreact to information that appears similar to previous conditions. Meanwhile, Kartini and Nahda (2021) emphasize that representativeness bias accelerates the decision-making process, even though it

often leads investors to overlook fundamental analysis. As a result, investors rely on simplified judgments and perceived similarities when selecting investment alternatives. Therefore, the proposed hypothesis is:

*H<sub>3</sub>*: Representativeness bias positively affects investment decision-making.

#### ***Representativeness Bias and Financial Literacy***

Representativeness bias may influence financial literacy because investors often evaluate information by comparing it with familiar patterns or previous experiences. This tendency encourages individuals to pay greater attention to market information and seek additional knowledge to confirm their judgments. These findings are supported by Sudirman et al. (2023), who show that representativeness bias can increase investor engagement in financial learning activities through market experience. Cao et al. (2021) also find that exposure to historical market patterns leads to increased investor understanding of risks and financial instruments. Meanwhile, Kartini and Nahda (2021) emphasize that cognitive bias can be a driving factor in improving financial literacy when accompanied by curiosity and broader information exploration. Through repeated observation of market trends and investment outcomes, investors may gradually develop a better understanding of financial concepts and investment mechanisms. In addition, the tendency to associate new information with existing knowledge stimulates continuous learning and strengthens financial awareness. Therefore, the proposed hypothesis is:

*H<sub>4</sub>*: Representativeness bias positively affects financial literacy.

#### ***Anchoring Bias and Investment Decision-Making***

Anchoring bias can cause investors to rely too heavily on initial information, such as historical prices or specific recommendations, thereby reducing rationality in investment decision-making. Sudirman et al. (2023) emphasize that this bias often makes it difficult for novice investors in emerging markets to adapt to changing market information. Similar findings are presented by Cao et al. (2021), who state that anchoring bias negatively impacts the quality of investment decisions because investors tend to fixate on old reference points. Meanwhile, Kartini and Nahda (2021) find that even when investors have financial understanding, the anchoring effect remains difficult to eliminate and can hinder rational decision-making. When making investment decisions, individuals may use initial information as a benchmark and insufficiently adjust their judgments when new information becomes available. Consequently, investment choices may not fully reflect current market conditions and available evidence. Therefore, the proposed hypothesis is:

*H<sub>5</sub>*: Anchoring bias negatively affects investment decision-making.

#### ***Anchoring Bias and Financial Literacy***

Anchoring bias may hinder the development of financial literacy because individuals tend to rely excessively on initial information when evaluating financial matters, causing them to pay insufficient attention to updated financial knowledge and information. As a result, this tendency may reduce the critical evaluation of new information, limit the expansion of financial understanding, and ultimately impede the development of comprehensive financial literacy. Ahmad and Shah (2022) indicate that anchoring bias hinders an individual's ability to objectively assess financial information due to the tendency to fixate on specific initial values or reference points. Meanwhile, Cao et al. (2021) and Kartini and Nahda (2021) emphasize that although financial literacy is important, the effect of anchoring bias on its development tends to be weak because this bias is automatic and difficult to control. Therefore, the proposed hypothesis is:

*H<sub>6</sub>*: Anchoring bias negatively affects financial literacy.

#### ***Availability Bias and Investment Decision-Making***

Availability bias may influence investment decision-making because investors tend to place greater emphasis on information that is easily recalled or readily available in memory. As a consequence, investment judgments are often based on recent experiences, frequently encountered information, or highly publicized events rather than comprehensive analysis. Iram et al. (2023) find that availability bias

significantly affects investment decision-making, as information that frequently appears in the media or is derived from personal experience tends to be more easily remembered and subsequently perceived as more important. Similarly, Sudirman et al. (2023) report that investors frequently depend on easily accessible information when assessing investment opportunities, thus affecting both the quality and outcomes of their investment decisions. This tendency may lead investors to overestimate the relevance of readily available information while overlooking other important information that is less accessible. Therefore, investment decisions may be based on incomplete evaluations, potentially reducing decision quality and increasing the likelihood of judgment errors. Therefore, the proposed hypothesis is:

*H<sub>7</sub>*: Availability negatively affects investment decision-making.

#### ***Availability Bias and Financial Literacy***

Availability bias may affect investment decision-making because investors tend to rely more heavily on information that is easily recalled or readily available in memory when evaluating investment opportunities. This cognitive bias can cause investors to place greater importance on recent experiences, highly publicized information, or personally familiar events while neglecting more comprehensive analysis. Iram et al. (2023) find that availability bias significantly influences investment decision-making, as information frequently presented in the media or derived from personal experience tends to be more easily remembered and subsequently perceived as more important. Similarly, Cao et al. (2021) argue that availability bias may negatively affect investment decisions because investors tend to overlook potentially profitable investment opportunities that receive limited media exposure. Therefore, the proposed hypothesis is:

*H<sub>8</sub>*: Availability bias negatively affects financial literacy.

