Original Research Article
Overconfidence and Herding Bias On Investment Decisions The Role of Risk Perception as a Mediator

Abstract:
Aims: The investment decision is essential in Small and Medium Enterprises (SMEs). The behavioral financial theory explains that behavioral biases and risk perceptions of SME owners will influence investment decisions. This study highlights the relationship between overconfidence and herding bias toward investment decisions mediated by Risk Perception.
Study design: The research population is SME owners in Banyumas Regency. The sample used was 118 SME owners. The data was collected using a questionnaire distributed to SME owners.
Methodology: This study uses the PLS-SEM analysis tool. The method used to gather the data was purposeful sampling. Test the validity and reliability using the outer model. Hypothesis testing uses the inner model.
Results: The study proves that partial overconfidence and herding bias positively affect risk perception. Overconfidence, herding bias, and Risk Perception positively affect investment decisions. The research results have not been able to prove that there is a mediating effect of risk perception on the relationship between overconfidence and herding bias on investment decisions. This research has theoretical and practical implications. Theoretical implications, especially for developing financial behavioral theory in investment decisions. For practical implications for stakeholders in SME development, it is necessary to pay attention to the behavioral biases in SME owners.

Keywords: overconfidence, herding bias, risk perception, investment decision, SMEs

1. INTRODUCTION

Investment decisions in SMEs are financial decisions that have an essential role. The phenomenon of investment decisions in the Banyumas district shows that SME owners are still moderate in planning investments based on institutions, markets, and consumers. The behavioral finance theory states that the behavioral aspects of investors will influence investment decisions. Investors do not always act rationally in choosing their investments [1], and investors sometimes show the nature of avoiding risk or loving risk [2]. Investors often face ambiguous and high-risk situations [3].

[4]–[7] stated that individuals exhibit behavioral biases in making investment decisions. Behavioral biases consist of emotional biases and cognitive biases. This research further explores the relationship between cognitive biases (overconfidence) and emotional biases (herding bias), perceptions of risk, and investment decisions. Risk Perception becomes a mediating variable between behavioral biases and investment decisions. Based on the research by [8], they have stated the importance of exploring the effect of behavioral biases in making investment decisions and including mediating variables in the relationship between the two variables.

Overconfidence is an unwarranted belief in intuitive reasoning, judgment, and cognitive abilities. Individuals overestimate their ability to predict and provide appropriate information. Overconfidence encourages investors to reduce the risk of loss in unexpected situations. Investors who are too confident feel confident in their judgment abilities and wait to improve when new information comes in.

Investors are confident in their experience and tend not to consider risks [9]. Overconfidence has a negative effect on risk perception. The higher the Overconfidence, the lower the risk perception [9], [10].

Herding bias shows the tendency of investors' behavior to follow other investors. The reason for carrying out herding bias is to reduce the risk [11]. Herding bias will increase the perception of risk. The higher the herding bias, the higher the Risk Perception [11], [12].

Behavioral factors also influence investment decisions [11], [13]–[21]. Overconfidence will cause investors to be overly confident and ignore signals from the market when making investment decisions. Overconfident individuals will gain losses or profits in the industry—overconfidence results in individuals making poor investment forecasts [6]. The research results between overconfidence and investment decisions show a research gap. Research by [22]–[26] proves that Overconfidence increases investment decisions. In contrast, [8]–[10] proved that Overconfidence has a negative effect on investment decisions.

Investors often imitate other investors in making investment decisions. Research [20] explains that biased herding behavioral often occurs in developing countries. Herding bias will improve investment decision-making. Herding bias influencing investment decisions was found by [16], [26]–[29]. Different results were shown by [30], which proved that herding bias has a negative effect on investment decisions

Perception of risk has an essential role in decision-making. Risk-taking behavior will be crucial in financial decisions [31]. If an individual has a high level of risk perception in an investment, he will continue investing [9]. Investors who tend to avoid risk have a negative effect on investment decisions. The results of the study also show a significant influence between Risk Perception and investment decisions [10], [16], [18], [30]–[33]. The results of [36] provide evidence that Risk Perception has a negative effect on investment decisions. Meanwhile, [9], [10] showed that risk perception could improve investment decisions.

Research by [9], [10] has proven that Risk Perception can be a factor that mediates the relationship between overconfidence and investment decisions. Overconfident investors will underestimate risk, and this will affect their investment decisions.

Herding behavior can occur because investors are unwilling to bear losses if they do not follow the behavior of other investors with more information [11]. Biased herding behavior will affect risk perception and investment decisions [37].

