Volume 4 Number 2 (2024)
July-December 2024
Page: 337-356

E-ISSN: 2808-1102
DOI: 10.37680/ijief.v4i2.6067

Indonesian Journal of Islamic Economics and Finance

How Risk Perception aand Financial Literacy Effect Overconfidence Bias and Investment Decisions Relationship

Vella Mirfaqoh[1], Ali Muktiyanto[2], Ira Geraldina[3], Sri Yusriani[4]

[1] Universitas Terbuka, Indonesia; vellamirfaqohh@gmail.com
[2] Universitas Terbuka, Indonesia; vellamirfaqohh@gmail.com
[3] Universitas Terbuka, Indonesia; vellamirfaqohh@gmail.com
[4] GSB of Universiti Sains Malaysia, Malaysia; sriyusriani_syspsp@student.usm.my

Received: 07/09/2024 Revised: 15/11/2024 Accepted: 31/12/2024

Abstract

This research aims to determine the influence of overconfidence bias on investment decisions, which is mediated by risk perception and moderated by financial literacy. This research is quantitative research using causality analysis. The research instrument is a questionnaire with a likert scale of one to five points. The research used a random sampling technique with 400 capital market investors in Indonesia. Data were analyzed by SmartPLS4 software using the SEM PLS method. The research results show that overconfidence bias and risk perception positively affect investment decisions. Risk perception can positively and significantly mediate the relationship between overconfidence bias and investment decisions. Other results prove that financial literacy cannot moderate the relationship between overconfidence bias and investment decisions. This research implies that investors are expected to make investment decisions rationally and avoid detrimental investments.

Keywords

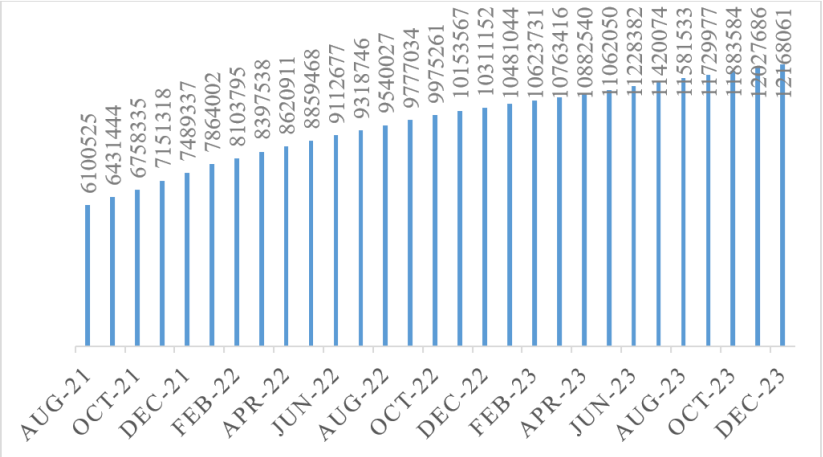
Overconfidence Bias; Investment Decisions; Risk Perception; Financial Literacy

Corresponding Author
Vella Mirfaqoh
Universitas Terbuka, Indonesia; vellamirfaqohh@gmail.com

1. INTRODUCTION

Changes in the world that are becoming more modern have made young people increasingly interested in financial education, especially investment (Budiman & Patricia, 2021). Every individual needs investment to protect the value of their wealth. By investing, you can directly create social security in the future (Novianggie & Asandimitra, 2019). The data below shows that investors in Indonesia are increasing year by year.

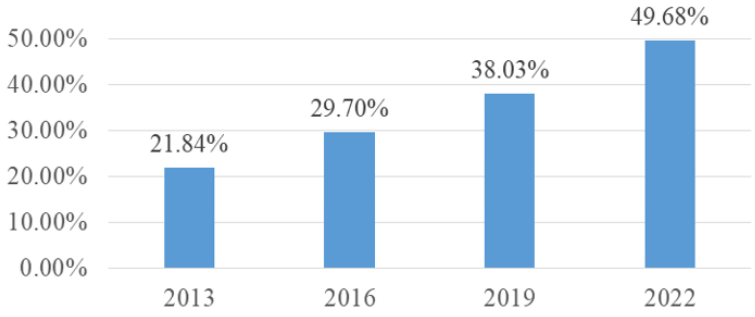
Figure 1 Number of Capital Market Investors in Indonesia



Source : KSEI, data processed 2023

The number of investors in Indonesia has risen, as has the level of financial literacy. Adequate financial knowledge enables investors to make informed decisions about investment instruments (Sukamulja et al., 2019). Financial literacy is vital for financial management, community empowerment, individual protection, welfare, and enhancing financial inclusion. Despite its importance, Indonesia's financial literacy level remains relatively low compared to other developing nations, such as Thailand and Malaysia (Nuryasman & Elizabeth, 2023). Indonesia's financial literacy is 49.6%, Thailand's is 82%, and Malaysia's is 85%. This disparity underscores the unequal distribution of access to financial literacy resources, especially in certain regions. Nonetheless, data from the National Survey of Financial Literacy and Inclusion (SNLIK) by the Financial Services Authority (OJK) shows annual improvements in financial literacy levels. However, Herliana et al. (2023) point out that this growth has not kept pace with the significant investment increase.

Figure 2. National Financial Literacy Level



Source : OJK, data processed 2023

Choosing the right type of investment instrument will produce maximum profits for investors (Sukamulja et al., 2019). Conventional Financial Theory explains that investors have to have rational thinking when deciding to invest, but emotions and psychology influence the decision to become

irrational (Khan, 2017). Islam Khan et al. (2016) explain that irrational decisions can be made due to biased behavior. One such biased financial Behavior is overconfidence bias, a psychological factor that can lead investors to behave irrationally when making investment decisions. Human resources play a crucial role in maintaining a company's efficiency, particularly during the disruption era and the challenges brought about by the COVID-19 pandemic, which have increased difficulties in investment and business sustainability (Mirfaqoh et al., 2023). Investors choose investment products to support their interests (Sudirman & Pratiwi, 2022), and there are many investors who choose investment products with confidence even though they still lack investment knowledge.

