

The Influence of Availability Bias, Herding Bias, Disposition Effect, and Overconfidence on Investment Decisions through Risk Perception

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ABSTRACT

The purpose of this study is to investigate how generation X, Y, and Z investors in Batam City are related to availability bias, disposition effect, herding bias, overconfidence bias, risk perception, and investment decisions. After 410 people were selected through purposive sampling technique, the data were processed using PLS-SEM method. The results show that overconfidence, herding bias, disposition effect, and risk perception have a positive impact on investment decisions. In contrast, availability bias has no direct impact. In addition, the results of the study show that risk perception serves as a link between availability bias, herding bias, and overconfidence bias with investment decision, however, the disposition effect with investment decision is not significant.

Keywords: *Availability bias, herding bias, disposition effect, risk perception, investment decision*

INTRODUCTION

Investing is one way individuals manage and develop financial assets to achieve future financial well-being. In the modern context, investing is not only an economic activity but also an important part of a financial planning strategy for individuals and families. Information and knowledge are also fundamental to helping shape investment decisions (R *et al.*, 2025). Investment intentions and investment decision outcomes are significantly influenced by *financial literacy* and *behavioral bias*. (Atif Sattar *et al.*, 2020).

A person's financial behavior is often influenced by cognitive biases that lead to deviations from rational decisions (Mohanty *et al.*, 2024). In addition to financial capability, psychological factors also play a role in shaping individual financial behavior (Khornida Marheni *et al.*, 2025). For example, *overconfidence bias* can encourage investors to overestimate investment outcomes, leading to greater risk-taking and suboptimal portfolio performance (Gabhane *et al.*, 2023). *Overconfidence* can reduce investment quality and individual investment performance (Salman *et al.*, 2021). Furthermore, other cognitive biases, such as *availability bias* and *the disposition effect*, also influence individuals' information assessment and investment decisions.

Availability bias refers more to information that is easily accessible or recently received, thus assessing this information as more important than information from the past (Acharya *et al.*, 2025). This bias makes investors tend to be more willing to take risks after experiencing a profit, because recent positive information is still embedded in memory, and conversely, after experiencing a loss, investors tend to avoid risks because the experience is still embedded in the mind (Mittal, 2022). Meanwhile, *the disposition effect* on the tendency of investors to immediately liquidate profitable investments while maintaining unprofitable investments for a long period of time, this bias is associated with lower investment performance and is more common in less experienced and less careful investors (Almansour *et al.*, 2023). *Herding bias* is a psychological tendency, individuals take by imitating others without seeking information and analyzing more deeply (Khairunnisa *et al.*, 2023).

When investors are more likely to follow the decisions or actions of other investors, it can lead to asset price bubbles and changes in market trends (Budiman *et al.*, 2025). Research conducted by [] Jain *et al.* (2023) found that risk perception serves as a partial mediator in the correlation between *overconfidence bias* and *investment decisions*, as well as between *availability bias* and *investment decisions*.

Risk is a complex issue that needs to be understood in a financial context because each individual has a different perspective (Zhang *et al.*, 2022). An individual's perspective on risk, which is a personal assessment of the potential losses or gains from an investment, plays a crucial role in the decision-making process. The concepts of risk and uncertainty are closely related in determining the risk perceived by investors, with *risk perception* being a crucial component in the decision-making process to minimize potential uncertainty (Wangzhou *et al.*, 2021). *Risk perception* describes how investors view financial risks based on their concerns and experiences (Ahmed *et al.*, 2022). When investors have experienced losses in investing, their perception of future risk can increase, while the experience of gaining profits can decrease their perception of risk.

studies have examined *behavioral bias in investment decisions*, but the results are mixed. Some studies suggest that *availability bias*, *disposition effect*, *herding bias*, and *overconfidence* influence *investment decisions*, while others report negligible findings. Furthermore, previous studies have largely focused on specific investor demographics, while investigations of

Generation X, Y, and Z investors are limited, particularly in Batam City. Each generation has unique attitudes and risk perceptions regarding financial decisions. This study aims to investigate the impact of *behavioral bias* on investment decisions, with *risk perception* as a mediating variable, among Generation X, Y, and Z investors in Batam City.

This research is expected to provide a deeper understanding of the components that influence investment decisions from an investor's perspective. It is hoped that the results of this study will provide a foundation for the development of behavioral finance. Furthermore, financial practitioners and institutions working in the financial sector can use the findings to develop financial education and investment management strategies that are more tailored to investor characteristics.