[8] states the importance of exploring the role of the heuristic basis for investment decisions and adding a mediating variable in the relationship between these two variables. This study provides novelty to behavioral research bias, risk perception, and investment decisions by adding the variable herding bias as one factor influencing investment decisions. The risk perception variable mediates the relationship between overconfidence and herding bias on investment decisions. This research was conducted on micro, small, and medium enterprises in Banyumas Regency. This research will contribute to the development of SMEs regarding investment decision-making.

2. LITERATURE REVIEW

Overconfidence encourages investors to reduce the risk of loss in unexpected situations. Overconfident investors feel confident about their judgment ability, so it only sometimes makes improvements when any incoming new information. Investors are confident in his experience and tend to consider risks [9]. Overconfidence has a negative effect on risk perception. The higher the Overconfidence, the lower the risk perception [9], [10]. Thus, the initial hypothesis that this investigation suggests is as follows:

H1. Overconfidence has a negative effect on Risk Perception.

Herding bias shows the tendency for investor behavior to follow other investors. The reason for herding bias is to reduce the risk [11]. Herding bias has been shown to influence risk perception in financial crisis conditions [12]. The higher the herding bias, the higher the Risk Perception [11], [12]. The second hypothesis this study suggests is the following in light of the results of past research:

H2. Herding Bias has a positive effect on Risk Perception.

Overconfidence will cause investors to be too confident and ignore signals from the market when making investment decisions. A study by [15] found evidence that overconfidence will positively affect investment decisions. Overconfident individuals will obtain a loss or profit in the industry—overconfidence results in individuals making wrong investment forecasts [6].

The research results on the effect of overconfidence on investment decisions show that overconfidence will increase investment decisions. Individuals who have overconfidence will result in

inner courage to make investment decisions [20], [22], [23], [25], [26]. The third hypothesis that this investigation raises is as follows:

H3. Overconfidence has a positive effect on Investment Decisions

Investors often imitate other investors in their behavior and make investment decisions. Research [20] explained that herding bias behavior often occurs in developing countries. Herding bias will improve investment decision-making. It has been proven by research by [16], [26], [28], [38] herding bias can drive the uptake of Investation decisions. The fourth hypothesis this study suggests is the following in light of the results of past research:

H4. Herding bias has a positive effect on Investment Decisions

Risk perception is related to investment decisions. Risk perception has an essential role in decision-making. If an individual has a high level of risk perception on an investment, it will withhold investment [9]. Investors who tend to avoid risk have a negative effect on Investation decisions. Research by [36], [39] proves that a high-risk perception will decrease Investment decisions. The fifth hypothesis this study suggests is the following in light of the results of past research:

H5. Risk Perception has a positive effect on Investment Decisions

Research by [9], [10] has proven that risk perception can be a factor that mediates the relationship between overconfidence and investment decisions. Overconfident investors will underestimate the risk, affecting the investment decision. The sixth hypothesis this study suggests is the following in light of the results of past research:

H6. Risk Perception can mediate the effect of Overconfidence on Investment Decisions.

Herding behavior can occur because investors are unwilling to bear losses if they do not follow the behavior of other investors with more information [11]. Biased herding behavior is related to risk perception and will affect investment decisions [37]. The seventh hypothesis this study suggests is the following in light of the results of past research:

H7. Risk Perception can mediate the effect of Herding Bias on Investment Decisions

Based on the formulation of the hypothesis as mentioned earlier, the research's conceptual framework can be pictured as follows:

