International Journal of Research and Review
[Indexed, Peer-Reviewed Journal]
Volume 12; Issue: 7; July 2025
Website: www.ijrrjournal.com
Research Paper *E-ISSN: 2349-9788; P-ISSN: 2454-2237*

The Impact of Behavioral Biases on Stock Investment Decisions with Investor Type as a Moderating Variable: A Case Study of Investors in North Sumatra

Alfred[1], Rina Br Bukit[2], Narumondang Bulan Siregar[3]

[1,2,3]Department of Accounting, Faculty of Economic and Business, Universitas Sumatera Utara, Indonesia.

Corresponding Author: Alfred

DOI: https://doi.org/10.52403/ijrr.20250713

ABSTRACT

The objective of this study is to determine and analyze the influence of Overconfidence Bias, Representative Bias, Herding Bias, Disposition Effect, and Anchoring Bias on Investment Decisions, with Investor Type as a moderating variable, among investors in North Sumatra. Using purposive sampling, there are 235 valid respondents and data analyzed using SmartPLS. The study's results indicate that Overconfidence Bias, Representative Bias, Herding Bias, Disposition Effect, and Anchoring Bias have a positive and significantly effects on investment decisions. Meanwhile, Representative Bias, when moderated by Investor Type, has a negative effect on investment decisions. Anchoring Bias, when moderated by Investor Type, has a positive and significantly effects on investment decisions. Overconfidence Bias, Herding Bias, and Disposition Effect, when moderated by Investor Type, do not significantly affect investment decisions of investors residing in North Sumatra.

Keywords: Overconfidence, Representative, Herding, Disposition Effect, Anchoring Bias, Investment Decision, Investor Type.

INTRODUCTION

Global economies are progressively recovering from the recession triggered by the Covid-19 pandemic in 2019. This period of economic downturn led to widespread job losses and hindered individuals' ability to meet their daily necessities, resulting in a severe economic contraction not only in Indonesia but worldwide. In Indonesia, this decline was evident in the decelerated economic growth, which fell from 5.02% in 2019 to 2.97% in 2020 (Kemenkeu, 2023). Despite the economic downturn caused by the recession, public interest in investment did not wane. This is evidenced by the increase in the number of Single Investor Identification (SID) accounts throughout the Covid-19 pandemic. A rise in investment typically correlates with an improvement in a country's economic standing (ojk.go.id)
According to data released by the Kustodian Sentral Efek Indonesia (KSEI), the number of stock investors in the capital market significantly increased from 1,104,610 in 2019 to 5,255,571 in 2023. This represents a remarkable surge of 375.79% in investors during this period. This trend suggests a growing public awareness of the crucial role of investment in the current era, particularly in safeguarding against future economic downturns akin to those experienced during the pandemic. According to data obtained

from ksei.go.id, the number of Single Investor Identification (SID) holders in North Sumatra saw a substantial increase. In December 2019, there were 107,272 investors, which surged to 559,092 investors by December 2023. This represents a significant growth of 421.19% in registered investors with KSEI in the region.

The growth in investment plays a vital role in fostering an increase in the number of investors within Indonesia. Data from the Central Statistics Agency (BPS) consistently shows an upward trend in investment across Indonesia year after year. This sustained growth reflects a strong investor confidence in the Indonesian economy, even in the face of various economic pressures such as global trade disputes and the Covid-19 pandemic. Behavioral bias forms the bedrock of finance, integrating behaviors and phenomena observed in the stock market. The primary challenge investors face lies in their investment decisions (Madaan and Singh, 2019). Novice investors often exhibit irrational tendencies in their decision-making, frequently allowing emotions and psychological factors to heavily influence their investment choices (Sabilla & Pertiwi, 2021). A significant portion of investors in Pakistan often fail to adequately comprehend investment risks, largely due to the influence of behavioral biases during their investment activities (Ahmed et al., 2022). Students often exhibit behavioral biases, a phenomenon frequently attributed to their young age (Puspawati & Yohanda, 2022). Students frequently make swift investment decisions driven by heightened and unchecked emotions. This suggests that behavioral biases are often more prevalent among younger individuals due to their less regulated emotional responses.

LITERATURE REVIEW

Behaviour Finance Theory

The foundational ideas of behavioral finance can be traced back to George Charles Selden (1912), who applied principles of psychology to the context of the capital market. Irrational behaviors stemming from behavioral biases can lead to chaotic investment decisions, often resulting in losses instead of the anticipated gains (Sabilla & Pertiwi, 2021). Behavioral Finance leverages psychological theories to explain market inefficiencies (Adi, 2018). Behavioral finance examines how individuals make investment decisions in response to the information and stimuli they receive. (Widyastuti, 2012). Behavioral finance is the study of cognitive and emotional errors in decision-making that lead to suboptimal investor choices (Fitra, 2023). Based on the theories discussed, behavioral finance can be summarized as a field that investigates how individuals make their investment decisions, drawing upon the information they acquire. It integrates concepts from psychology, economics, and traditional finance to elucidate phenomena observed in financial markets, particularly those that deviate from purely rational behavior.

Prospect Theory

Prospect Theory, a foundational concept in behavioral economics, was developed by Daniel Kahneman and Amos Tversky in their seminal 1979 research. This theory investigates how individuals make financial decisions when faced with uncertainty. A significant number of investors are influenced by their own behavioral biases, which can lead to irrational decision-making. (Rasool & Ullah, 2020). Prospect Theory elucidates how investors make decisions when faced with uncertainty (Puspawati & Yohanda, 2022). Prospect Theory posits that psychology profoundly influences people's choices in uncertain situations, leading to consistent biases. (Afriani & Halmawati, 2019). In Prospect Theory, investors evaluate their choices by considering potential gains and losses relative to a specific reference point. This reference point is often, but not exclusively, the purchase price of an asset (Shukla, 2021).

Investment Decisions

Investment decisions refer to the allocation of existing funds into a company's assets (Rahman and Gan, 2020). Millennial investors often base their decisions on the buying and selling reactions of other investors. (Adielyani & Mawardi, 2020). Every investor naturally anticipates returns from their investments. However, not many investors fully grasp that maximizing investment results often requires a significant time commitment. Appropriate investment decisions lead to more optimal investment outcomes for an investor (Jariah et al., 2023).