When making investment decisions, many investors do not conduct an analysis first, so they do not pay attention to the risks of the investment they choose (Sukamulja et al., 2019). The investment growth in the millennial generation and generation Z in recent years cannot be separated from the factors that influence it, such as financial literacy (Herliana et al., 2023). However, investment cannot be separated from risk (Nguyen et al., 2019). Some people still carry out investment activities because they follow along without analyzing them first (Sukamulja et al., 2019) and are overconfident when making an investment decision. This can certainly create a higher risk of loss when making investment decisions. Moreover, here is data about the losses experienced by the Indonesian people, one of which is the result of illegal investment.

Table 1 Total losses of Indonesian society due to illegal investment

No	Year	Nominal (in trillions of rupiah)
1	2018	1,4
2	2019	4
3	2020	5,9
4	2021	2,54
5	2022	112,2

Source : OJK, data processed 2023

The data above show that cases of fraudulent investment in Indonesia increase annually. In 2022, the losses experienced by the Indonesian people due to fraudulent investment cases increased significantly, reaching 112.2 trillion rupiah. Victims of fraudulent investments are often more attracted to the promised profits without considering the risk of large future losses. From the data above, we can conclude that the gap between the number of investors and the level of financial literacy is increasing. However, the number of losses due to fraudulent investments is also increasing. Purpose—Businesses must display proof of effective financial performance, and people must improve their knowledge. It is explained in Hamzah (2022) that knowledge or understanding of investment can help people make investment decisions.

Research Choosing the right investment products is critical for achieving maximum returns (Sukamulja et al., 2019). Conventional financial theory suggests that investors should base their decisions on rational thinking, but emotions and psychological factors often lead to irrational choices (Khan, 2017). Overconfidence bias, a psychological factor, contributes to irrational investment decisions. Human resources play a key role in maintaining organizational efficiency, especially in the face of disruptions like the COVID-19 pandemic, which has heightened challenges in investment and business sustainability (Mirfaqoh et al., 2023). Many investors confidently choose products despite insufficient knowledge (Sudirman & Pratiwi, 2022).

Many investors neglect to analyze the risks associated with their investments before making decisions (Sukamulja et al., 2019). The recent surge in investment among Millennials and Generation Z can be attributed to factors such as financial literacy (Herliana et al., 2023). However, as Nguyen et al. (2019) highlight, investment is inherently linked to risk. Many investors continue to engage in investment activities without proper analysis, often driven by overconfidence, which increases the risk of financial loss.

In Indonesia, fraudulent investment cases have risen, resulting in substantial financial losses. In 2022, fraudulent investment schemes caused a loss of 112.2 trillion rupiah, underscoring the dangers of overconfidence and inadequate financial knowledge. Victims of such scams are often enticed by the promise of high returns, neglecting the risks of significant future losses.

Previous studies in Indonesia show that overconfidence bias positively influences investment decisions (Khan, 2017; Sudirman & Pratiwi, 2022; Kiran et al., 2017; Ahmad et al., 2020). However, Novita Sari and Damingun (2021) found that overconfidence bias negatively and insignificantly affects investment decisions. Other studies suggest that overconfidence bias influences risk perception (Ahmad et al., 2020; Kiran et al., 2017; Halim & Pamungkas, 2023), while Anifa and Soegiharto (2023) report no effect. Research also indicates that risk perception can influence investment decisions (Ahmad et al., 2020; Gustiarum & Kusumawardhani, 2023; Sukamulja et al., 2019), although Ainia & Lutfi (2019) argue otherwise. Some studies have explored mediating and moderating variables in the relationship between overconfidence bias and investment decisions. Ahmad et al. (2020) and Arie Wibowo et al. (2023) suggest that risk perception can mediate this relationship. However, Kiran et al. (2017) and Anifa and Soegiharto (2023) found that risk perception does not mediate the relationship between overconfidence bias and investment decisions. Ahmad et al. (2020) also propose that financial literacy moderates the relationship between overconfidence bias and investment decisions, although Novianggie and Asandimitra (2019) disagree.

This research differs from previous studies conducted in Indonesia, encompassing a diverse sample of age, education, and region. The study aims to help investors make more rational investment

decisions. Based on the research background and the four key variables, this study will analyze five primary relationships:

1. Does Overconfidence Bias have a positive effect on Investment Decisions?
2. Does Overconfidence Bias have a positive effect on Risk Perception?
3. Does risk perception have a positive effect on investment decisions?
4. Does Risk Perception positively mediate the relationship between Overconfidence Bias and Investment Decisions?
5. Does Financial Literacy moderate the strengthening of the relationship between Overconfidence Bias and Investment Decisions?

This research uses three theories: the Theory of Planned Behavior (TPB), Prospect Theory, and Financial Behavior. TPB, as explained by Ajzen (1991), posits that attitudes and beliefs influence decision-making. It is relevant for financial literacy research, as lower income, education, and experience typically correlate with lower financial literacy. Prospect Theory, developed by Kahneman and Tversky (1979), explains that decision-making is often irrational due to biased behavior, such as overconfidence bias. Overconfidence bias occurs when individuals overly trust their knowledge despite being inaccurate (Khan, 2017; Ahmad et al., 2020). Financial Behavior, as defined by Kholilah & Iramani (2013), refers to an individual's ability to manage finances. It affects rational investment decisions, which can become irrational due to psychological factors (Ainia & Lutfi, 2019). Financial Behavior also explains how investors assess risks and make decisions (Ishfaq et al., 2010; Mushinada & Veluri, 2019; Budiman & Patricia, 2021).