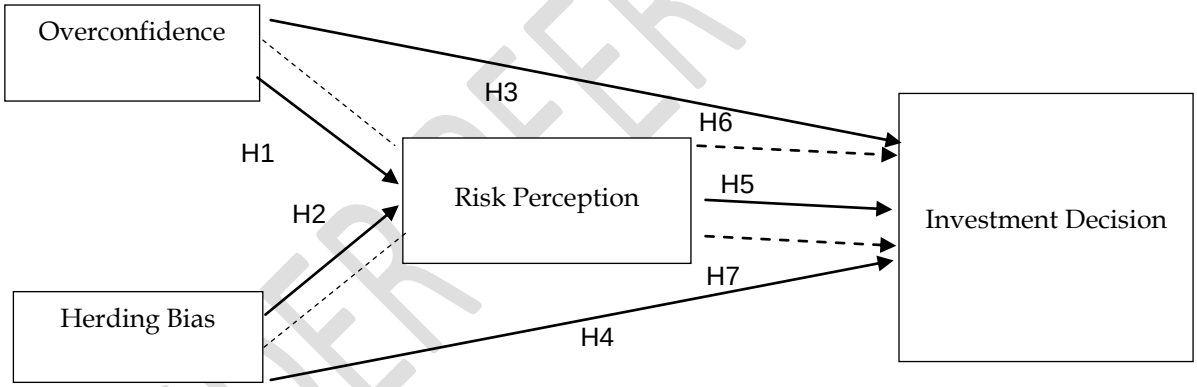

Figure 1. Research Framework

3. METHOD

This study was designed using a quantitative approach. The population is SME owners in Banyumas Regency, namely 1,604 people. The minimum sample that must be used is 94 people. Research distributes questionnaires using two ways: directly to respondents and using Google Forms. Questionnaires collected as many as 118 pieces. In this study, there were four variables tested, namely investment decision variables (IC), Overconfidence (OC), Herding Bias (HB), and risk perception (PI). All items of this study were measured using a Likert scale of 1 to 5.

The investment decision allocates the company's funding to the company's current and fixed assets. The question indicators use indicators from [40]. There are six questions consisting of future investment plans, investment planning on intuition, investment planning on the market, investment planning on consumers, investments considering environmental factors, and making business plans or studies investment before doing investment planning.

Overconfidence is the tendency of investors to need more confidence about the accuracy of their knowledge in assessing an investment. This variable uses a composite question indicator from

research [41], [42]. There are seven items of questions used consisting of the ability to pay off debt, ability to bear debt costs, ability to pay off debt on time, ability to invest, confidence in actions and knowledge that can affect investment results, confidence to invest according to one's own opinion and the influence of friends on investment decision making.

Herding bias shows the tendency of investors' behavior to follow other investors. The question indicators used in research come from research [23]. There are four questions: making decisions based on the majority of investors' choices, based on the best price, distrust of making decisions that differ from others, and the influence of market changes on decision-making.

Risk Perception is investors' beliefs, attitudes, judgments, and feelings toward investment risk [35]. Perception of risk in this study was measured by research indicators [11]. There are six question items, namely the difference between the words risk and opportunity; the risk is a situation that must be eliminated, the risk is acceptable if it relates to profit potential, the desire to earn higher income in the future, looking for a business that provides higher income and willingness take risky financial decisions.

This study uses the Partial Least Square Structural Equation Model (PLS-SEM) method. Test the validity and reliability using the outer model. Hypothesis testing uses the inner model.

4. RESULT

This study was conducted on SME owners in Banyumas Regency. The research sample is 118 respondents. The average number of employees is three people, the average length of business is five years, and the average age of the respondents is 32 years. This study examines the effect of overconfidence and herding bias on investment decisions with Risk Perception as a mediating variable. There are seven questions for Overconfidence, four for herding bias, six for the perception of risk, and six for investment decisions. In the first test, several question items had an outer loading smaller than 0.6, as shown in Figure 2 below.