#### ***Financial Literacy as a Mediator between Overconfidence Bias and Investment Decision Making***

Ahmad et al. (2021) explain that financial literacy helps investors process financial information more objectively, thereby reducing excessive confidence in their personal judgments. Similar findings are also reported by Ahmad and Shah (2022), who find that investors with higher levels of financial literacy tend to demonstrate greater awareness of market risks and the limitations of their investment knowledge. Furthermore, Iram et al. (2023) suggest that financial literacy functions as a factor that can suppress and moderate overconfidence bias. With a better understanding of fundamental analysis, risk management, and diversification strategies, investors are more likely to evaluate investment information critically and avoid excessive reliance on intuition or subjective beliefs. Although financial literacy may not completely eliminate overconfidence bias, it provides a stronger cognitive foundation for making more rational and objective investment decisions. Therefore, the proposed hypothesis is:

*H<sub>9</sub>*: Financial literacy mediates the relationship between overconfidence bias and investment decision-making.

#### ***Financial Literacy as a Mediator between Representativeness Bias and Investment Decision Making***

Shah et al. (2018) suggest that investors with higher levels of financial literacy are generally better able to recognize and control cognitive biases in the investment decision-making process. Financial knowledge enables investors to evaluate information more systematically rather than relying solely on simplified judgments or familiar patterns. Ahmad and Shah (2022) further report that financially literate investors tend to conduct more comprehensive analyses, including the evaluation of company performance, market conditions, and other relevant financial information before making investment decisions. Similarly, Iram et al. (2023) find that strong financial literacy reduces investors' reliance on trends, stereotypes, or easily recognizable information when assessing investment opportunities. Investors with adequate financial knowledge are more likely to critically assess the credibility and relevance of information, thereby supporting more rational and objective investment decisions. Therefore, the proposed hypothesis is:

*H<sub>10</sub>*: Financial literacy mediates the relationship between representativeness bias and investment decision-making.

***Financial Literacy as a Mediator between Anchoring Bias and Investment Decision Making***

Financial literacy is considered an important factor in reducing cognitive biases because it enhances an individual’s ability to evaluate financial information systematically and objectively. Mubaraq et al. (2021) and Kartini and Nahda (2021) find that financial literacy can weaken the effect of anchoring bias by providing a more rational basis for evaluating investment-related information. Furthermore, Cao et al. (2021) suggest that novice investors tend to be more susceptible to anchoring bias because limited practical experience restricts their understanding of financial concepts. Given that financial literacy reduces the influence of anchoring bias while enhancing the quality of investment decisions, it is expected to function as a mediating variable in the relationship between anchoring bias and investment decision-making. Financial literacy enables investors to evaluate information more objectively, thereby reducing excessive reliance on initial reference points and supporting more rational investment decisions. Therefore, the proposed hypothesis is:

*H<sub>11</sub>*: Financial literacy mediates the relationship between anchoring bias and investment decision-making.

***Financial Literacy as a Mediator between Availability Bias and Investment Decision Making***

Financial literacy may influence availability bias because individuals with greater financial knowledge tend to evaluate information more critically and rely less on easily accessible or recently encountered information when making investment decisions. Rahman and Gan (2020) emphasize that behavioral biases such as availability bias are rooted in rapid psychological processes, making them difficult to control solely through analytical ability or formal financial literacy. This suggests that even when investors understand diversification principles or fundamental analysis, they may still be influenced by information that is readily available and easily recalled. In contrast, Mubaraq et al. (2021) as well as Kartini and Nahda (2021) find that financial literacy can reduce the influence of availability bias. This view is consistent with the findings of Cao et al. (2021), who report that experienced investors are better able to use their financial literacy to mitigate heuristic biases than novice investors. Given that financial literacy reduces the influence of availability bias and improves the quality of investment decisions, it may play a mediating role in the relationship between availability bias and investment decision-making. Greater financial literacy enables investors to evaluate information more objectively, thereby supporting more rational and effective investment decisions. Therefore, the proposed hypothesis is:

*H<sub>12</sub>*: Financial literacy mediates the relationship between availability bias and investment decision-making.