Overconfidence Bias

Overconfidence leads investors to underestimate the risks they face and overestimate their own knowledge, often based on the belief that they possess superior information (Nkukpornu et al., 2020). Investors are influenced by overconfidence bias when they rely more heavily on their own beliefs, knowledge, and intelligence (Khilar & Singh, 2020). Investors exhibiting overconfidence tend to disregard their actual ability to evaluate companies. This often leads them to over-trade and underestimate risks (Afriani & Halmawati, 2019). Generally, overconfident investors tend to make quick and hasty decisions. This behaviour stems from their belief that their choices are superior to others, often leading them to disregard readily available information. In the end, investors often operate with limited information and considerable uncertainty, which inherently makes their decisions highly risk (Putri et al, 2024).

Representative Bias

Representative bias occurs when an investor assesses a company with a positive trend, assuming it will automatically lead to a good investment (Putri et al, 2024). In this bias, investors typically make judgments and decisions based on past experiences. Representative bias can lead investors to make incorrect decisions (Kartini & Nahda, 2021). Representative bias is a cognitive shortcut where individuals categorize new information by relying on past experiences and classifications (Seth & Kumar, 2020). Generally, investors influenced by this bias tend to be more cautious in their decision-making. However, their choices are primarily driven by past experiences, which can sometimes lead to suboptimal decisions.

Herding Bias

Herding in investment refers to a situation where an investor is unable to make independent investment decisions and tends to follow what most other investors decide (Raheja & Dhiman, 2019). Investors often find it difficult to avoid herding behavior because investing requires a significant amount of information. Consequently, they tend to join online communities or forums on social media, seeking to gain insights and often, consciously or unconsciously, aligning their decisions with the collective sentiment (Soraya et al., 2023). Clear information is also crucial for decision-making. The decisions made must align with existing facts; however, investors often receive incomplete information. A segment of investors are swayed by emotions and instincts rather than their own independent analysis (Joedono & Evelyn, 2023).

Disposition Effect

The disposition effect causes investors to hold onto investments for too long, often resulting in no profit (Dervishaj, 2021). Investors influenced by the disposition effect tend to hold onto unproductive stocks while actively pursuing those perceived to have excellent future performance (Fitra, 2023). New investors often feel a strong inclination to realize gains, even small ones, from their investments, quickly cashing them in. Conversely, they tend to be highly reluctant to admit losses on their investments, leading them to hold onto declining assets, even when those investments are performing poorly. An investor's final decision is not based on

perceived losses but rather on perceived gains (Jovianto et al., 2023).

Anchoring Bias

Investors affected by anchoring bias determine prices for both buying and selling stocks based on previously acquired information (Jan et al., 2022). According to Kartini & Nadha (2021), Many investors in the stock market experience this bias, and they tend to only remember the purchase price of the stocks in their portfolio. Investors affected by this bias will determine stock choices based on historical trends. Investors select stock prices based on historical trends. If the current price is not higher than their purchase price, investors will almost certainly not sell their investment (Charissa, 2018).

Investor Type

In investment, there's a fundamental principle: lower risk generally corresponds to lower potential returns and losses, while higher risk has the potential for both higher returns and greater losses (Putri et al, 2024). Investor types are categorized based on an individual's risk profile, which is a process of identifying an investor's risk tolerance (Nurhaliza, 2021). It's crucial for investors to assess how much risk they are willing to undertake before making any investment. This assessment helps determine the most suitable investment strategies and assets that align with their comfort level regarding potential financial fluctuations. According to Hikmah et al., (2020), investors are categorized into three main types which is, risk taker, risk neutral, and risk averter. It can be concluded that understanding an investor's type is crucial for effective decision-making. If an investor isn't aware of their risk tolerance and limitations, their investment efforts could ultimately be fruitless.

Framework

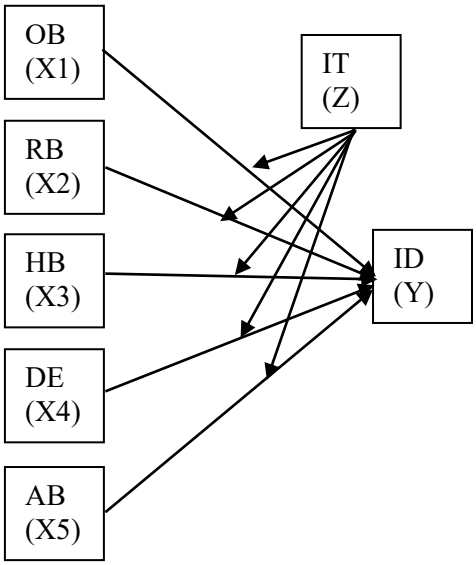

Figure 1. Conceptual Framework

H1: OB has positive effect on ID
H2: RB has positive effect on ID
H3: HB has positive effect on ID
H4: DE has positive effect on ID
H5: AB has positive effect on ID
H6: OB moderated by IT has positive effect on ID
H7: RB moderated by IT has positive effect on ID
H8: HB moderated by IT has positive effect on ID
H9: DE moderated by IT has positive effect on ID
H10: AB moderated by IT has positive effect on ID

MATERIALS & METHODS

This study employs a quantitative research approach, primarily due to the use of a questionnaire as the data collection instrument. The questionnaire will be distributed to investors residing in North Sumatra. This research employs purposive sampling as its data collection technique. In this method, the researcher intentionally sets specific criteria or "weights" to select participants who are most relevant and knowledgeable for the study, ensuring that the chosen sample directly addresses the research objectives. In this research, the

sample size was determined using Slovin's formula, resulting in a total of 400 samples for the study. This research will collect data using questionnaires distributed specifically to investors residing in North Sumatra. The questionnaires will be disseminated electronically via Google Forms, shared through messaging applications like WhatsApp and Telegram to reach each respondent. The study will employ a Likert scale for its research measurements. In this research, data will be analyzed using the Structural Equation Modeling (SEM) method, specifically with the Partial Least Squares (PLS) technique. Within SEM-PLS, there are two primary models which is the measurement model (Outer Model) and the structural model (Inner Model).

RESULT

The researcher collected data over a two-month period, from March 2025 to April 2025. The data was gathered using an online questionnaire distributed via Google Forms within WhatsApp and Telegram groups. A total of 249 responses were initially received. After screening, 14 respondents did not meet the study's criteria, resulting in a final sample size of 235 valid respondents. Therefore, all 235 respondents were included in the analysis for this research.

A. Descriptive Statistic

In this research, the researcher uses utilize SmartPLS 4.0 to obtain descriptive statistics. The results generated will include key metrics such as mean, minimum (min), maximum (max), and standard deviation.