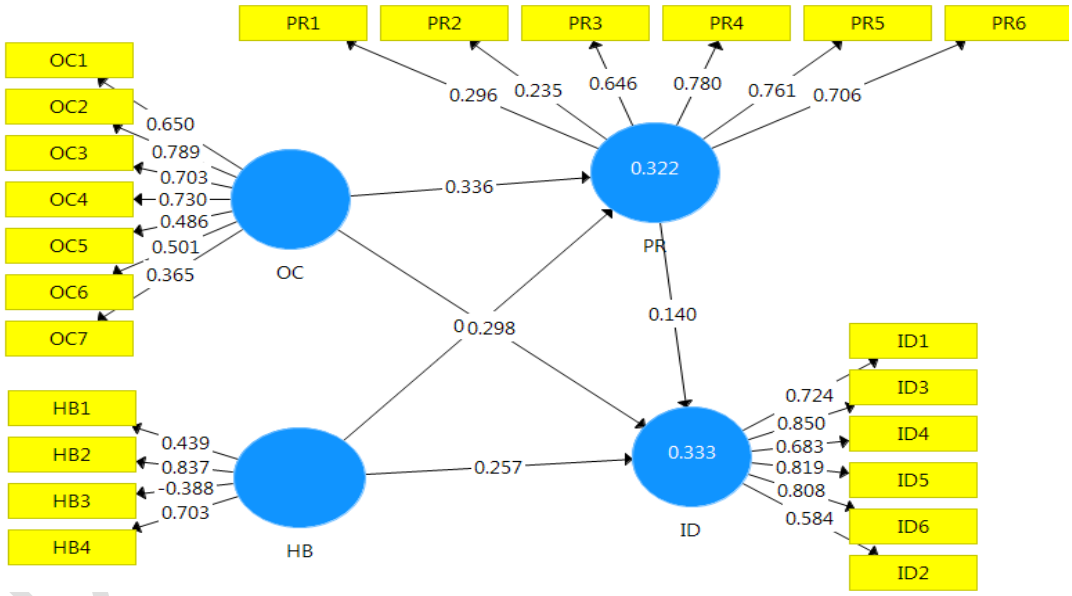

Figure 2. Test research model before being reconstructed

These results indicate two overconfidence (OC) question items with outer loading below 0.6 (OC5, OC6, and OC7). For the variable herding bias (HB), two question items have outer loading below the number 0.6, namely HB1 and HB3. The risk perception variable (PR) has two question items with an outer loading below 0.6, namely PR1 and PR2. In contrast, the investment decision variable (ID) is only one question item with an outer loading below 0.6, namely ID2. The question items were removed from the model, after which a second test was carried out. The results of the second stage of testing show results as shown in Figure 3 below.

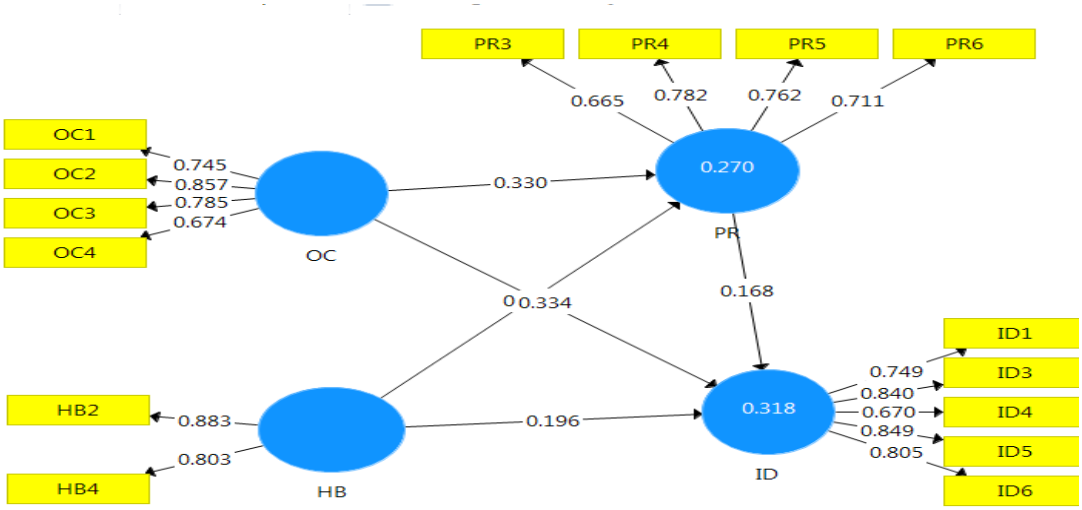

Figure 3. The research model, after being reconstructed

The test results show that all question items have an outer loading that is greater than 0.6, so the results of this test already meet the required requirements. The R Square value for the first equation is 0.270, and the R square for the second equation is 0.318.

Table 1 below shows the results of the Cronbach Alpha test, Composite Reliability, and Average Variance Extract

Table 1. Cronbach Alpha, Composite Reliability, and Average Variance Extract

Variables	AVE	Cronbach Alpha	Composite Reliability	Criteria
Herding Bias (HB)	0,712	0,600	0,831	Reliable
Overconfidence (OC)	0,590	0,767	0,851	Reliable
Risk Perception (PR)	0,535	0.710	0.821	Reliable
Investment Decision (ID)	0,617	0.843	0,889	Reliable

The AVE value indicates the convergent validity test, which must be above 0.5. The results show that the AVE value for all variables is above 0.5. The discriminant validity test uses two measures: Fornell-Lacker's and Cross loading. Fornell-Lacker's test is calculated by comparing the square root value of AVE with the correlation of latent variables. Table 2 below shows the test results.

Table 2. Discriminant Validity of Latent Variable Correlations

Variables	Herding Bias (HB	Overconfidence (OC)	Risk Perception (PR)	Investment Decision (ID)
Herding Bias (HB)	0.844			
Overconfidence (OC)	0.454	0.768		
Risk Perception (PR)	0.429	0.457	0.731	
Investment Decision (ID)	0.420	0.500	0.405	0.786

Table 2 above shows that AVE's square root exceeds the latent variables' correlation. Therefore the discriminant validity test is acceptable.