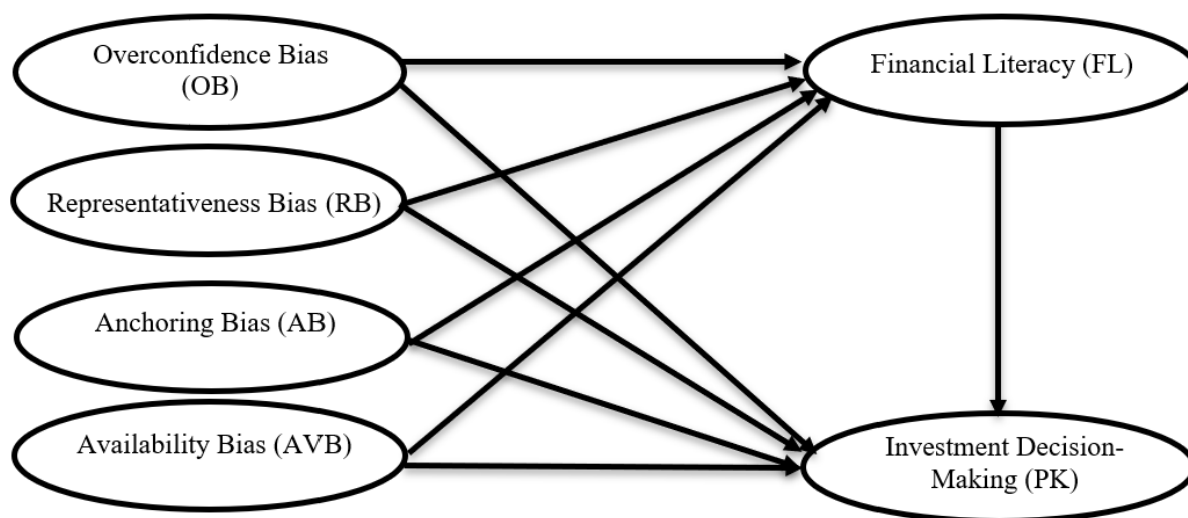


Figure 1. Research framework

Financial literacy is considered an important factor in improving the quality of investment decision-making. A positive and significant role of financial literacy in enhancing investment decision-making is identified by Rahman and Gan (2020) as well as Cao et al. (2021), particularly among investors with relatively extensive investment experience. Financial literacy enables individuals to understand financial concepts, evaluate investment alternatives, and assess the risks and returns associated with different investment options. Furthermore, financially literate investors are better equipped to process relevant information and make objective judgments when selecting investment opportunities. Consequently, higher levels of financial literacy are expected to promote more informed, rational, and effective investment decisions. Therefore, the proposed hypothesis is:

*H<sub>13</sub>*: Financial literacy positively affects investment decision making.

**Research Framework**

Based on the hypotheses developed in this study, the research model is shown in Figure 1.

**Research Methods**

This study employed a quantitative research approach, with the population consisting of female investors who had engaged in investment activities in North Sumatra. Table 1 shows the operational definition and indicators of each variable. The sample was selected using a purposive sampling technique, resulting in 200 respondents. This sample size is consistent with the recommendation of Hair et al. (2026), who suggested that an ideal sample size for SEM-PLS analysis ranges from 100 to 200 respondents. The purposive sampling technique was considered appropriate because it enabled the selection of respondents based on specific criteria relevant to the research objectives (Sugiyono, 2021). Primary data were collected through an online questionnaire administered via Google Forms. The respondent criteria included age, educational background, occupation, income level, type of investment, investment experience, and domicile. A total of 200 questionnaires were distributed, and all questionnaires were successfully returned and deemed suitable for further analysis, resulting in a response rate of 100%. The research instrument consisted of a series of written statements measured using a five-point Likert scale, ranging from 1 = strongly disagree to 5 = strongly agree, as recommended by Sujadi and Aulianisya (2021). This scale was employed to capture respondents' level of agreement with each statement included in the questionnaire. Prior to hypothesis testing, the measurement instrument was evaluated for validity and reliability. The results indicated that all measurement items met the established validity and reliability criteria, confirming that the instrument was appropriate for subsequent statistical analysis.

**Table 1**  
**Operational Definition**

Variable	Definition	Indicator
Overconfidence Bias (OB)	Overconfidence bias is an investor's high level of confidence in the predictions and information they have when investment decision-making (Puspawati & Yohanda, 2022).	<ol style="list-style-type: none"> <li>1. Confidence in one's own abilities</li> <li>2. Confidence in one's knowledge</li> <li>3. Confidence in one's experience (Ahmad &amp; Shah, 2022).</li> </ol>
Representativeness Bias (RB)	Representativeness bias is a cognitive bias in which people tend to make judgments or decisions based on how closely an event or situation appears to fit a particular prototype or stereotype (Sudirman et al., 2023).	<ol style="list-style-type: none"> <li>1. Investors view things objectively</li> <li>2. Investors make decisions based on potential success</li> <li>3. based on potential success</li> <li>4. Investors tend to make investment decisions quickly and stereotypically</li> <li>5. Investors make decisions based on the past, implement them in the present and future (Mardiana et al., 2025)</li> </ol>

Anchoring Bias (AB)	Anchoring bias is a cognitive bias phenomenon in heuristic theory that occurs when an investor uses an initial value assessment as an anchor for the purchase price of an investment and makes estimates of subsequent investment prices, but in reality, this often results in returns/values that differ from those estimated by the investor (Iram et al., 2023).	<ol style="list-style-type: none"> <li>1. Reliance on past experience</li> <li>2. Reliance on historical prices to predict stock prices (Kartini &amp; Nahda, 2021)</li> </ol>
Availability Bias (AVB)	Availability bias is the tendency to make decisions based solely on available information without considering risks and market trend (Sudirman et al., 2023).	<ol style="list-style-type: none"> <li>1. Tendency to buy local stocks</li> <li>2. Views on information from close friends (Sudirman et al., 2023)</li> </ol>
Financial Literacy (FL)	Financial literacy is knowledge that discusses Literacy encompasses basic financial concepts and products that can be used as benchmarks for effective decision-making to achieve financial well-being in the future (Ahmad & Shah, 2022).	<ol style="list-style-type: none"> <li>1. General knowledge</li> <li>2. Savings and loans</li> <li>3. Insurance</li> <li>4. Investment (Ahmad &amp; Shah, 2022).</li> </ol>
Investment Decision-Making (PK)	Investment decision-making is the process of analyzing financial products, considering the rate of return, risk, and planning time to maximize profits. This process encompasses not only financial considerations but also psychological and behavioral aspects that can influence an investor's final decision (Kusumawati, 2022).	<ol style="list-style-type: none"> <li>1. Using income to invest</li> <li>2. Investing without consideration</li> <li>3. Investing without collateral</li> <li>4. Investing based on intuition (Perayunda &amp; Mahyuni, 2022)</li> </ol>

### Data Analysis and Discussions

Table 2 shows the respondent profile. A total of 200 female investors participated in this study. The majority of respondents were aged 25 years or younger (60.5%), followed by those aged 26–30 years (17.5%), 31–35 years (8.5%), over 40 years (7.5%), and 36–40 years (6.0%), indicating that the sample was dominated by young investors. In terms of educational background, most respondents had completed senior high school or its equivalent (47.0%), followed by a bachelor's degree (36.0%), diploma degree (12.5%), and postgraduate degree (4.5%).