Table 1. The Result of Descriptive Statistics

Variable	n	*Mean*	*Min*	*Max*	*Standard Deviation*
Overconfidence Bias (X1)	235	3.728	1	5	0.85
Representative Bias (X2)	235	3.658	1	5	0.91
Herding Bias (X3)	235	3.623	1	5	0.86
Disposition Effect (X4)	235	3.497	1	5	0.889
Anchoring Bias (X5)	235	3.791	1	5	0.82
Investment Decisions (Y)	235	3.686	1	5	0.804
Investor Type (Z)	235	3.61	1	5	0.887

B. Outer Model

The analysis of the measurement model, also known as the outer model, involves testing the relationship between indicators and their respective latent variables. The primary tests conducted within the outer model:

a. Convergent Validity

For assessing convergent validity in PLS-SEM, the primary criterion is the loading factor. A loading factor greater than 0.70 is generally considered very good or ideal, indicating that the indicator strongly represents its intended construct. The test result of convergent validity are as follows:

Table 2. Convergent Validity Result

Variable	Indicator	*Loading Factor*
X1_(OB)	X1_(OB1)	0,757
	X1_(OB2)	0,773
	X1_(OB3)	0,779
	X1_(OB4)	0,813
	X1_(OB5)	0,797
X2_(RB)	X2_(RB1)	0,890
	X2_(RB2)	0,863
X3_(HB)	X3_(HB1)	0,908
	X3_(HB2)	0,867
	X3_(HB3)	0,909
X4_(DE)	X4_(DE1)	0,823
	X4_(DE2)	0,887
	X4_(DE3)	0,723
X5_(AB)	X5_(AB1)	0,886
	X5_(AB2)	0,900
	X5_(AB3)	0,859
Y_(KIRE)	Y_1(KIRE1)	0,765
	Y_2(KIRE2)	0,735
	Y_3(KIRE3)	0,734
	Y_4(KIRE4)	0,731
	Y_5(KIRE5)	0,719
	Y_6(KIRE6)	0,703
	Y_7(KIRE7)	0,712
	Y_8(KIRE8)	0,725
Y_(KIRI)	Y_9(KIRI1)	0,740
	Y_10(KIRI2)	0,740
	Y_11(KIRI3)	0,719
Y_(KITF)	Y_12(KITF1)	0,755
	Y_13(KITF2)	0,724
	Y_14(KITF3)	0,701
	Y_15(KITF4)	0,713
Z_(RT)	Z_1(RT1)	0,703
	Z_2(RT2)	0,771
	Z_3(RT3)	0,799
Z_(RN)	Z_4(RN1)	0,865
	Z_5(RN2)	0,831
	Z_6(RN3)	0,824
Z_(RA)	Z_7(RA1)	0,762
	Z_7(RA2)	0,795
	Z_7(RA3)	0,811

According to the test result, since the loading factor for every indicator is above 0.7, we can conclude that each indicator for the variables is valid and successfully meets the criteria for convergent validity. This indicates a strong relationship between the indicators and their respective latent variables.

b. Discriminant Validity

Discriminant validity is used to evaluate whether measured constructs are sufficiently distinct from one another. In

simpler terms, it assesses if a latent variable is truly unique and not merely a measure of another, different construct within the model. The test result of discriminant validity are as follows:

Table 3. Discriminant Validity Result

Variable	Average Variance Extracted
Overconfidence Bias	0,615
Representative Bias	0,769
Herding Bias	0,801
Disposition Effect	0,662
Anchoring Bias	0,778
Investment Decision	0,530
Investor Type	0,635

Table 4. Fornell-Larcker

	X1_(OB)	X2_(RB)	X3_(HB)	X4_(DE)	X5_(AB)	Y_(KI)	Z_(TI)
X1_(OB)	**0,784**						
X2_(RB)	0,649	**0,877**					
X3_(HB)	0,665	0,603	**0,895**				
X4_(DE)	0,596	0,568	0,650	**0,814**			
X5_(AB)	0,639	0,509	0,601	0,535	**0,882**		
Y_(KI)	0,746	0,707	0,765	0,698	0,700	**0,728**	
Z_(TI)	0,402	0,312	0,457	0,411	0,385	0,461	**0,797**

The square root of its Average Variance Extracted (AVE) must be greater than its highest correlation with any other latent variable in the model. AVE itself should generally be 0.50 or greater. An AVE of 0.50 means that the construct explains 50% or more of the variance of its indicators. (Wiyono, 2020). Based on the results, since all Average Variance Extracted (AVE) values are above 0.5, and the square root of each AVE is greater than its correlation with any other construct, it can be concluded that all constructs in the model have demonstrated both convergent validity and discriminant validity.

c. Composite Reliability

This test is used to assess the reliability of each indicator within a variable by utilizing Cronbach's Alpha values. A variable is considered reliable if its Cronbach's Alpha value is greater than 0.700.

Table 5. Composite Reliability Result

Variabel	*Cronbach Alpha*
X1_(OB)	0,845
X2_(RB)	0,700
X3_(HB)	0,876
X4_(DE)	0,745
X5_(AB)	0,857
Y_(ID)	0,937
Z_(IT)	0,928

Based on the results presented, it's concluded that every variable has a Cronbach's Alpha value above 0.7. Therefore, all variables meet the required criteria and have passed the reliability test.

C. Inner Model

The next step is the Inner Model. In this model, the researcher uses the coefficient of determination (R^2 value) to ascertain the extent of influence that specific independent latent variables have on the dependent latent variable.

Table 6. Coefficient Determination (R^2)

Variabel	*R-Square*	*R-Square Adjusted*
Investment Decision	0,790	0,780

The Adjusted R-Square value for the investment decision variable is 0.780. This indicates that the endogenous variable (dependent variable), investment decision, in this study can be explained by the exogenous variables (independent variables) comprising overconfidence bias, representative bias, herding bias, disposition effect, and anchoring bias to an extent of 78%. The remaining 22% of the variation in investment decisions is attributed to other factors or variables not included in this research.

D. Hypothesis Testing

Hypothesis testing will be processed using the data analyzed with Smart PLS to determine the relationships between variables. In this test, the researcher will examine the t-statistic and compare it against the t-table value. The t-table value for this study is set at 1.96 (with an alpha level of 0.05). A hypothesis is accepted if the t-statistic > 1.96 (t-table). The relationship is considered significant if the p-value < 0.05.