Overconfidence Bias is the tendency to overestimate one's investment decisions (Ahmad et al., 2020), measured by Over-precision, Over-placement, and Over-estimation (Moore & Healy, 2008). Risk Perception is the evaluation of future risks when investing (Hidayat et al., 2023) and is shaped by an investor's experience and caution (Ahmad et al., 2020). Risk perception can be measured by factors like diversification, rate of return, and the credibility of service providers (Sindhu & Kumar, 2014). Financial Literacy refers to the knowledge of managing finances and improving well-being (Sholeh, 2020). Indicators include investment security, personal financial condition, and understanding the time value of money (Fernandes et al., 2014). Investment Decisions involve managing resources for future income (Budiman & Patricia, 2021). Financial literacy enables rational investment decisions, with indicators like stock knowledge, financial management, and understanding of market fluctuations (Novita Sari & Damingun, 2021).

2. METHODS

Data collected through questionnaires were analyzed using Structural Equation Modeling Partial Least Square (SEM PLS) software. The application used is SEM PLS 4. PLS-SEM (Hamid & Anwar, 2019) explained that in the application of PLS-SEM, there are two stages to evaluate the measurement model, namely the outer model (measurement model) and the inner model (structural model).

The outer model in PLS-SEM is referred to as the construct validity test. Construct validity includes both convergent validity and discriminant validity. The inner model is evaluated by several item component values, namely significance and R-squared (R^2). The R^2 value measures the level of variation in the dependent variable explained by the independent variable. An R^2 value of 0.75, 0.50, and 0.25 indicates a strong, moderate, and weak model. Loading factor < 0,6 (Chin, 1998) and Average Variance Extraction < 0,5. The next assessment is significance, where the values used are the (two-tailed) t-value of 1.65 (significance level 10%), t-value of 1.96 (significance level 5%), and t-value of 2.58 (significance level 1%). The research also used **the Heterotrait-Monotrait Ratio (HTMT)** < 0.90 to show that all constructs have met discriminant validity. (Ghozali & Latan, 2015; Hair et al., 2017; Hendrian & Patiro, 2020).

The research design uses quantitative methods, which are explained in descriptive form. The population in this study are investors who invest in the capital market, specifically the stock market in Indonesia. The PT Custodian Sentral Efek Indonesia report in 2023 states that the number of investors in Indonesia as of December 2023 was 12,168,061. The technique uses a random sampling technique where samples are selected randomly to obtain relevant results without paying attention to the special characteristics or criteria of the population. Investors who fill out the questionnaires are active in capital market transactions. Data is calculated using the Slovin formula, which is used with a margin of error of 5 %, so 400 investors in Indonesia are needed as respondents.

The questionnaires are distributed by filling out the Google Form link. Before being distributed widely, the questionnaire had been distributed to a small sample and showed valid results. The link is then shared randomly with capital market investor community groups on social media such as WhatsApp, Instagram, and Telegram. Respondents who filled out the questionnaire were investors who actively transacted in the capital market. Not only the investor community this research also asks for support from capital market activists at several universities with capital market study groups or investment galleries spread throughout Indonesia. Then, the questionnaire was distributed to several bank or securities employees and distributed again to their customers or investors in the capital market.

3. FINDINGS AND DISCUSSION

The characteristics of the respondents in the research and the tendencies of the respondents' answers to all questions in the questionnaire were explained through descriptive analysis. Questionnaires had been distributed and filled in by 486 respondents. However, 86 questionnaires were not filled in properly. So, the number of questionnaires can be used to test the research hypothesis is 400 questionnaires. Analysis of research respondents used the basic characteristics of gender, age, highest level of education, and monthly income.

Table 2 Characteristics of Respondents

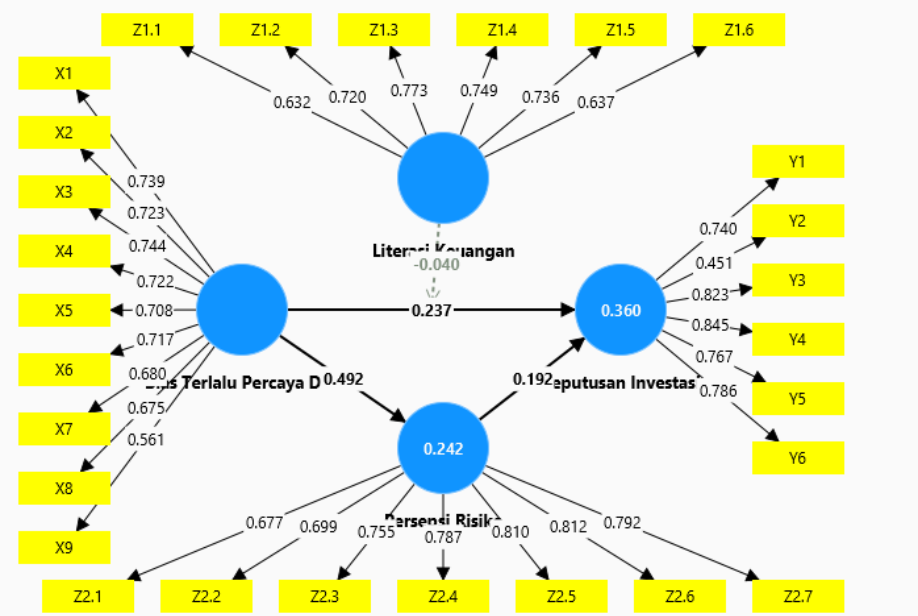
Characteristic	**Alternative answer**	**Frequency**	**(%)**
gender	male	210	52,5
	female	190	47,5
Total		**400**	**100**
age	under 20 years	44	11
	20 - 30 years	187	46,75
	30 - 40 years	126	31,5
	more than 40 years	43	10,75
Total		**400**	**100**
education	SMA	41	10,25
	D3-S1	313	78,25
	S2-S3	46	11,5
Total		**400**	**100**
Monthly income	Under 5 million	182	45,5
	5- 10 millions	141	35,25
	More than 10 million	77	19,25
Total		**400**	**100**