**Table 2**  
**Respondent Profile**

Description	Frequency	Percentage (%)
Age:		
≤ 25 Years	121	60.5
26–30 Years	35	17.5
31–35 Years	17	8.5
36–40 Years	12	6.0
> 40 Years	15	7.5
Educational Background:		
Senior High School/Vocational High School/Equivalent	94	47.0
Diploma (D3)	25	12.5
Bachelor's Degree (S1)	72	36.0
Postgraduate Degree (S2/S3)	9	4.5
Occupation:		
Unemployed	56	28.0

Civil Servant/State-Owned Enterprise Employee	43	21.5
Private-Sector Employee	71	35.5
Homemaker	6	3.0
Entrepreneur	24	12.0
Monthly Income:		
< IDR 3,000,000	56	28.0
IDR 3,000,001–5,000,000	76	38.0
> IDR 5,000,000	68	34.0
Type of Investment:		
Stocks	80	40.0
Mutual Funds	58	29.0
Gold	35	17.5
Bonds	15	7.5
Cryptocurrency	5	2.5
Time Deposits	7	3.5
Investment Experience:		
< 1 Year	59	29.5
1–3 Years	81	40.5
> 3 Years	60	30.0

Regarding employment status, the largest proportion of respondents were private-sector employees (35.5%), followed by unemployed individuals (28.0%), civil servants/state-owned enterprise employees (21.5%), entrepreneurs (12.0%), and homemakers (3.0%). With respect to monthly income, 38.0% of respondents earned between IDR 3,000,001 and IDR 5,000,000, while 34.0% reported income exceeding IDR 5,000,000 and 28.0% earned less than IDR 3,000,000. Concerning investment preferences, stocks were the most popular investment instrument (40.0%), followed by mutual funds (29.0%), gold (17.5%), bonds (7.5%), deposits (3.5%), and cryptocurrencies (2.5%), suggesting a preference for investment instruments with relatively higher return potential. In terms of investment experience, most respondents had been investing for one to three years (40.5%), followed by less than one year (29.5%) and more than three years (30.0%). Overall, these characteristics indicate that the respondents were predominantly young female investors with relatively limited investment experience, which may influence their financial literacy and investment decision-making behavior.

**Table 3**  
**Validity and Reliability Model**

Latent Construct	Cronbach's Alpha	Composite Reliability ( $P_c$ )	Average Variance Extracted (AVE)	$R^2$	$Q^2$ predict
OB	0.903	0.924	0.670		
RB	0.967	0.972	0.812		
AB	0.855	0.902	0.697		
AVB	0.838	0.888	0.666		
FL	0.896	0.911	0.561	0.654	0.320
PK	0.956	0.964	0.768	0.530	0.520

Table 3 shows that the reliability and validity tests showed good results. The Cronbach's Alpha values for all constructs were greater than 0.70, indicating reliable and internally consistent data. Similarly, the Composite Reliability (CR) values were greater than 0.70, indicating that the indicators were consistent in measuring the latent variables. Meanwhile, the Average Variance Extracted (AVE)

values were all greater than 0.50, indicating that more than half of the indicator variance can be explained by the constructs. Thus, all research variables met the reliability and convergent validity criteria.