Table 7. Hypothesis Result

Variables	*T-statistic*	*p-value*	*Original Sampel*
OB → ID	2,611	0,009	0,166
RB → ID	5,147	0	0,214
HB → ID	3,614	0	0,258
DE → ID	2,909	0,004	0,161
AB → ID	4,089	0	0,212
OB (IT)→ ID	1,203	0,229	-0,057
RB (IT) → ID	2,569	0,01	-0,1
HB (IT) → ID	0,808	0,419	-0,045
DE (IT) → ID	1,328	0,184	0,066
AB (IT) → ID	2,199	0,028	0,083

Based on the hypothesis result, OB (X1) has a positive and significant effect on ID (Y), with a t-statistic value of 2.611 > 1.96 and a p-value of 0.009 < 0.05. RB (X2) has a positive and significant effect on ID (Y), with a t-statistic value of 5.147 > 1.96 and a p-value of 0.000 < 0.05. HB (X3) has a positive and significant effect on ID (Y), with a t-statistic value of 3.614 > 1.96 and a p-value of 0.000 < 0.05. DE (X4) has a positive and significant effect on ID (Y), with a t-statistic value of 2.909 > 1.96 and a p-value of 0.004 < 0.05. AB (X5) has a positive and significant effect on ID (Y), with a t-statistic value of 4.089 > 1.96 and a p-value of 0.000 < 0.05. OB (X1) moderated by IT (Z) has no effect on investment decisions. RB (X2) moderated by IT (Z) has a negative effect on ID (Y), with a t-statistic value of 2.569 > 1.96 and a p-value of 0.01 < 0.05. HB (X3) moderated by IT (Z) has no effect on investment decisions. DE (X4) moderated by IT (Z) has no effect on investment decisions. AB (X5) moderated by IT (Z) has a positive effect on ID (Y), with a t-statistic value of 2.199 > 1.96 and a p-value of 0.028 < 0.05. Additionally, this research found that RB had a stronger impact on ID.

DISCUSSION

The Effect of Overconfidence Bias on Investment Decision

Overall, in the first hypothesis, Overconfidence Bias (OB) with Investment Decisions (ID) is stated to have a positive and significant relationship. Researchers also divide investors who have overconfidence bias into 3 types of investment decisions, namely return, risk and time factor. It is concluded that investors who have overconfidence bias tend to invest to get returns and invest for the long term. While investors who have overconfidence bias tend not to care too much about risk when investing.

The results of this study are in accordance with the Behavioural Finance Theory where investor psychology will affect the results of their investment decisions. These results are in accordance with research conducted by Haryanto and Alice (2019) where there is a significant influence between financial literacy, financial knowledge, overconfidence attitudes, financial behaviour, risk aversion and risk perception on investment decisions. This study proves that the higher the level of overconfidence bias in a person, the riskier the decisions taken will be and have the potential to produce higher returns. However, in this bias, investors must learn to control it because if not, this overconfidence bias will boomerang on themselves. The way to reduce this bias is to use fundamental and technical analysis techniques so that an investor's view is more objective.

The Effect of Representative Bias on Investment Decision

Overall, in the second hypothesis, Representative Bias (RB) with Investment Decision (ID) is stated to have a positive and significant relationship. Researchers also divide investors who have representative bias into 3 types of investment decisions, namely return, risk and time factor. It is concluded that investors who have representative bias tend to invest to get returns, understand risk and invest for the long term.

The results of this study are in line with the Behavioral Finance Theory where investor psychology will affect the results of their investment decisions. These results are in line with research conducted by Kurniana et al (2023) where there is a significant influence of Availability Bias and Representative Bias on investment decisions. This study proves that the higher a person's representative bias, the more the investment decisions taken will be influenced by the investor's past experiences. This bias can cause investors to make irrational decisions and will affect their investment results in the future. Therefore, investors must try to reduce this bias to avoid losses in the future.

The Effect of Herding Bias on Investment Decision

Overall, in the third hypothesis, Herding Bias (RB) with Investment Decision (ID) is stated to have a positive and significant relationship. Researchers also divide investors who have herding bias into 3 types of investment decisions, namely return, risk and time factor. It is concluded that investors who have herding bias tend to invest to get returns, understand risks and invest for the long term.

The results of this study are in accordance with the Behavioral Finance Theory where investor psychology will affect the results of their investment decisions. These results are in accordance with research conducted by Sabilla and Pertiwi (2021) where there is a positive influence on overconfidence, herding, and representative bias on investment decisions. This study proves that the higher a person's herding bias, the more the investment decisions taken will be influenced by the decisions or behavior of other investors. In this bias, investors are not objective in making decisions and hesitate to act. This can have bad consequences and make investor decisions irrational and potentially lose money. Dependence on someone also has a bad impact because the investor's behavior is not necessarily in accordance with the type of investor we have.

The Effect of Disposition Effect on Investment Decision

Overall, in the fourth hypothesis, Disposition Effect (DE) with Investment Decision (KI) is stated to have a positive and significant relationship. Researchers also divide investors who have disposition effect into 3 types of investment decisions, namely return, risk and time factor. It is concluded that investors who have anchoring bias tend to invest to get returns, understand risk and invest for the long term.

The results of this study are in line with the Behavioral Finance Theory where investor psychology will affect the results of their investment decisions. These results are in line with research conducted by Ullah et al (2020) where there is an influence of disposition effect, herding bias, and overconfidence bias that have a positive and significant influence on investment decisions. This study proves that the higher a person's disposition effect, the more the investment decisions taken will be influenced by the tendency to sell stocks that are up trending and maintain stocks that are down trending. In this case, investors will lose greater potential profits if they still maintain this bias. Likewise, investors have the potential to suffer much greater losses if there is no established analysis of the losses of the stocks they are still maintaining.

The Effect of Anchoring Bias on Investment Decision

Overall, in the fifth hypothesis, Anchoring Bias (AB) with Investment Decision (ID) is stated to have a positive and significant relationship. Researchers also divide investors who have anchoring bias into 3 types of investment decisions, namely return, risk and time factor. It is concluded that investors who have a disposition effect tend to invest by understanding risk and investing for a long period of time. While investors with this bias do not pursue rewards in their investments.

The results of this study are in accordance with the Behavioral Finance Theory where investor psychology will affect the results of their investment decisions. These results are in accordance with research conducted by Kartini and Nahda (2021) where there is a significant influence between anchoring, representative, loss aversion, overconfidence, optimism, and herding bias on investment decisions. This study proves that the higher a person's anchoring bias, the more the investment decisions taken will be influenced by irrelevant reference prices. This will have a serious impact on an investor's investment decisions because investors invest based on irrelevant reference prices as the basis for considering their decisions. The way for investors to reduce this bias is to be objective by

comparing the latest data and not just focusing on the first data they receive. Then investors can develop a more independent strategy so as not to be fixated on the data they first receive.