Source: data processed, 2024

The data in the table above shows that most respondents are male (52.5%). Then the majority of respondents who filled out the questionnaire were 20 - 30 years old (46.75%). The majority of respondents' final education was D3-S1 (78.25%). Most respondents' monthly income is below five million (45.5%), followed by those with an income of 5 - 10 million (35.25%). The data shows that most respondents are investors still in their productive age with a D3-S1 educational background. The age and educational background of the majority of respondents are productive, where someone has the confidence to make risky investments.

Loading Factor

Figure 3 Factor Loading Results



Source: data processed, 2024

Table 3 Results of SEM-PLS Iteration 1 Factor Loading

Overconfidence Bias (X)		Financial Literacy (Z1)		Risk Perception (Z2)		Investment Decisions (Y)	
X1	0,739	Z1.1	0,632	Z2.1	0,677	Y1	0,740
X2	0,723	Z1.2	0,720	Z2.2	0,699	Y2	0,451
X3	0,744	Z1.3	0,773	Z2.3	0,755	Y3	0,823
X4	0,722	Z1.4	0,749	Z2.4	0,787	Y4	0,845
X5	0,708	Z1.5	0,736	Z2.5	0,810	Y5	0,767
X6	0,717	Z1.6	0,637	Z2.6	0,812	Y6	0,786
X7	0,680			Z2.7	0,792		
X8	0,675						
X9	0,561						

Source: data processed, 2024

The table above shows that two variables have a factor loading < 0.6, namely overconfidence bias and investment decisions. In the overconfidence bias variable, the X9 indicator only has a value of 0.561 < 0.6. In the investment decision variable, the Y2 indicator only has a value of 0.451 < 0.6. All indicators with a loading factor value <0.6 must be removed from the model. According to the provisions of (Chin, 1998), indicators with a loading value between 0.40 and 0.60 should be deleted.

Table 4 Results of Factor Loading Iteration 2 of SEM-PLS

Overconfidence Bias (X)		Financial Literacy (Z1)		Risk Perception (Z2)		Investment Decisions (Y)	
X1	0,754	Z1.1	0,629	Z2.1	0,674	Y1	0,728
X2	0,741	Z1.2	0,717	Z2.2	0,696	Y2	
X3	0,760	Z1.3	0,772	Z2.3	0,754	Y3	0,812
X4	0,738	Z1.4	0,750	Z2.4	0,787	Y4	0,861
X5	0,717	Z1.5	0,739	Z2.5	0,812	Y5	0,784
X6	0,720	Z1.6	0,640	Z2.6	0,814	Y6	0,799
X7	0,661			Z2.7	0,793		
X8	0,642						
X9							

Source: data processed, 2024

After two indicators have been removed from the model, the data show that the result of Composite reliability and AVE increase, and the values are > 0.6. Therefore, it can be concluded that all indicators in this research model meet the reliability criteria.

Average Variance Extracted (AVE)

Table 4 AVE SEM-PLS Calculation Results

Variable	Average variance extracted (AVE)
OB	0,515
ID	0,637
FL	0,504
RP	0,582

Source: data processed, 2024

The AVE results show that all variables exceed the minimum AVE limit, namely 0.5.

Cronbach's Alpha and Composite Reliability

Table 5 Results of Cronbach's Alpha and Composite Reliability SEM-PLS calculations

Variable	Cronbach's Alpha	Composite Reliability
OB	0,865	0,866
ID	0,856	0,857
FL	0,801	0,802
RP	0,880	0,886

Source: data processed, 2024

Based on the results, all variables have CA and CR values > 0.7. Therefore, it can be concluded that all constructs have good reliability and can measure each variable consistently.

Heterotrait -Monotrait Correlation Ratio (HTMT).

Table 6 SEM-PLS HTMT Calculation Results

	OB	FL	RP	ID
OB				
ID	0,556			
FL	0,566	0,612		
RP	0,560	0,594	0,538	

Source: data processed, 2024

Discriminant validity is said to be appropriate if the value is < 0.90. According to the PLS algorithm calculation results in the table above, the HTMT value of all variables is < 0.9 threshold. Thus, discriminant validity has been met by all constructs.

R-Square Coefficient of Determination (R^2)

Table 7 R-Square Calculation Results

	R-square	R-square adjusted
ID	0,361	0,355
RP	0,243	0,241

Source: data processed, 2024

The results above show that the R^2 for Investment Decisions is 0.361, which means that the overconfidence bias and risk perception factors only explain 36.1% of the investment decisions. The remaining 63.9% is explained by other variables not examined in this research, such as herding bias, representative bias, accounting information, market condition, government policy, and other factors.