RESEARCH METHODS

The success of research is greatly influenced by the accuracy in selecting the methodology used to achieve results with a strong scientific foundation. Research methods basically aim to obtain new knowledge, answer the problem formulation, and test or prove previously established hypotheses (Nurhaswinda *et al.*, 2025). One of the main components in the methodology is the selection of the research approach, because this approach will determine the method of data collection, analysis techniques, and the process of interpreting research results. Mistakes in understanding or selecting a research approach can cause research results to be invalid or not in accordance with the objectives that have been formulated from the beginning (Agina Tiani *et al.*, 2025). This research uses a quantitative approach, namely a research method that is carried out systematically and structured with a design that has been determined from the beginning until the research process is completed, so that its implementation is relatively unaffected by changing field conditions (Sarwono, 2022).

The participants in this study were investors from Generation X, Y, and Z living in Batam City with various income sources. This study examines investment decision-making influenced by various behavioral biases, with *risk perception* as a mediator. *Risk perception* is crucial in explaining how behavioral biases influence investors' evaluations of prospective risks and rewards before making investment decisions. The sampling method used *purposive sampling*, where sample characteristics are deliberately determined based on the research objectives, ensuring that only individuals who meet certain criteria are selected as respondents. Individuals who have invested or are currently investing in financial instruments are the subjects of this study.

RESULTS AND DISCUSSION

The questionnaire in this study was successfully distributed to 410 respondents, the collected data was then used as a reference in the analysis process to examine the problem formulation and submit hypotheses.

Table 1. Respondent profile

Criteria	category	amount	percentage
Age	18-20 years old	106	29.5%
	21-23 years old	104	25.4%
	24-26 years old	67	16.3%
	27-29 years old	50	12.2%
	30-32 years old	41	10%
	33-36 years	21	5.1%
	37-39 years old	12	2.9%
	>40 years	9	2.2%
Last level of education	Total	410	100%
	High school/vocational school or equivalent	199	48.5%
	Diploma/Bachelor's Degree	195	47.6%
	S2	15	3.7%
	S3	1	0.2%
Status work	Government employees	61	14.9%
	Private employees	127	31%
	Businessman	61	14.9%
	Students	154	37.6%
	Doesn't work	7	1.7%
	Total	410	100%
Average Monthly Income	>100,000.00	54	13.2%
	1,000,000.00 - 5,000,000.00	199	48.5%
	6,000,000.00 - 10,000,000.00	118	28.8%
	10,000,000.00 - 15,000,000.00	26	6.3%
	> 20,000,000.00	13	3.2%
	Total	410	100%

Source: Processed from research data, 2026

CONVERGENT VALIDITY TEST

Convergent validity testing was conducted to determine how well construct indicators consistently reflect the variables under study. Convergent validity testing was accepted or valid when the *outer loading indicator value* was >0.7 and the *average variance extracted (AVE)* was >0.5 . The test results showed that several indicators had *outer loadings* of 0.63–0.65. However, all AVE values exceeded the minimum threshold, thus all constructs were still deemed to meet the convergent validity criteria.

Table 2. Convergent validity

Indicator	outer loadings	AVE	results
AB1	0,755	0,556	Valid
AB2	0,717		
AB3	0.715		
AB4	0,778		
AB5	0,762		

Indicator	outer loadings	AVE	results
DE1	0,815	0.598	Valid
DE2	0,766		
DE3	0.634		
DE4	0,808		
DE5	0,828		
HB1	0,841	0,601	Valid
HB2	0,779		
HB3	0,758		
HB4	0,710		
HB5	0,784		
OC1	0,820	0,646	Valid
OC2	0,773		
OC3	0,793		
OC4	0,829		
RP1	0,793	0,565	Valid
RP2	0,658		
RP3	0,763		
RP4	0,796		
RP5	0,739		
ID1	0,814	0.589	Valid
ID2	0.748		
ID3	0.647		
ID4	0.800		
ID5	0.814		

DISCRIMINANT VALIDITY TEST

The ability of each construct to represent a concept distinct from other constructs is evaluated through a discriminant validity test. The *Fornell-Larcker criterion* and the *heterotrait-monotrait ratio* (HTMT) value are used to conduct this test. According to the *Fornell-Larcker criterion*, a construct is considered to have discriminant validity if the square root of the *average variance extracted* (AVE) for each construct is greater than the relationship between the constructs (Hair jr *et al.*, 2021). According to the HTMT value, a construct is considered to have discriminant validity if the HTMT value is <0.90.(Sarstedt *et al.*, 2022).