The Effect of Overconfidence Bias moderated by Investor type on Investment Decision

Overall, in the sixth hypothesis, Overconfidence Bias (OB) moderated by Investor Type (IT) with Investment Decision (ID) is stated to have no relationship. The researcher also divided investors who have overconfidence bias moderated by investor type into 3 types of investment decisions, namely return, risk and time factor. It is concluded from the results of this study, although the results have no effect, but if the investment decision variable is taken, namely time factor, investors must be able to adjust their investor type to the decisions they will take. This can be seen if investors who have a risk averse type with high overconfidence bias can make risky investment decisions, while investors with a risk taker type with low overconfidence bias will make overly conservative investment decisions.

Researchers also divide the results of the investor type research into 3 types, namely risk taker, risk neutral, risk averse. Overall results, the variable overconfidence bias moderated by investor type does not affect investment decisions. Although researchers have divided into 3 categories of investor types, this variable still cannot show the influence of overconfidence bias moderated by investor type has an influence on investment decisions. This is because overconfidence bias is a universal and fundamental bias so that every investor who has this bias tends to overestimate their abilities. Investors with the risk taker type feel confident that predicting market prices will have an impact on 1 understanding, namely high risk - high return. For investors with the risk averse type, they believe that safe investments will provide stable returns and will not lose. Therefore, the sixth hypothesis is not accepted.

The Effect of Representative Bias moderated by Investor type on Investment Decision

Overall, in the seventh hypothesis, Representative Bias (RB) moderated by Investor Type (IT) with Investment Decision (ID) is stated to have a negative and significant relationship. The researcher also divided investors who have representative bias moderated by investor type into 3 types of investment decisions, namely return, risk and time factor. It is concluded from the results of this study that investors who have representative bias have a negative influence on investment decisions if moderated by investor type. This can be seen if investors who have a risk averse type with high representative bias will make risky investment decisions because they trust too much in experience and very limited information, while investors with a risk taker type with high representative bias will make bad investment decisions because they do not diversify and focus too much on more successful investments based on their experience.

Researchers also divided the results of the investor type research into 3 types, namely risk taker, risk neutral, risk averse. Based on the overall results, the representative bias variable moderated by the investor type influences investment decisions. Researchers have also divided into 3 categories of investor types and found that the risk taker and risk neutral investor types showed an effect on the representative bias variable. Investors with risk takers see the same pattern and act based on that pattern. They will buy stocks that are rising because they believe in the previous pattern. The same is true for risk neutral investors where these investors tend to be passive and follow patterns in past events. Therefore, it is concluded that the representative bias variable tends to be dominated by risk taker

and risk neutral investor types. Thus, the seventh hypothesis is accepted.

The Effect of Herding Bias moderated by Investor type on Investment Decision

Overall, in the eighth hypothesis, Herding Bias (HB) moderated by Investor Type (IT) with Investment Decision (ID) is stated to have no relationship. Researchers also divide investors who have herding bias moderated by investor type into 3 types of investment decisions, namely return, risk and time factor. The overall research results have no influence between herding bias moderated by investor type on investment decisions. Researchers have also divided into 3 categories of investment decision types and there is no influence between herding bias moderated by investor type on investment decisions which are divided into 3 categories, namely reward, risk, and time factor.

Researchers also divided the results of the investor type research into 3 types, namely risk taker, risk neutral, risk averse. It can be concluded, the overall results, the herding bias variable moderated by investor type does not affect investment decisions. Although researchers have divided into 3 categories of investor types, this variable still cannot show the influence of herding bias moderated by investor type on investment decisions. This is because herding bias is not a bias related to individual psychological characteristics, but rather a universal response to market movements and the same information. In risk taker investors, they will follow the majority because they are afraid of missing out on momentum (FOMO) from the ongoing trend, while in risk averse investors they follow because they are afraid of losing on the shares they buy. Therefore, the eighth hypothesis is not accepted.

The Effect of Disposition Effect moderated by Investor type on Investment Decision

Overall, in the ninth hypothesis, the Disposition Effect (DE) moderated by Investor Type (IT) with Investment Decision (ID) is stated to have no relationship. Researchers also divide investors who have a disposition effect moderated by investor type into 3 types of investment decisions, namely return, risk and time factor. The overall research results do not have an influence between the disposition effect moderated by investor type on investment decisions. Researchers have also divided into 3 categories of investment decision types and there is no influence between the disposition effect moderated by investor type on investment decisions which are divided into 3 categories, namely reward, risk, and time factor.

Researchers also divided the results of the investor type research into 3 types, namely risk taker, risk neutral, risk averse. It can be concluded that overall, the disposition effect variable moderated by investor type does not affect investment decisions. Although researchers have divided into 3 categories of investor types, this variable still cannot show the effect of herding bias moderated by investor type on investment decisions. The disposition effect is a strong bias and is rooted in basic human emotions. This makes investors feel happy even though the profits obtained are very minimal. For investors with the risk taker type, they are willing to take risks to avoid regret from losses, so they will hold stocks that are losing. While for investors with the risk averse type, they tend to sell stocks that are profitable even though they are small, but this is in line with their preferences, namely investment security. Therefore, the ninth hypothesis is not accepted.

The Effect of Anchoring Bias moderated by Investor type on Investment Decision

Overall, in the tenth hypothesis, Anchoring Bias (AB) moderated by Investor Type (IT) with Investment Decision (ID) is stated to have a positive and significant relationship. The researcher also divided investors who have anchoring bias moderated by investor type into 3 types of investment decisions,

namely return, risk and time factor. The results of the study showed that overall, there is an influence between anchoring bias moderated by investor type on investment decisions. However, if divided into reward, risk and time factor, Investors in this study who have anchoring bias moderated by investor type have no influence on investment decisions. From the results above, it was decided that overall, investors who have anchoring bias according to their type will be able to make better decisions. It is concluded from the results of this study that investors who have anchoring bias have a positive influence on investment decisions if moderated by investor type. This can be seen if investors who have a risk averse type with a high anchoring bias on stable historical prices will make their decisions more conservative and careful, while risk taker type investors who have a high anchoring bias on growth potential will make more aggressive investment decisions and are based on analysis that takes changes (dynamics) into account.