Effect Size F Squared (F^2)

Table 8 F-Square Calculation Results

	OB	ID	FL	RP	FL x OB
OB		0,062		0,321	
ID					
FL		0,066			
RP		0,037			
FL x OB		0,004			

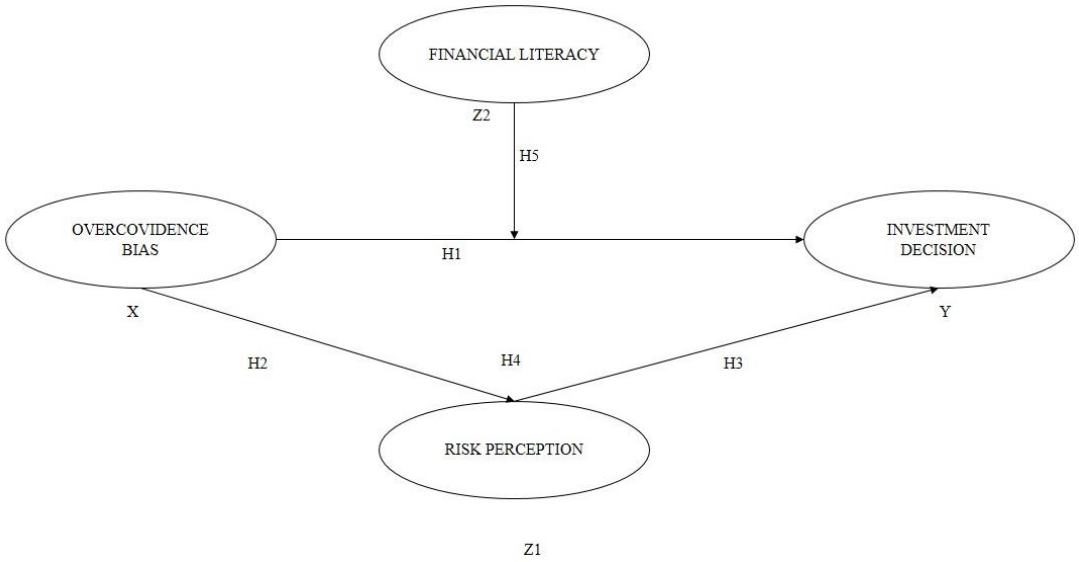
Source: data processed, 2024

According to the test results in the table above, it is found that Overconfidence Bias has a small influence on investment decisions (0.062). Second, Overconfidence Bias has a moderate influence on risk perception (0.321). Financial literacy has a small effect on investment decisions (0.066). Risk perception has a small influence on investment decisions (0.037). The moderating effect of financial literacy has a low value on Overconfidence Bias, and investment decisions also have an influence

(0.004). SmartPLS F2 results are also displayed in graphical format. These figures show that Overconfidence Bias has the greatest influence on risk perception.

Hypothesis test

Figure 4 Results of Direct Influence Hypothesis Testing



Source: data processed, 2024

Table 9 Results of Direct Effect Testing

Hypothesis		Path coefficients	T statistics (|O/STDEV|)	P values	Results
H1	OB -> ID	0,245	5,142	0,000	Accepted
H2	OB -> RP	0,493	7,898	0,000	Accepted
H3	RP -> ID	0,196	3,957	0,000	Accepted
H5	FL x OB -> ID	-0,029	1,465	0,143	Rejected

Source: data processed, 2024

Table 10 Results of Mediation Effect Testing

Hypothesis		Path coefficients	P values direct effect	P values indirect effect	Information
H4	(a) OB -> RP	0,493	0,000	0,000	a, b, dan c significant = partial mediation
	(b) OB -> ID	0,245	0,000		
	(c) RP -> ID	0,196	0,000		

Source: data processed, 2024

Based on the results of testing the direct influence hypothesis shown in Table 10, it can be concluded that:

1. The influence of overconfidence bias on investment decisions has a path coefficient of 0.245 (positive), t-statistic 5.142 > 1.96, and p-value 0.000 <0.05 because H1 states that overconfidence bias has a positive effect on investment decisions.

2. The influence of overconfidence bias on risk perception has a path coefficient of 0.493 (positive), t-statistic 7.898 > 1.96, and p-value 0.000 < 0.05. H2 states that overconfidence bias has a positive effect on Risk Perception.
3. The influence of risk perception on investment decisions has a path coefficient of 0.196 (positive), t-statistic 3.957 > 1.96, and p-value 0.000 < 0.05. Therefore, these results support H3, which states that risk perception positively affects investment decisions.
4. The moderating effect of financial literacy on the relationship between overconfidence bias and investment decisions has a path coefficient of –0.029 (negative), t-statistic 1.465 < 1.96, and p-value 0.143 > 0.05. Thus, these results do not support H5, which states that financial literacy cannot moderate the relationship between overconfidence bias and investment decisions.
5. The indirect effect of Overconfidence Bias on Investment Decisions mediated by Risk Perception has a path coefficient of 0.097 (positive). This value is the product of the direct influence path coefficient of Overconfidence Bias on Risk Perception (0.493) and Risk Perception on Investment Decisions (0.196). P-value of 0.000 < 0.05 indicates a significant effect. Therefore, it can be concluded that Risk Perception can mediate the relationship between the Overconfidence Bias factor and Investment Decisions, and the fifth hypothesis is accepted. Risk perception can partially mediate the relationship between the overconfidence bias factor and investment decisions because overconfidence bias has been proven to, directly and indirectly, influence investment decisions.

3.1. The influence of overconfidence bias on investment decisions

The research results show that overconfidence bias positively and significantly affects investment decisions. These results align with the TPB where attitudes and beliefs, in this case, namely overconfidence, can influence individual behavior to reject or accept a decision. Bias behavior can increase when investors become overconfident in their abilities without considering existing advice, information, and trends. According to Pompian (2006), overconfidence makes people overestimate their knowledge and underestimate their risks. High or low levels of self-confidence can have an impact on investment decisions. Investors who are too confident become bolder in making investment decisions (Budiarto & Susanti, 2017).