Table 3. Fornell -Larcker Discriminant Validity Test

Indicator	Availability bias	Disposition effect	Herding bias	Investment decision	Overconfidence	Risk perception
Availability bias	0,746	-	-	-	-	-
Disposition effect	0,589	0,774	-	-	-	-
Herding bias	0,649	0,537	0,775	-	-	-
Investment decision	0,530	0,447	0,565	0,767	-	-

<i>Overconfidence</i>	0,529	0,405	0,501	0,716	0,804	-
<i>Risk perception</i>	0,569	0,390	0,555	0,679	0,684	0,752

Tabel 4. Uji validitas diskriminan *heterotrait-monotrait ratio*

Indikator	<i>Availability bias</i>	<i>Disposition effect</i>	<i>Herding bias</i>	<i>Investment decision</i>	<i>Overconfidence</i>	<i>Risk perception</i>
<i>Availability bias</i>	-	-	-	-	-	-
<i>Disposition effect</i>	0,727	-	-	-	-	-
<i>Herding bias</i>	0,795	0,647	-	-	-	-
<i>Investment decision</i>	0,654	0,552	0,683	-	-	-
<i>Overconfidence</i>	0,652	0,494	0,609	0,868	-	-
<i>Risk perception</i>	0,705	0,476	0,672	0,829	0,841	-

RELIABILITY TEST

In reliability testing, *composite reliability* , *Cronbach's alpha* , and *rho-A values* are used to measure the extent to which the indicator consistently demonstrates the construct. A value exceeding 0.7 indicates that the indicator is capable of producing consistent and reliable results (Sarstedt & Liu, 2024).

Table 5. Reliability Test

Indicator	<i>Cronbach's Alpha</i>	<i>Rho-A</i>	<i>Composite Reliability</i>
<i>Availability bias</i>	0,801	0,804	0,862
<i>Disposition Effect</i>	0,829	0,811	0,866
<i>Herding Bias</i>	0,833	0,832	0,877
<i>Investment decision</i>	0,823	0,818	0,880
Indikator	<i>Cronbach's Alpha</i>	<i>Rho-A</i>	<i>Composite Reliability</i>
<i>Overconfidence</i>	0,817	0,833	0,881
<i>Risk perception</i>	0,833	0,838	0,883

DIRECT EFFECT TEST

The direct influence between constructs in the research model is measured using the *direct effect test*. The *path coefficient* and *p-value* are used to assess this test. A significant relationship is indicated if the *p-value* is <0.05, indicating a direct influence between the constructs discussed.(Ringle *et al.*, 2023).

Indicator	Coefficient	P-Value	Results	Hypothesis
<i>Availability bias > Investment decision</i>	0.001	0.988	Not significant	Rejected
<i>Availability bias > Risk perception</i>	0.202	0.002	Significant (positive)	Accepted
<i>Disposition effect > Investment decision</i>	0.087	0.037	Significant (positive)	Accepted
<i>Disposition effect > Risk perception</i>	-0.033	0.450	Not Significant	Rejected
<i>Herding bias > Investment decision</i>	0.159	0.004	Significant (positive)	Accepted
<i>Herding bias > Risk perception</i>	0.194	0.001	Significant (positive)	Accepted
<i>Overconfidence > Investment decisions</i>	0.413	0,000	Significant (positive)	Accepted
<i>Overconfidence > Risk perception</i>	0.494	0,000	Significant (positive)	Accepted
<i>Risk perception > Investment decisions</i>	0.274	0,000	Significant (positive)	Accepted

Hypothesis 1 was rejected ; this relationship was insignificant because *investment decisions* are generally not only based on the most easily remembered information but are also influenced by other considerations, such as analysis of market conditions, investment objectives, and the risks the investor is willing to bear. Therefore, the ease of recalling or obtaining information does not affect a person's investment decision. In this situation, it indicates that the investor's decision-making process is not only determined by the information that most easily comes to mind, but also considers other components that contribute to decision-making. This finding confirms the results of previous research conducted by Nayara Labiba dan Sutrisno (2025) showing that *availability bias* is not always a major factor in influencing investment decisions, especially when investors consider other factors more in the decision-making process.