Researchers also divided the results of the investor type research into 3 types, namely risk taker, risk neutral, risk averse. Based on the overall results, the anchoring bias variable moderated by the investor type has an effect on investment decisions. Researchers have also divided into 3 categories of investor types and found that the risk taker investor type showed an effect on the anchoring bias variable. Investors with risk takers are bolder in acting based on limited information. They tend to bet on their own thoughts and reference prices rather than conducting in-depth analysis. While for risk averse type investors, they tend to be silent and hold stocks that are losing based on the first information obtained. This is done because this type of investor prioritizes security rather than being hasty. Therefore, it is concluded that the anchoring bias variable tends to be dominated by the risk taker investor type. Thus, the tenth hypothesis is accepted.

CONCLUSION

Based on the discussion result, several conclusions can be drawn as:

1. Overconfidence bias has a positive and significant effect on investment decisions of investors domiciled in North Sumatra; thus, the first hypothesis (H1) is accepted.
2. Representative bias has a positive and significant effect on investment decisions of investors domiciled in North Sumatra; thus, the second hypothesis (H2) is accepted.
3. Herding bias has a positive and significant effect on investment decisions of investors domiciled in North Sumatra; thus, the third hypothesis (H3) is accepted.
4. Disposition Effect has a positive and significant effect on investment decisions of investors domiciled in North Sumatra; thus, the fourth hypothesis (H4) is accepted.
5. Anchoring bias has a positive and significant effect on investment decisions of investors domiciled in North Sumatra; thus, the fifth hypothesis (H5) is accepted.
6. Overconfidence bias moderated by investor type has no influence on investment decisions of investors domiciled in North Sumatra, thus the sixth hypothesis (H6) is rejected.
7. Representative bias moderated by investor type has a negative and significant effect on investment decisions of investors domiciled in North Sumatra, thus the seventh hypothesis (H7) is accepted.
8. Herding bias moderated by investor type has no influence on investment decisions of investors domiciled in North Sumatra, thus the eighth hypothesis (H8) is rejected.
9. Disposition effect moderated by investor type has no influence on investment decisions of investors domiciled in North Sumatra, thus the ninth hypothesis (H9) is rejected.

10. Anchoring bias moderated by investor type has a positive and significant effect on investment decisions of investors domiciled in North Sumatra, thus the tenth hypothesis (H10) is accepted.

LIMITATIONS

There are several limitations faced by researchers in their research:

1. The main limitation faced by the researcher is the distribution and filling of the questionnaire online. This has an impact on the data collection process by respondents who are likely not serious and not honest in providing answers according to the circumstances they experience.
2. Too broad coverage. In this study, the researcher felt that the scope for the data collection process was too broad so that the distribution of questionnaires could be said to be less effective because there were several cities / districts that had a small number of investors.
3. Indicators used in the questionnaire. Researchers feel that there are too many indicators, making respondents a little confused in filling out the questionnaire. This also has an impact on the availability of respondents to fill out the questionnaire because of the many questions that must be filled in.
4. Lack of interaction with respondents and this has an impact on the results received.

SUGGESTION

Based on the conclusions and limitations above, the researcher hopes that this can be a reference for further researchers. The suggestions that the researcher can convey to further researchers are as follows:

1. It is recommended that it can be more focused on one area only, not expanding too much to various cities/districts.
2. It is expected to add new variables in further research so that the results obtained can be more optimal.
3. It is recommended that further researchers will determine indicators that are shorter and easier for respondents to understand.
4. It is recommended that additional tools in the form of FGD (Focus Group Discussion) can be added so that the results received are more optimal.

Declaration by Authors

Acknowledgement: None
Source of Funding: None
Conflict of Interest: No conflicts of interest declared.

REFERENCES

1. Adielyani, Dea., & Mawardi Wisnu. (2020). The Influence of Overconfidence, Herding Behavior, and Risk Tolerance on Stock Investment Decisions: The Empirical Study of Millennial Investors in Semarang City. Jurnal Maksipreneur. Volume 10. Number 1: 89-101. https://doi.org/10.30588/jmp.v10i1.691
2. Adil, Mohd., Singh, Yogita., & Ansari, Mohd. Shamim. (2021). How Financial Literacy Moderate the Association Between Behaviour Biases and Investment Decision? Asian Journal of Accounting Research. Volume 7. Number 1:17-30. https://doi.org/10.1108/AJAR-09-2020-0086
3. Afriani, Dila., & Halmawati. (2019). Pengaruh Cognitive Dissonance Bias, Overconfidence Bias dan Herding Bias terhadap Pengambilan Keputusan Investasi. Jurnal Eksplorasi Akuntansi (JEA). Volume 1. Number 4: 1650-1665.
4. Ahmed, Zeeshan., Rasool, Shahid., & Saleem, Qasim. (2022). Mediating Role of Risk Perception Between Behavioural Biases and Investor's Investment Decisions. Journal Sage. Pakistan. Pg 1-18. https://doi.org/10.1177/21582440221097
5. Aigbovo, O., & Ilaboya, O. J. (2019). Does Behavioural Biases Influences Individual Investment Decisions. Management Science Review. Volume 10(1):68-90.
6. Aldilawati, Akun. (2024). Pengaruh Bias Karakter Investor Individu terhadap Pengambilan Keputusan Investasi melalui Tipe Investor sebagai Variabel Perantara dengan Studi Kasus di Lingkungan Kanwil DJP Jateng I Direktorat Jendral Pajak