On the other hand, overconfident investors tend to be very careful in making decisions. This shows that self-confidence Behavior influences investment decisions. Overconfidence can sometimes influence investors' decisions in the stock market.

3.2. The influence of overconfidence bias on risk perception

The research results show that overconfidence bias positively and significantly affects risk perception. Several previous studies, which are by the results of this study, explain that overconfidence

bias has a positive and significant effect on risk perception (Arie Wibowo et al., 2023; Kiran et al., 2017). This research shows that if the average respondent data is young or of productive age, this encourages a person to invest because they can still bear the risk if a loss occurs even though their knowledge and experience are still lacking. This aligns with research conducted by (Arie Wibowo et al., 2023). Someone with high self-confidence will be braver in making high-risk decisions (Kiran et al., 2017). This research shows that people with high self-esteem are more confident in making decisions themselves and without other people's input, so it can also be said that someone with high self-esteem has a consistent attitude toward their decisions. The next indicator is that someone with high self-confidence can assess an opportunity well based on their experience (Yusriani et al., 2023).

3.3 The influence of risk perception on investment decisions

The research results show that risk perception positively and significantly affects investment decisions. The results of this research are also supported by research conducted by Sukamulja et al. (2019), which states that risk perception significantly influences investment decision-making. This is by TPB, where intentions and goals must be achieved when deciding (Ajzen, 1991). Risk perception describes investors' views of the risks that will be obtained when investors make an investment decision. Risk perception is formed from several indicators, such as investment without consideration and guarantees and using income for risk. Several previous studies, which are the results of this study, explain that risk perception has a positive and significant effect on investment decisions (Ahmad et al., 2020).

The result also means that someone with a high-risk perception can influence their high tendency to make investment decisions (Anifa & Soegiharto, 2023). Investors assume that they invest in a portfolio of risky assets, so the expected profits are also high. Therefore, investors face a high-risk portfolio by investing in a diversified manner. Based on Markowitz's risk and return portfolio theory, the most optimal way to manage a portfolio is to consider every trade-off between risk and return that will be obtained later (Anifa & Soegiharto, 2023).

3.4. The moderating effect of financial literacy on the relationship between overconfidence bias and investment decisions

The research results show that financial literacy cannot moderate the relationship between overconfidence bias and investment decisions. The results of the direct influence between financial literacy and investment decisions show a positive and significant value. These results illustrate that investors with a high level of financial literacy are less likely to have any impact on the relationship between psychological bias Behavior and investment decisions. The reason is that the financial literacy variable in this research is not an independent or moderator variable. This is proven by the results of

the regression carried out which states that the financial literacy variable influences the significance of investment decisions. This can happen because an investor's intuition is more dominant than intellectual activity regarding the information they have. Investors who have previous investment experience or follow other people's recommendations will be too confident in the investment decisions they make so they can gain profits quickly. Most respondents show they are still at a productive age, so they are confident they can make risky investments. This result aligns with the theory of planned behavior; psychological factors often influence decision-making and ignore rational factors. This is also in line with prospect theory, where if someone makes a decision influenced by psychological factors, such as overconfidence bias, that person will tend to be too confident in their knowledge and abilities and ignore rational factors.

Previous research also explains that financial literacy may not moderate the relationship between overconfidence bias and investment decisions (Khalid et al., 2016). Investment decisions that are influenced by overconfidence bias are also considered by investors to be excessive. This results in them being excessively accurate in the information they have and ignoring rational information (Barber & Odean, 2000). This research provides results on the significance level of the influence of overconfidence bias, which decreases after being moderated by financial literacy. This can also happen because investors with a high sense of self-confidence will feel that they already know all the available information, so they feel that their decision is the right one.

3.5. The mediating effect of risk perception on the relationship between Overconfidence Bias and Investment Decisions

The research results show that risk perception can positively mediate the relationship between Overconfidence Bias and Investment Decisions. Previous studies also explained that risk perception can positively mediate the relationship between Overconfidence Bias and Investment Decisions (Ahmad et al., 2020; Arie Wibowo et al., 2023; Shah et al., 2018). Increasing investors' perception of risk will improve their investment decisions. This will ultimately increase the profits from their investment process. This is based on prospect theory, which emphasizes investors' subjective decisions, but expected utility focuses on investors' rational expectations in making decisions regarding investment. The results of this research are in line with research conducted by Sindhu & Kumar (2014), who argue that investors' risk perceptions have a positive effect on investment decisions, meaning that if an investor has a high-risk perception, then investors often rethink their investment decisions, diversify to minimize the level of risk to be accepted and learn how profits can occur and how they relate to existing risks.

Risk perception can have a mediating effect on the influence of overconfidence bias on investment decisions. The results of the overconfidence variable bias towards risk perception and risk perception

towards investment decisions show significant results. The direct influence of the independent variable on the mediating variable and the direct influence of the mediating variable on the dependent variable show that the type of mediation in this research is partial mediation. This proves that overconfidence bias can significantly influence investment decisions with or without involving risk perceptions. Partial mediation in this research is supported by previous research (Arie Wibowo et al., 2023).

4. CONCLUSION

Based on the test results and the discussion of this research hypothesis, the conclusion that can be drawn is that overconfidence bias and risk perception have a positive effect on investment decisions. Additionally, risk perception can positively mediate the relationship between overconfidence bias and investment decisions. However, financial literacy does not moderate the relationship between overconfidence bias and investment decisions. This research also has limitations, such as the low R-square result and the uneven distribution of questionnaires across all regions in Indonesia due to limited internet access in certain areas.