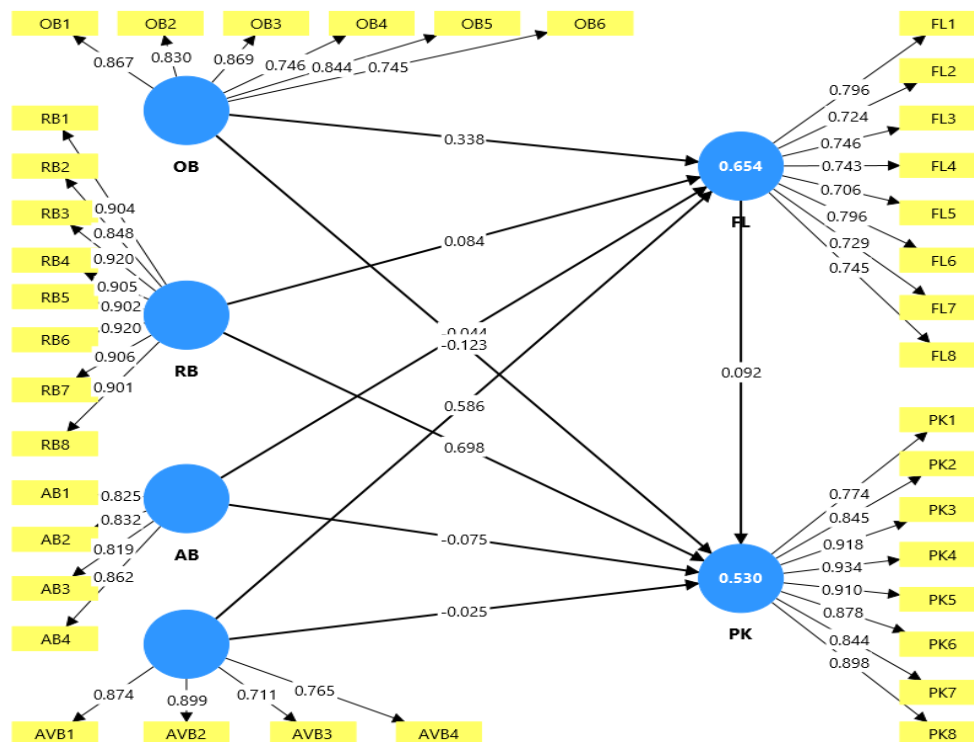


Figure 1. Conceptual framework

Table 4  
Relationship between Direct and Indirect Influence

Hypotheses	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T statistics ( O/STDEV)	p values
OB → PK	-0,123	-0,110	0,102	1,209	0,227
OB → FL	0,338	0,329	0,102	3,299	0,001
RB → PK	0,698	0,702	0,045	15,573	0,000
RB → FL	0,084	0,081	0,038	2,203	0,028
AB → PK	-0,075	-0,072	0,074	1,008	0,313
AB → FL	-0,044	-0,034	0,079	0,555	0,579
AVB → PK	-0,025	-0,038	0,090	0,273	0,784
AVB → FL	0,586	0,585	0,101	5,809	0,000
FL → PK	0,092	0,094	0,091	1,021	0,307
OB → FL → PK	0,031	0,029	0,031	1,002	0,316
RB → FL → PK	0,008	0,007	0,009	0,892	0,373
AB → FL → PK	-0,004	-0,005	0,012	0,346	0,729
AVB → FL → PK	0,054	0,058	0,057	0,946	0,344

**Overconfidence Bias on Investment Decision-Making**

The results (Figure 1 and Table 4) indicate that overconfidence bias does not have a significant effect on investment decision-making, as evidenced by a path coefficient of -0.123 and a p-value of

0.227. This finding suggests that respondents' investment decisions are influenced more strongly by other factors, such as financial literacy, investment experience, and risk preferences, rather than by excessive confidence in their own judgment. Given that the majority of respondents are relatively inexperienced investors, overconfidence may not be sufficiently developed to influence their investment behavior. These results support the findings of Kusumawati (2022), who reported that overconfidence bias does not always exert a significant influence on the investment decisions of novice investors. However, the results differ from those of Iram et al. (2023) and Ahmad and Shah (2022), who reported that overconfidence bias encourages experienced investors to make more aggressive investment decisions. These findings enrich the behavioral finance literature by providing evidence that heuristic biases, such as overconfidence, are contextual in nature and may be dominant among experienced investors but less relevant to novice investors, who often have limited financial literacy, investment experience, and risk tolerance.

#### ***Overconfidence Bias on Financial Literacy***

The results of this study (Figure 1 and Table 4) indicate that overconfidence bias has a positive and significant effect on financial literacy, as evidenced by a path coefficient of 0.338 and a *p-value* of 0.001. This finding suggests that higher levels of self-confidence encourage individuals to perceive themselves as possessing adequate knowledge of financial instruments, which subsequently increases their engagement in financial learning and information-seeking activities. In the Indonesian context, where access to financial information has expanded significantly through digital platforms, social media, webinars, and investment communities, overconfidence may encourage investors to actively explore financial content and participate in educational activities. This phenomenon appears to be particularly relevant among young female investors, who tend to be highly engaged with digital media and frequently seek investment-related information from various online sources. As confidence in their financial capabilities increases, these investors may become more motivated to enhance their knowledge and understanding of financial products, investment risks, and market opportunities. These findings provide empirical support for the argument that heuristic biases may also contribute positively to financial learning by stimulating greater interest and involvement in financial matters.

The findings are consistent with those of Ahmad and Shah (2022) and Iram et al. (2023), who reported that overconfidence can encourage individuals to become more active in understanding investment risks and opportunities. However, the findings differ from those of Kusumawati (2022), who found that overconfidence does not necessarily improve financial literacy because some individuals may become reluctant to seek additional information due to an excessive belief in their own knowledge. Therefore, this study extends the behavioral finance literature by demonstrating that the influence of overconfidence on financial literacy is context-dependent. While overconfidence may hinder learning among some investors, it can also function as a catalyst for knowledge acquisition among young female investors who actively engage with financial information and educational resources.