Hypothesis 2 is accepted; this relationship is significant because information that is easily remembered or frequently received tends to be more easily used as a reference by investors in assessing risk. Thus, *risk perception* is shaped not only by objective information but also by the information that most readily comes to mind. This study yielded findings similar to those Nizar (2024) stating that *availability bias* occurs because individuals tend to use the information that most quickly comes to mind. Furthermore, these results are also supported Jain *et al.* (2023) by Cuandra *et al.* (2024) which suggests that *availability bias* can strengthen *risk perception* because individuals' assessment processes are often influenced by readily accessible information rather than completely objective evaluations .

Hypothesis 3 is accepted; this relationship is significant because investors' tendency to immediately realize profits and hold on to investments that experience losses can influence how they make subsequent investment decisions. This condition indicates that in addition to rational considerations, psychological and emotional elements influence investors' investment decisions. The findings in this study reinforce research Subandi dan Basana (2021) showing that *the disposition effect* can influence the timing of stock purchases and sales when making investment decisions. *The disposition effect* influences *investment decisions*. (Adil *et al.*, 2022; Bhutto *et al.*, 2025; Daud *et al.*, 2023)

Hypothesis 4 is rejected, the insignificance of the relationship indicates that investors' tendency to sell profitable assets or hold onto assets experiencing losses does not necessarily influence how investors perceive investment risk. This condition indicates that *risk perception* is more influenced by factors other than *the disposition effect behavior*. The findings in this study strengthen the empirical evidence reported by Nareswari *et al.* (2021), that *the disposition effect* does not always have a significant effect on *risk perception*. These results are also supported by Purnomo *et al.* (2025) those who found that some *behavioral biases* may not directly affect *risk perception* in certain empirical models.

Hypothesis 5 is accepted, this relationship is significant because investors often consider the actions of the majority as a consideration in making investment decisions. When many investors choose the same decision, individuals tend to be more confident in following that decision even though it is not necessarily based on personal analysis. This condition indicates that in certain situations, investors do not fully rely on personal information, but tend to imitate the actions of other investors in the market. The results obtained in this study confirm the findings Ahmad dan Wu (2022) regarding the influence of *herding* on *investment decisions* in the stock market. In addition, these results are also supported by Abideen *et al.* (2023), Ahmed *et al.* (2022), and Cuandra *et al.* (2024) found that the tendency to follow majority decisions is one of the characteristics of investor behavior that is influenced by *herding bias*.

Hypothesis 6 is accepted, and this relationship is significant because the tendency to follow the majority decision can influence how investors perceive the risk level of an investment. Decisions made by many people are often perceived as signals that the risks faced are more acceptable, thus influencing investors' risk perceptions. This condition illustrates that investors tend to feel safer when many other parties make the same decision, even though the actual risk level does not change. This is further supported by findings Almansour *et al.* (2023) explaining that *herding bias* arises from investors' tendency to avoid risk and follow the majority. This is supported by empirical evidence from Cuandra *et al.* (2024) and Ahmed *et al.* (2022) confirming that following the group can influence risk perception. Seraj *et al.* (2022) also indicates that the higher the herding bias, the higher the investor's *risk perception*.

Hypothesis 7 is accepted, this relationship is significant because investors who are very confident in their abilities and knowledge tend to be more confident in making investment decisions, making investors more daring to act and quicker in determining their investment choices. These findings indicate that investors with high levels Adil *et al.* (2022) of *overconfidence* tend to be more active and bold in making investment decisions. These results align with research showing that *overconfidence* has a positive and significant effect on investment decisions. This finding is also supported by Seraj *et al.* (2022), Bihari *et al.* (2022), Almansour *et al.* (2023), and Cuandra *et al.* (2024) who identified *overconfidence* as one of the most dominant *behavioral biases* in influencing investment decisions.

Hypothesis 8 is accepted; this relationship is significant because *overconfidence* can influence how investors assess investment risk. Investors who are confident in their analytical abilities tend to assess risk differently than more cautious investors, so their risk perception is also influenced by their level of confidence. These results align with research conducted by Jain *et al.* (2023), which explains that overconfident individuals tend to overestimate what they know and can do. Furthermore, Cuandra *et al.* (2024) this finding supports the findings that overconfidence has a significant impact on risk perception, as overconfidence can influence how investors assess and manage their investment risk.

Hypothesis 9 is accepted; this relationship is significant because *risk perception* is an important consideration before investors make decisions. The better investors understand the risks they might face, the more likely they are to consider various alternatives before making an investment decision. According to research Kurnijanto *et al.* (2025), *risk perception* has a positive impact on *investment decisions*, where better knowledge of risk can encourage more rational decision-making. This finding is also supported by Ahmed *et al.* (2022) research Jain *et al.* (2023) that found that *risk perception* plays a significant role in the investment decision-making process under unstable market conditions.