Based on the conclusions and limitations obtained from the research analysis, the following recommendations are made for all parties involved in the continuation of this research:

For future researchers, it is suggested that additional regions be included in the respondents' criteria to examine which regions are more interested in investing in stocks. It is also recommended to incorporate other variables that may influence investment decisions, such as herding bias, representative bias, accounting information, market conditions, government policies, and other relevant factors.

For the community, this research has implications for individuals who are or wish to become investors. It emphasizes the importance of being more rational and increasing financial knowledge before making investment decisions. Investors should be more selective to avoid potential biases. A high sense of self-confidence may lead individuals, particularly those of productive age, to frequently buy and sell shares and other risky assets. It is crucial for those considering high-risk investments to increase risk tolerance by improving decision-making behavior, cognition, and life satisfaction and being prepared to accept potential losses in pursuit of investment goals.

For regulators, policymakers need to provide education and disseminate accurate information about investing to the public. This will help individuals become more aware of financial investments and avoid following trends unthinkingly. Regulators should also pay closer attention to the terms and conditions of investment service providers to ensure that investors, especially newcomers to the financial world, feel secure and are not misled by fraudulent investments.

REFERENCES

Ahmad, M., Zulfiqar, S., & Shah, A. (2020). *Overconfidence heuristic-driven bias in investment decision-making and performance : mediating effects of risk perception and moderating effects of financial literacy*. https://doi.org/10.1108/JEAS-07-2020-0116

Ainia, N. S. N., & Lutfi, L. (2019). Pengaruh Risk Perception, Risk Tolerance, Overconfidence dan Loss Aversion Terhadap Pengambilan Keputusan Investasi. *Journal of Economics, Business & Accountancy Ventura*, *21*(3), 401–413.

Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*, *50*, 179–211.

Anifa, A. S., & Soegiharto. (2023). *Does The Psychology of Investment Decisions Depend on Risk Perception and Financial Literacy ? 13*(2), 152–163.

Arie Wibowo, M., Khusniyah Indrawati, N., & Aisjah, S. (2023). The impact of overconfidence and herding bias on stock investment decisions is mediated by risk perception. The impact of overconfidence and herding bias on stock investment decisions is mediated by risk perception. *International Journal of Research in Business and Social Science (2147- 4478)*, *12*(5), 174–184. https://doi.org/10.20525/ijrbs.v12i5.2663

Barber, B. M., & Odean, T. (2000). *Trading Is Hazardous to Your Wealth : The Common Stock Investment Performance of Individual Investors*. *LV*(2), 773–806.

Budiarto, A., & Susanti. (2017). Pengaruh Financial Literacy, Overconfidence, Regret Aversion Bias, DanRisk Tolerance Terhadap Keputusan Investasi. *Jurnal Ilmu Manajemen*, *05*, 1–9.

Budiman, J., & Patricia. (2021). Pengaruh Overconfidence Bias, Herding Bias, Representativeness Bias, Loss Aversion, dan Risk perception terhadap Investment Decision di Kota Batam. *CoMBInES*, *1*(1), 1979–1987.

Chin, W. (1998). The Partial Least Squares Approach To Structural Equation Modeling. In *Modern Methods for Business Research* (Marcoulide, pp. 295–336).

Fernandes, D., Lynch, J. G., & Netemeyer, R. G. (2014). Financial literacy, financial education, and downstream financial behaviors. *Management Science*, *60*(8), 1861–1883. https://doi.org/10.1287/mnsc.2013.1849

Gustiarum, T., & Kusumawardhani, I. (2023). The Effect of Financial Literacy, Accounting Information, Risk Perception, and Herding Behavior on Investment Decisions. *Journal of Business and Information System (e-ISSN: 2685-2543)*, *5*(1), 1–10. https://doi.org/10.36067/jbis.v5i1.156

Halim, R., & Pamungkas, A. S. (2023). The Influence of Risk Perception, Overconfidence, and Herding Behavior on Investment Decision. *International Journal of Application on Economics and Business*, *1*(1), 521–529. https://doi.org/10.24912/v1i1.521-529

Hamid, R. S., & Anwar, S. (2019). *Structural Equation Modelling (SEM) Konsep Dasar dan Aplikasi Program Smart PLS 3.2.8 dalam Riset Bisnis*. PT Inkubator Penulis Indonesia.

Hamzah, A. (2022). Pengaruh Overconfidence Bias, Mental Accounting Dan Familiarity Bias Terhadap Pengambilan Keputusan Investasi. *Journal of Global Business and Management Review*, *4*(1), 50. https://doi.org/10.37253/jgbmr.v4i1.6777

Hendrian, H., & Patiro, S. P. S. (2020, May). The effect of leadership and organizational justice in predicting positive emotion of Indonesian Civil Servants. In *2nd International Seminar on Business, Economics, Social Science and Technology (ISBEST 2019)* (pp. 19-27). Atlantis Press.

Herliana, Y. T., Ratnawati, K., & Djumahir, D. (2023). The Role of Personality Traits as Mediation: The Effect of Financial Literacy and Risk Perception on Investment Decision. *Journal of Business and Management Review*, *4*(6), 469–493. https://doi.org/10.47153/jbmr46.7202023

Hidayat, T., Oktaviano, B., & Baharuddin, R. (2023). *Keputusan Investasi Berdasarkan Literasi Keuangan, Pengetahuan Investasi dan Persepsi Risiko*. *4307*(June), 441–452.

Ishfaq, M., Maqbool, Z., Akram, S., Tariq, S., & Khurshid, M. . (2010). Mediating Role of Risk Perception between Cognitive Biases and Risky Investment Decision : Empirical Evidence from Pakistan's Equity Market. *Journal of Managerial Sciences*, *11*(03), 266–278.