#### ***Representativeness Bias on Investment Decision-Making***

The findings (Figure 1 and Table 4) show that representativeness bias has a positive and significant effect on investment decision-making, as evidenced by a path coefficient of 0.698 and a *p-value* of 0.000. This finding suggests that investors tend to evaluate investment opportunities based on familiar patterns, recent market trends, or previous experiences, rather than conducting comprehensive analyses of available information. The findings are consistent with those of Ahmad and Shah (2022), Hossain and Siddiqua (2024), and Sudirman et al. (2023), who reported that representativeness bias encourages investors to make investment decisions based on perceived similarities and prevailing market trends. In the Indonesian context, where financial information is widely disseminated through social media platforms, online communities, and investment influencers, investors may be more susceptible to relying on simplified judgments when evaluating investment opportunities. This tendency appears to be particularly relevant among young female investors, who are generally active users of digital media and are frequently exposed to investment-related content, recommendations, and success stories shared online. Consequently, investment decisions may be influenced more by perceived patterns and social signals than by objective assessments of fundamental information. These findings highlight

the importance of strengthening financial literacy and analytical skills among young investors to reduce excessive reliance on heuristic judgments and promote more rational, informed, and sustainable investment decision-making.

#### ***Representativeness Bias on Financial Literacy***

The findings (Figure 1 and Table 4) confirm that representativeness bias has a positive and significant effect on financial literacy, as indicated by a path coefficient of 0.084 and a *p-value* of 0.028. This result suggests that investors who frequently rely on familiar patterns, previous experiences, or widely recognized market trends tend to become more engaged in seeking and processing financial information. Although financial literacy is generally viewed as a mechanism for reducing cognitive biases, the findings indicate that representativeness bias may also play a role in shaping how financial knowledge is acquired and interpreted. These results are consistent with the studies of Mubaraq et al. (2021) and Sudirman et al. (2023), which found that certain cognitive biases can encourage investors to actively seek additional information, thereby contributing to the development of financial literacy.

In Indonesian, where financial information is increasingly accessible through social media, online investment communities, financial influencers, and digital investment platforms, investors are continuously exposed to market trends and investment-related content. This condition appears particularly relevant among young female investors, who tend to actively engage with digital media and online learning resources. Exposure to recurring investment narratives and successful investment stories may stimulate their interest in learning about financial products and investment opportunities, thereby enhancing their financial literacy. However, the knowledge acquired through such experiences may be based primarily on perceived similarities and practical observations rather than comprehensive financial analysis. Consequently, while representativeness bias may contribute to the development of financial literacy, it may also create an overestimation of financial knowledge if not supported by adequate financial education and critical evaluation skills.

#### ***Anchoring Bias on Investment Decision-Making***

The findings (Figure 1 and Table 4) indicate that anchoring bias does not have a significant effect on investment decision-making, as evidenced by a path coefficient of -0.075 and a *p-value* of 0.313. This result suggests that although investors often use historical prices or prior information as reference points, these factors are not the primary determinants of their investment decisions. This finding is consistent with that of Rahman and Gan (2020), who argued that young investors tend to be more responsive to current market trends than to historical references. However, it differs from the findings of Ahmad and Shah (2022), who reported that anchoring bias significantly influences investment decisions in highly volatile market conditions. These differences suggest that the effect of anchoring bias may vary across investment environments and investor characteristics. In the context of Indonesia's emerging market, anchoring bias may not be a dominant factor influencing investment decision-making. Investors are likely to consider a broader range of information sources, including market trends, peer recommendations, and digital financial content, rather than relying solely on initial reference points. Therefore, financial education remains essential to help investors utilize historical information objectively and critically, rather than depending excessively on initial references without conducting comprehensive analyses.

#### ***Anchoring Bias on Financial Literacy***

The findings (Figure 1 and Table 4) reveal that anchoring bias does not significantly influence financial literacy, as indicated by a path coefficient of -0.044 and a *p-value* of 0.519. This means that investors' tendency to focus on initial information or reference points does not significantly influence their understanding or ability to manage their finances. This finding aligns with Rahman and Gan (2020), Puspawati and Yohanda (2022), as well as Kartini and Nahda (2021), who emphasized that financial literacy is more influenced by education and experience than by cognitive bias. However, these results differ from Mubaraq et al. (2021), who stated that anchoring bias can reduce the quality of financial understanding, and Ahmad and Shah (2022) and Iram et al. (2023), who found that cognitive bias can encourage individuals to improve their financial knowledge. The implication is that for novice investors

with limited experience, anchoring bias is not yet strong enough to influence financial literacy. This confirms that improving financial literacy is more effective through formal education, direct investment experience, and access to credible information, rather than solely through cognitive patterns like anchoring.

#### ***Availability Bias on Investment Decision-Making***

The findings (Figure 1 and Table 4) indicate that availability bias does not have a significant effect on investment decision-making, as evidenced by a path coefficient of  $-0.025$  and a  $p$ -value of  $0.784$ . This result suggests that the tendency to rely on readily available or easily remembered information is not a primary factor influencing respondents' investment decisions. This finding is consistent with those of Puspawati and Yohanda (2022), Rahman and Gan (2020), and Kartini and Nahda (2021), who emphasized that novice investors tend to be more cautious and consider rational factors, such as capital security, limited financial resources, and official information provided by investment platforms. However, the findings differ from those of Hossain and Siddiqua (2024) and Ahmad and Shah (2022), who reported that availability bias significantly influences investment decisions, particularly in environments characterized by low levels of financial literacy, where investors rely heavily on popular information disseminated through the media and social communities. These differences suggest that the influence of availability bias may depend on investors' characteristics and the availability of credible financial information. In the Indonesian context, particularly among young female novice investors, investment decisions appear to be influenced more by caution, market regulations, and access to official information than by easily recalled information. Therefore, these findings underscore the importance of continuous financial education to help investors distinguish reliable information from temporary trends and popular narratives, thereby supporting more rational, informed, and long-term investment decision-making.