INDIRECT EFFECT

TEST

indirect effect test aims to identify the extent of the influence of the independent variable on the dependent variable through the mediating variable. The test results are determined by observing the *specific indirect effect value* in the *bootstrapping results*. The significance of the *indirect effect* is determined based on the test results meeting a *p-value* <0.05. A significant *indirect effect* indicates that the mediating variable plays a role in explaining the relationship between the independent and dependent variables. (Hair Joseph *et al.*, 2022).

Indicator	P-Value	Results
AB>RP>ID	0.012	Significant (positive)
DE>RP>ID	0.466	Not significant
HB>RP>ID	0.008	Significant (positive)
OC>RP>ID	0,000	Significant (positive)

Hypothesis 10 is accepted, the results of the indirect effect test indicate that *availability bias*, *herding bias*, and *overconfidence* have a significant indirect influence on *investment decisions* through *risk perception* with p-values of 0.012, 0.008, and 0.000, respectively, so that hypothesis 10 on this path is accepted. This shows that *risk perception* can be an intermediary variable that explains how *behavioral bias* affects investment decisions, where changes in risk perception can influence the direction of investor decision-making.

However, the indirect influence of the *disposition effect* on *investment decisions* through *risk perception* was found to be insignificant with a *p-value* of 0.466. This indicates that *risk perception* is not always able to mediate the entire relationship between *behavioral bias* and *investment decisions*.

R SQUARE TEST

R-Square (R^2) test is used to estimate the proportion of the dependent variable's variability that can be explained by the independent variables in a research model. The higher the R^2 value, the better the model's predictive ability. According to Hair *et al.* (2021), an R^2 value of 0.75 indicates a strong category, 0.50 a moderate category, and 0.25 a weak category in the PLS-SEM structural model.

Indicator	<i>R-Squared</i>	<i>R-Squared Adjusted</i>
<i>Risk perception</i>	0.547	0.543
<i>Investment decision</i>	0.611	0.606

F-SQUARE TEST

F-Square (f^2) is used to evaluate the magnitude of the effect given by each exogenous variable on the endogenous variable in the PLS-SEM model through changes in the R^2 value (Hair *et al.*, 2021). The results of the *f-square* (f^2) test show that *Overconfidence* has the greatest influence on *risk perception* (0.363) with a moderate category, while *Herding bias* (0.043), *availability bias* (0.042), and *disposition effect* (0.001) have a small influence.

Overconfidence also has the largest influence (0.216) on *investment decisions*, with a moderate impact. Other variables, such as *risk perception* (0.087), *herding bias* (0.032), *availability bias* (0.000), and *disposition effect* (0.0012), have only a small to very small impact. This indicates that *overconfidence* is the most dominant variable in this research model.

Indicator	<i>Availability bias</i>	<i>Disposition effect</i>	<i>Herding bias</i>	<i>Investment Decision</i>	<i>Overconfidence</i>	<i>Risk perception</i>
<i>Availability bias</i>	-	-	-	0,000	-	0,042
<i>Dispositin effect</i>	-	-	-	0,0012	-	0,001
<i>Herding bias</i>	-	-	-	0,032	-	0,043
<i>Investment decision</i>	-	-	-	-	-	-
<i>Overconfiden ce</i>	-	-	-	0.216	-	0.363
<i>Risk perception</i>	-	-	-	0.087	-	-

CONCLUSION AND SUGGESTIONS

This research shows that not all *behavioral biases* have a direct influence on *investment decisions*. *Overconfidence*, *herding bias*, *disposition effect*, and *risk perception* have been shown to have a positive influence on *investment decisions*, while *availability bias* does not show a direct influence. *Risk perception* also plays a mediating role in some relationships, such

as *availability bias* , *herding bias* , and *overconfidence* . *Overconfidence* is the main factor influencing *investment decisions* .

This study has limitations because it only involved investors in Batam City, so the results cannot be generalized to a wider area. Furthermore, several insignificant relationships indicate that other factors may not have been included in the model. Therefore, it is recommended that future research expand the region and sample size and include additional variables such as financial knowledge, emotional intelligence, or market perception. Furthermore, for more in-depth results on investor behavior, it is recommended to consider a qualitative or *mixed methods approach* .

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