Kementrian Keuangan. Universitas Pancasakti Tegal. Tegal.
7. Altaf, Hadiya., & Jan, Anisa. (2023). Generational Theory of Behavioural Biases in Investment Behaviour. Borsa Istanbul Review. Elsevier. Volume 23. Number 4:834-844. https://doi.org/10.1016/j.bir.2023.02.002
8. Azis, Yusuf Abdhul. (2022). Kerangka Penelitian: Pengertian, Isi dan Contoh. https://deepublishstore.com/blog/kerangka-penelitian/.
9. Bayu, Irfan. (2023). Alasan mengapa harus melakukan investasi. https://mediakeuangan.kemenkeu.go.id/article/show/ini-6-alasan-kenapa-kamu-harus-mulai-investasi-mulai-dari-sekarang.
10. Charissa, Enda Ayu. (2018). Analisis Pengaruh Adanya Anchoring Bias dan Loss Aversion dalam Pengambilan Keputusan Investasi Investor di Yogyakarta. Fakultas Ekonomi Universitas Islam Indonesia. Yogyakarta.
11. Dervishaj, Blerina. (2021). Psychological Biases, Main Factors of Financial Behaviour: A Literature Review. European Journal of Medicine and Natural Sciences. Volume 4, Number 1:27-44. https://doi.org/10.26417/ejnm.v1i2.p25-35
12. Fitra, Yopi Adhimas. (2023). Pengaruh Bias Perilaku Investor terhadap Keputusan Investasi di Pasar Saham Judul. Jurnal Capital. Volume 5. Number 1:89-98. https://doi.org/10.33747/capital.v5i1.185
13. Haryanto, Hery., & Alice. (2022). Dampak Behavioural Finance terhadap Keputusan Investasi dengan Persepsi Resiko sebagai Variabel Moderasi. A Journal Management, Business, and Accounting. Volume 21, Number 2: 159-173. https://doi.org/10.33557/mbia.v21i2.1852
14. Hidajat, Amelia., Margaretha, Farah., & Purba Yosephina. (2022). Bias Perilaku Investor dalam Mengambil Keputusan Berinvestasi. Jurnal Ilmiah Akuntansi dan Keuangan. Volume 4. Number 8: 3327-3336. https://doi.org/10.32670/fairvalue.v4i8.1385
15. Hikmah, Siagian, Mauli., & Siregar, Parlindungan. (2020). Analisis Tingkat Literasi Keuangan, Experience Regret, dan Risk Tolerance pada Keputusan Investasi di Batam. Jurnal Ekonomi & Ekonomi Syariah. Volume 3. Number 1: 138-146. https://doi.org/10.36778/jesya.v3i1.142
16. https://www.idx.co.id/id
17. https://www.bkpm.go.id/
18. https://www.bi.go.id/id/default.aspx
19. https://www.kemenkeu.go.id/home
20. Irshad, Shoaib., Badshah, Waqar., & Hakam, Usman. (2016). Effect of Representativeness Bias on Investment Decision Making. Management and Administrative Sciences Review. Volume 5, Number 1:26-30.
21. Jan, Naveed., Jain, Vipin., Li, Zeyun., Sattar, Javeria., & Tongkachok, Korakod. (2022). Post COVID 19 Investor Psychology and Individual Investment Decision: A Moderating Role of Information Availability. University of Economics and Business, Czechia. https://doi.org/10.3389/fpsyg.2022.846088
22. Jariyah, Ainun., Diana, Nur., & Mawardi, M. Cholid. (2023). Pengaruh Informasi Akuntansi, Profil Resiko Investor dan Perilaku Investor Saham Individual terhadap Keputusan Investasi Investor Mahasiswa di Universitas Islam Malang. E-Jurnal Ilmiah Riset Akuntansi. Volume 12. Number 2 : 524-543.
23. Joedono, Dennis Alexander., & Evelyn. (2023). Literature Review: Pengaruh Bias terhadap Keputusan Investor dalam Berinvestasi Saham. Jurnal Bisnis Manajemen & Ekonomi. Volume 21, Number1 :799-810. https://doi.org/10.33197/jbme.vol21.iss1.2023.1049
24. Jovianto, Liong, Saw., Kelvin., Jacelyin., & Lina. (2023). Pengkajian Perliaku Bias pada Investor terhadap Keputusan Investasi. Jurnal Economina. Volume 2. Number 1:197-205. https://doi.org/10.55681/economina.v2i1.275
25. Kahneman, Daniel., & Tversky, Amos. (1979). Prospect Theory: An Analysis of Decision Under Risk. Econometrica. Volume 47. Number 2:263-291.
26. Kartini, & Nugraha, Nuris Firmansyah. (2015). Pengaruh Illusion of Control, Overconfidence dan Emotion terhadap Pengambilan Keputusan Investasi pada Investor di Yogyakarta. Jurnal Inovasi dan Kewirausahaan, Volume 4. Number 2 :115-123. https://doi.org/10.20885/ajie.vol4.iss2.art6
27. Kartini, Kartini., & Nahda, Katiya. (2021). Behavioral Biases on Investment Decision :

A Case Study in Indonesia. Journal of Asian Finance, Economics and Business. Volume 8. Number 3:1231-1240.

28. Kasoga, Pendo Shukrani. (2021). Heuristic Biases and Investment Decisions: Multiple Mediation Mechanisms of Risk Tolerance and Financial Literacy: A Survey at the Tanzania Stock Market. Journal of Money and Business. Volume 1. Number 2:102-116. https://doi.org/10.1108/JMB-10-2021-0037
29. Khilar, Ruchi Priya., & Singh, Shikta. (2020). Role of Emotional Bias on Investment Decision from Behavioural Finance Perspective. International Journal of Scientific & Technology Research. Volume 9. Number 3:3457-3460.
30. Kurniana., Manurung, Adler Haymans., & Sembel, Roy. (2023). The Effect of Availability Bias and Representativeness Bias on Investment Decisions Among Millenials and Gen Z in Indonesia. Journal of Industrial Engineering and Management. Volume 18. Number 2:47-58. https://doi.org/10.33005/tekmapro.v18i2.337
31. Lubis, Tona Aurora. (2016). Manajemen Investasi dan perilaku Keuangan. Pendekatan Teoritis dan Empiris. Salim Media Indonesia. Jambi.
32. Madaan, Geetika., & Singh, Sanjeet., (2019). An Analysis of Behavioral Biases in Investment Decision-Making. International Journal of Finance Research. Volume 10. Number 4:55-67. https://doi.org/10.5430/ijfr.v10n4p55
33. Mardiana, R., Saputra, Muhammad Haris., & Hassand, Irfan. (2023). Anchoring Bias dalam Pengambilan Keputusan Investor Ritel. Jurnal Ilmiah Manajemen dan Kewirausahaan. Volume 2. Number 2 : 182-190. https://doi.org/10.33998/jumanage.2023.2.2.780
34. Melati, Wely putri. (2023). Pandemi Covid-19 dan Menurunnya Perekonomian Indonesia. Kementrian Keuangan Republik Indonesia. https://www.djkn.kemenkeu.go.id/artikel/baca/16064/Pandemi-Covid-19-Dan-Menurunnya-Perekonomian-Indonesia.html.
35. Nkukpornu, Etse., Gyimah, Prince., & Sakyiwaa, Linda. (2020). Behavioural Finance and Investment Decisions: Does Behavioural Bias Matter? International Business Research. Volume 13, Number 11:65-76. https://doi.org/10.5539/ibr.v13n11p65
36. Novianggie, Vido., & Asandimitra, Nadia. (2019). The Influence of Behavioral Bias, Cognitive Bias, and Emotional Bias on Investment Decision for College Students with Financial Literacy as the Moderating Variabel. International Journal of Academic Research in Accounting, Finance and Management Sciences. Volume 9. Number 2:92-107. https://doi.org/10.6007/IJARAFMS/v9-i2/6044
37. Nurhaliza, Shifa. (2021). Ada Tiga Tipe Investor berdasarkan Profil Resiko, Kamu yang mana? https://www.idxchannel.com/market-news/ada-tiga-tipe-investor-berdasarkan-profil-risiko-kamu-yang-mana.
38. Prasetyu, Priyo., Sumiati., & Ratnawati, Kusuma. (2023). The Impact of Disposition Effect, Herding and Overconfidence on Investment Decisions Making Moderated by Financial Literacy. International Journal of Research in Business and Social Science. Volume 12. Number 9:241-251. https://doi.org/10.20525/ijrbs.v12i9.3026
39. Puspawati, Dewita., & Yohanda, Alfandi Rico. (2022). Bias Perilaku pada Keputusan Investasi Generasi Muda. E-Jurnal Akuntansi Universitas Muhammadiyah Surakarta. Volume 16. Number 1: 41-60. https://doi.org/10.29259/ja.v16i1.15724
40. Putri, I Gusti Agung Prabandari Tri., Sawitri, Ni Putu Yuliana Ria., Wijaya, Bagus Arya., & Sudiyani, Ni Nyoman. (2024). Peran Mediasi Toleransi Resiko dalam Analisis Determinasi Keputusan Investasi Mahasiswa Kota Denpasar. Jurnal Manajemen dan Akuntansi. 19(1): 154-171. https://doi.org/10.32534/jv.v19i1.5035
41. Raheja, Saloni., & Dhiman, Babli. (2019). Relationship Between Behavioural Biases and Investment Decisions: The Mediating Role of Risk Tolerance. DLSU Business & Economics Review. 29(1):31-39.
42. Rahman, Mahfuzur., & Gan, Soon Sheng. (2020). Generation Y Investment Decision: An Analysis Using Behavioural Finance. Managerial Finance. Volume 46. Number 8:1023-1041. https://doi.org/10.1108/MF-10-2018-0534
43. Rasool, Nosheen., & Ullah, Safi. (2020). Financial Literacy and Behavioural Biases