#### ***Availability Bias on Financial Literacy***

The results of this study (Figure 1 and Table 4) indicate that availability bias has a positive and significant effect on financial literacy, as evidenced by a path coefficient of  $0.586$  and a  $p$ -value of  $0.000$ . This finding suggests that exposure to readily available information encourages investors to become more engaged in learning about financial concepts, investment instruments, and market developments. Frequent interaction with financial information increases investors' familiarity with investment-related topics and stimulates their interest in acquiring additional financial knowledge. Consequently, availability bias may serve as an initial mechanism that motivates individuals to seek, process, and utilize financial information, thereby contributing to the development of financial literacy. This finding aligns with Iram et al. (2023), and Cao et al. (2021), who emphasized that frequent information exposure contributes to increased financial understanding. This is also consistent with the efforts of the Financial Services Authority (OJK) (2022) and the Indonesian Stock Exchange (IDX) (2023) in utilizing digital media as a means of financial education.

In the Indonesian context, where financial information is widely disseminated through social media, online investment communities, digital financial platforms, and mobile applications, investors are continuously exposed to investment-related content. This phenomenon appears particularly relevant among young female investors, who tend to actively use digital media as a source of information and learning. Easy access to financial information encourages them to explore investment opportunities, understand market developments, and improve their financial knowledge. These findings suggest that availability bias does not always produce negative consequences; under certain circumstances, it can act as a catalyst for financial learning. Nevertheless, the development of financial literacy should be accompanied by critical evaluation skills to ensure that the information obtained is accurate, credible, and capable of supporting sound investment decisions.

#### ***Financial Literacy in Mediating Overconfidence Bias on Investment Decision-Making***

The results of this study (Figure 1 and Table 4) indicate that financial literacy does not significantly mediate the relationship between overconfidence bias and investment decision-making, as evidenced by an indirect effect coefficient of  $0.092$  and a  $p$ -value of  $0.307$ . Although overconfidence

bias significantly influences financial literacy, this influence is not strong enough to be transmitted to investment decisions. This indicates that increasing financial literacy has not been able to reduce the dominance of overconfidence in investment behavior. This finding is consistent with Rahman and Gan (2020) and Mubaraq et al. (2021), who found that investors tend to rely more on intuition and subjective experience than objective financial knowledge. However, this contrasts with Sudirman et al. (2023) and Iram et al. (2023), who reported that financial literacy can be an important mediator in reducing the influence of overconfidence. This difference can be explained by the characteristics of the study respondents, the majority of whom were young investors with limited investment experience. Therefore, despite improvements in financial literacy, cognitive biases remain influential in shaping investment decisions. These findings support the bounded rationality perspective, which suggests that financial literacy alone is insufficient to fully neutralize cognitive biases, as investor behavior is also constrained by limitations in information processing, cognitive capacity, and decision-making capabilities. Given these findings, initiatives undertaken by the Financial Services Authority (OJK) (2022) and the Indonesian Stock Exchange (IDX) (2023) to enhance financial literacy should be complemented by behavioral training programs. Such programs can help investors not only develop financial knowledge but also identify and mitigate cognitive biases, particularly overconfidence bias, thereby supporting more rational investment decision-making.

#### ***Financial Literacy in Mediating Representativeness Bias on Investment Decision-Making***

The findings (Figure 1 and Table 4) indicate that financial literacy does not serve as a significant mediating variable in the relationship between representativeness bias and investment decision-making, as indicated by an indirect effect coefficient of 0.031 and a *p-value* of 0.316. Although representativeness bias significantly influences financial literacy and decision-making, this influence does not continue through the mediation pathway. This indicates that financial knowledge is not strong enough to correct investors' tendency to rely on historical patterns or stereotypes in investing. This finding is consistent with Ahmad and Shah (2022) and Hossain and Siddiqua (2024), who stated that financial literacy does not necessarily reduce behavioral bias, as investors can still fall into representativeness even with theoretical understanding. However, these results differ from those of Iram et al. (2023) and Sudirman et al. (2023), who showed that literacy can weaken the influence of bias on investment decisions. This difference can be explained by the characteristics of the respondents in this study: the majority of young investors with short investment experience tend to be more easily influenced by heuristics despite having basic knowledge. The practical implication of these results is that improving financial literacy alone is not enough; it must be accompanied by a behavioral finance approach. Educational programs need to emphasize awareness of cognitive biases so investors can manage representativeness bias and make more rational and sustainable investment decisions.