Kahneman, D., & Tversky, A. (1979). Prospect Theory: An Analysis of Decision under Risk. *Econometrica*, *47*(2), 263–291. http://web.mit.edu/curhan/www/docs/Articles/15341_Readings/Behavioral_Decision_Theory/Kahneman_Tversky_1979_Prospect_theory.pdf

Khalid, R., Javed, M., & Khurram, S. (2016). Impact of Behavioral Biases on Investment Decision Making with Moderating Role of Financial Literacy. *Journal Business Review*, *6*. https://doi.org/10.53369/RKXA7855

Khan, M. Z. U. (2017). Impact of Availability Bias and Loss Aversion Bias on Investment Decision Making, Moderating Role of Risk Perception. *IMPACT: Journal of Modern Developments in General Management & Administration (IMPACT: JMDGMA)*, *1*(1), 17–28. www.impactjournals.us

Kholilah, N. Al, & Iramani, R. (2013). *Studi Financial Management Behavior pada Masyarakat Surabaya*. *3*(1), 69–80.

Kiran, A. M., Munir, M. A., & Sarwar, S. (2017). Impact of Overconfidence and Loss Aversion Biases on Investor Decision Making Behavior: Mediating Role of Risk Perception. *International Journal of Public Finance*, *1*(1), 13–24. www.eurekajournals.com

Miller, M., Godfrey, N., Levesque, B., & Stark, E. (2009). *The Case for Financial Literacy in Developing Countries*. OECD.

Mirfaqoh, V., Yusriani, S., Helmi, T. A., Fadhil, A., Sholihah, F. M., & Kusnadi. (2023). Analysis of the

Impact of the Covid-19 Pandemic on Stock Prices in the Construction Sector in Indonesia. *Greenation International Journal Economic and Accounting*, *1*(3). https://doi.org/https://doi.org/10.38035/gijea.v1i3

Moore, D. A., & Healy, P. J. (2008). *The Trouble With Overconfidence*. *115*(2), 502–517. https://doi.org/10.1037/0033-295X.115.2.502

Mushinada, V. N. C., & Veluri, V. S. S. (2019). Elucidating investor's rationality and behavioral biases in the Indian stock market. *Review of Behavioral Finance*, *11*(2), 201–219. https://doi.org/10.1108/RBF-04-2018-0034

Nguyen, L., Gallery, G., & Newton, C. (2019). The Joint Influence of Financial Risk Perception and Risk Tolerance on Individual Investment Decision-Making. *Accounting and Finance*, *59*(S1), 747–771. https://doi.org/10.1111/acfi.12295

Novianggie, V., & Asandimitra, N. (2019). The Influence of Behavioral, Cognitive, and Emotional Bias on Investment Decisions for College Students with Financial Literacy as the Moderating Variable. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, *9*(2), 92–107. https://doi.org/10.6007/IJARAFMS/v9-i2/6044

Novita Sari, R., & Damingun. (2021). Pengaruh Bias Overconfidence Terhadap Keputusan Investasi di Pasar Modal. *Borneo Student Research*, *2*(3), 2721–5725.

Nuryasman, & Elizabeth. (2023). Generasi Sandwich: Penyebab Stres Dan Pengaruhnya Terhadap Keputusan Keuangan. *Jurnal Ekonomi*, *28*(1), 20–41. https://doi.org/10.24912/je.v28i1.1322

Pompian, M. M. (2006). *Behavioral Finance and Wealth Management*. John Wiley & Sons, Inc.

Pradikasari, E., & Isnabah, Y. (2018). Pengaruh Financial Literacy, Illusion of Control, Overconfidence, Risk Tolerance, dan Risk Perception Terhadap Keputusan Investasi Pada Mahasiswa di Kota Surabaya. *Jurnal Ilmu Manajemen (JIM)*, *6*(4), 424–434.

Shah, S. Z. A., Ahmad, M., & Mahmood, F. (2018). Heuristic biases in investment decision-making and perceived market efficiency: A survey at the Pakistan stock exchange. *Qualitative Research in Financial Markets*, *10*(1), 85–110. https://doi.org/10.1108/QRFM-04-2017-0033

Sholeh, B. (2020). Pengaruh Literasi Keuangan terhadap Perilaku Keuangan Mahasiswa Program Studi Pendidikan Ekonomi Universitas Pamulang. *Jurnal Pendidikan, Ekonomi Dan Bisnis*, *4*(2).

Sindhu, K. P., & Kumar, S. R. (2014). Influence of Risk Perception of Investors on Investment Decisions: An Empirical Analysis. *Journal of Finance and Bank Management*, *2*(2), 15–25.

Sudirman, W. F. R., & Pratiwi, A. (2022). Overconfidence Bias dalam Pengembilan Keputusan Investasi: Peran Perbedaan Gender. *Muhammadiyah Riau Accounting and Business Journal*, *3*(2), 081–092. https://doi.org/10.37859/mrabj.v3i2.3493

Sukamulja, S., Meilita, A. Y. N., & Senoputri, D. (2019). Regret Aversion Bias, Mental Accounting,

Overconfidence, and Risk Perception in Investment Decision Making on Generation Y Workers in Yogyakarta. *International Journal of Economics and Management Studies*, *6*(7), 102–110. https://doi.org/10.14445/23939125/ijems-v6i7p116

Yusriani, S., Patiro, S. P. S., Pamungkas, C. R., Aryadi, D., Lusiati, M., Nurbaeti, N., & Siregar, D. H. (2023, November). Exploring the Dynamics and Implications of Remote Work during and post-COVID-19: A Qualitative Analysis. In *Proceeding of The International Seminar on Business, Economics, Social Science and Technology (ISBEST)* (Vol. 3, No. 1).