of Individual Investors: Empirical Evidence of Pakistan Stock Exchange. Journal of Economics, Finance and Administrative Science. Volume 25. Number 50:261-278. https://doi.org/10.1108/JEFAS-03-2019-0031
44. Ricciardi, Victor., & Simon, Helen K. (2000). What is Behavioral Finance? Business, Education and Technology Journal Fall. 1-9.
45. Sabilla, Berliana Viera., & Pertiwi, Tri Kartika. (2021). Pengaruh Bias Perilaku terhadap Pengambilan Keputusan Investasi Saham pada Investor Pemula di Kota Sidoarjo. Jurnal E-Bis (Ekonomi-Bisnis). Volume 5. Number 2: 353-364. https://doi.org/10.37339/e-bis.v5i2.688
46. Sattar, Muhammad Atif., Toseef, Muhammad., & Sattar, Muhammad Fahad. (2019). Behavioral Finance Biases in Investment Decision Making. International Journal of Accounting, Finance & Risk Management. 5(2): 69-75. https://doi.org/10.11648/j.ijafrm.20200502.11
47. Seth, Vaishanavi., & Kumar, Sharad. (2020). A Study of Effect of Behavioural Biases on Investment Decisions. Durgadevi Saraf Institute of Management Studies (DSIMS). Volume 3. Number 1:21-50.
48. Shukla, Aparna. (2021). Behavioural Biases and its Implications on Investment Decision-Making: A Literature Review. Palarch's Journal of Archaeology of Egypt/Egyptology. 18(10):311-319.
49. Sihombing, Yessi Rianita., & Prameswary, Raeesah Shalsabila Anjani. (2023). The Effect of Overconfidence Bias and Representativeness Bias on Investment Decision with Risk Tolerance as Mediating Variabel. Jurnal Ilmiah Manajemen & Bisnis. Volume 7. Number 1:1-12. https://doi.org/10.22441/indikator.v7i1.18396
50. Sisbintari, Ika. (2017). Sekilas tentang Behavioral Finance. Jurnal Ilmiah Administrasi Bisnis dan Inovasi (JIABI). Volume 1. Number 2: 88-101.
51. Soraya, Ratih., Risman, Asep., & Siswanti, Indra. (2023). The Role of Risk Tolerance in Mediating the effect of Overconfidence Bias, Representativemess Bias and Herding on Investment Decisions. Journal of Economic, Finance, and Management Studies. Volume 6. Number 7:3324-3335. https://doi.org/10.47191/jefms/v6-i7-36
52. Sudirman, Wahyu Febri Ramadhan., Winario, Mohd., Priyanto, Arif Mudi., & Assyifa, Zubaidah. (2023). Risk Tolerance: Heuristic Bias Towards Investment Decision Making. Journal of Theoretical and Applied Management. Volume 16. Number 2:266-279. https://doi.org/10.20473/jmtt.v16i2.47471
53. Ullah, Saif., Elahi, Muhammad Ather., Ullah, Atta., Pinglu, Chen., & Subhani. Bilal Haider. (2020). Behavioural Biases Investment Decision Making and Moderating Role of Investor's Type. Intelektine Ekonomika, Intellectual Economis. Number 15(1): 87-105. https://doi.org/10.13165/IE-20-14-2-06
54. Widyastuti, Arie (2012). Behavioural Finance dalam Proses Pengambilan Keputusan. Lembaga Management Fakultas Ekonomi (LMFE) Universitas Padjadjaran. Bandung.
55. Wiryaningtyas, Dwi Perwitasari. (2016). Behavioural Finance dalam Pengambilan Keputusan. Universitas Abdurachman Saleh Situbondo. Jawa Timur.
56. Wiyono, Gendro. (2020). Merancang penelitian Bisnis dengan alat analisis SPSS & Smart PLS 3.2.8. Edisi kedua, UPP STIM UKPN. Yogyakarta.

How to cite this article: Alfred, Rina Br Bukit, Narumondang Bulan Siregar. The Impact of Behavioral Biases on Stock Investment Decisions with Investor Type as a Moderating Variable: A Case Study of Investors in North Sumatra. *International Journal of Research and Review*. 2025; 12(7): 115-129. DOI: *https://doi.org/10.52403/ijrr.20250713*

******