#### ***Financial Literacy in Mediating Anchoring Bias on Investment Decision-Making***

The findings (Figure 1 and Table 4) reveal that financial literacy does not serve as a significant mediating variable in the relationship between anchoring bias and investment decision-making, as indicated by an indirect effect coefficient of 0.008 and a *p-value* of 0.373. This means that even though investors possess financial literacy, the tendency to fixate on the initial reference point (anchor) remains difficult to correct. This is because the anchoring process occurs intuitively and quickly, resulting in a stronger dominance of cognitive biases than formal knowledge capacity. This finding aligns with Hossain and Siddiqua (2024) and Rahman and Gan (2020), who stated that financial literacy is not always effective in suppressing anchoring bias, as even investors who understand capital market theory can still be trapped by historical prices or initial recommendations. However, these results differ from research by Mubaraq et al. (2021) and Kartini and Nahda (2021), who found that literacy can weaken the anchoring effect through a more rational evaluation framework. This difference can be explained by the characteristics of the respondents in this study, who were mostly young investors with limited experience, so their knowledge was not yet strong enough to neutralize heuristic tendencies. The practical implication is that financial literacy alone is insufficient to mitigate the effects of anchoring bias. This education needs to emphasize awareness of behavioral biases so investors can recognize the limitations of heuristics and not rely solely on initial information when making investment decisions.

### ***Financial Literacy in Mediating Availability Bias on Investment Decision-Making***

The findings (Figure 1 and Table 4) show that financial literacy does not serve as a significant mediating variable in the relationship between availability bias and investment decision-making, as indicated by an indirect effect coefficient of -0.004 and a *p-value* of 0.729. This means that even though investors have financial understanding, the tendency to rely on memorable or popular information remains dominant in influencing investment behavior. This is in line with Ahmad and Shah (2022) and Rahman and Gan (2020), who stated that availability bias is rooted in rapid psychological processes and therefore difficult to control with formal literacy. However, these results differ from those of Mubaraq et al. (2021) and Kartini and Nahda (2021), who found that literacy can suppress the influence of availability bias, especially in experienced investors. This difference can be explained by the characteristics of the respondents in this study, who were mostly novice investors with minimal experience, resulting in conceptual knowledge that has not been fully applied in investment practice. Critically, these results support the bounded rationality view (Sharpe et al., 2023), which states that financial knowledge does not always lead to rational behavior. Investors often use cognitive shortcuts, such as the most readily accessible information, so financial literacy fails to be an effective mediator. The practical implication of this finding is the need for behavioral finance-based education that emphasizes awareness of psychological biases, so that investors not only have technical literacy but also are able to control heuristic tendencies in investment decision-making.

### ***Financial Literacy on Investment Decision-Making***

The empirical evidences (Figure 1 and Table 4) indicate that financial literacy does not have a significant effect on investment decision-making, as evidenced by a path coefficient of 0.092 and a *p-value* of 0.344. This means that even though investors have a basic understanding of financial concepts such as diversification or risk management, this knowledge is not automatically applied in investment practice. This finding is consistent with Puspawati and Yohanda (2022) and Ansari et al. (2023), who stated that financial literacy is not always directly related to the quality of investment decisions. However, this result differs from Rahman and Gan (2020) and Cao et al. (2021), who found that literacy plays a positive role in improving decision quality, especially among experienced investors. This difference can be explained by the context of this study, where the majority of respondents were novice investors, particularly young women, who are still more influenced by popular information, social media trends, and herd behavior than by rational analysis. The practical implication of this finding is that financial literacy programs need to be accompanied by behavioral financial education so that investors not only understand theory but also are able to control psychological biases in investment practice.

## **Conclusions, Limitations, and Suggestions**

### ***Conclusions***

This study examined the influence of behavioral biases on investment decision-making among 200 female investors in North Sumatra. The findings indicate that psychological factors are more influential in shaping investment decisions than financial literacy. Although basic financial knowledge is generally considered important, it does not necessarily lead to more rational investment decisions in practice. This finding supports the heuristic theory proposed by Tversky and Kahneman (1974), which suggests that investors often rely on cognitive shortcuts when making decisions under conditions of uncertainty. Financial literacy among young investors may therefore remain largely informational and may not be sufficient to alter actual investment behavior.

These findings have important practical implications. Existing financial literacy programs should be enhanced by incorporating behavioral approaches that address psychological biases and emotional regulation, rather than focusing solely on the acquisition of financial knowledge. This is particularly important given that young investors, who constitute a large proportion of participants in the Indonesian capital market, remain vulnerable to short-term market trends and external recommendations. For investors, the findings serve as a reminder to exercise greater caution when making investment decisions. Financial knowledge remains essential; however, it should be complemented by self-discipline, awareness of cognitive biases, and the adoption of more rational investment strategies.

Furthermore, regulators, academics, and digital investment platform providers play a crucial role in promoting behavior-based financial education to support the development of a healthier and more sustainable capital market.

### ***Limitations***

This study has several limitations. First, the sample consists only of female investors in North Sumatra, which may limit the generalizability of the findings to investors in other regions or demographic groups. Second, the study employs a cross-sectional design, which captures respondents' perceptions and behavior at a single point in time and therefore cannot fully explain changes in investment behavior over time. Third, the data are collected through self-reported questionnaires, which may be subject to response bias and social desirability bias. Finally, this study focuses on selected behavioral biases and financial literacy, while other factors such as herding behavior, risk tolerance, financial experience, and market conditions may also influence investment decision-making.

### ***Suggestions***

Future research is recommended to incorporate additional variables, such as herding behavior and risk tolerance, which may exert a stronger influence on investment decision-making. Furthermore, financial literacy should be assessed not only in terms of financial knowledge but also through observable changes in financial behavior. For young investors, awareness of cognitive biases, particularly overconfidence and representativeness bias, is essential for making more rational investment decisions and avoiding the tendency to follow market trends uncritically.

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