This study has seven hypotheses, namely H1 and H2 are the direct effects of overconfidence and herding bias on risk perception. H3, H4, and H5 are the direct effects of Overconfidence, herding bias, and Risk Perception on investment decisions. The results of testing the hypothesis are presented in Table 3 below.

Table 3 Results of hypothesis testing (H1, H2, H3, H4 and H5)

Hypothesis	Relationship	Original Sample	T Statistic	P-Value	Conclusion
H1	OC -> RP	0,330	3,150	0,002***	Not supported
H2	HB -> RP	0,279	2,602	0,010***	Supported
H3	OC -> ID	0,390	5,346	0,000***	Supported
H4	HB -> ID	0,243	2,467	0,014**	Supported
H5	RP -> ID	0,168	1,838	0,067*	Supported

Note: *** significance at level 0,01; ** significance at level 0,05; * significance at level 0,1.

H1, which states that Overconfidence has a negative effect on risk perception, is not supported. H2, which states that Herding Bias has a positive effect on Risk Perception, is supported by H3, which states that Overconfidence has a positive effect on investment decision is supported. H4, which states that herding bias positively affects investment decisions, is supported. H5, which states that Risk Perception positively affects investment decisions, is supported.

The results of testing hypotheses 6 and 7, which are indirect effects, are presented in Table 4 below.

Table 4 Results of hypothesis testing H6 and H7

Hypothesis	Relationship	Original Sample	T Statistic	P-Value	Conclusion
H6	OC -> RP -> ID	0,047	1,518	0,130	Not supported
H7	HB -> RP -> ID	0,055	1,355	0,176	Not supported

The results of testing the H6 and H7 hypotheses show a P value greater than 0.05. H6, which states that risk perception can mediate the effect of Overconfidence on investment decisions, is rejected. H7, which states that risk perception can mediate the effect of herding bias on investment decisions, is rejected.

5. DISCUSSION

H1 states that Overconfidence has a negative effect on risk perception. The study results show contradictory results. Overconfidence can increase the perception of risk. Investors who have high trust will consider the risks of investing more. Overconfident investors will have a positive risk perception. This causes individuals to be willing to take risks that encourage them to invest [43]. The results of this study need to follow the research results [9], [10].

The test results show that herding bias positively affects risk perception (H2 is supported). The existence of a high herding bias will increase the perception of risk. Herding behavior occurs because investors prefer to avoid risk. This herding behavior will minimize investment risk. Investors need to learn how to invest. Therefore they follow the behavior of other investors. The results of this study support [12], which found that herding behavior affected risk perception. [11] also found that herding behavior can increase risk perception.

Overconfidence positively affects investment decisions (the third hypothesis is supported). The test results strengthen empirical evidence that an increase in overconfidence behavior will be able to increase investment decisions. Numerous studies have shown that investors are overly confident in their investment decisions. This study supports the results of [22]–[24], [26], [28], proving that Overconfidence increases investment decisions. [44] states that overly confident investors will cause investors to invest excessively. Investors will make investments based on information they believe is true. Overconfident investors will like risk and cause an increase in their investment [28]. Overconfidence is needed in making investment decisions for SME owners because every decision has a risk. Individuals willing to take high risks hope to obtain a high level of profit [45].

The study's results prove that herding bias can increase the investment decisions of SME owners (the fourth hypothesis is supported). High herding behavior will lead to more investment decisions. These results support research [16], [20], [26], [27], [29], [38]. The study results prove that SME owners tend to follow the investment decisions made by other business actors. Many things cause herding behavior, for example, the availability of information that has been formed. The behavior of leading to correct information will result in better investment decisions [27].

Risk Perception can increase investment decisions supported by the five hypotheses. These results align with [9], [10]. Risk Perception has a positive effect on investment decisions. There is an increase in the risks associated with investment decisions and performance, so the investment decisions are also better. The results of this study are not in line with prospect theory and cognitive theory, which state that if an investor faces investment risk, the investor will avoid the investment opportunity [9]. The results of this study are consistent with Markowitz's portfolio risk and return theory.

This study cannot prove the influence of risk perception mediating variables on the relationship between overconfidence and herding bias in investment decisions. The study results show that the six and seven hypotheses are not supported. The research results are not in line with the results of [11], [17], [19], [33]–[35], [37]. Based on the analysis findings mentioned above, a discussion may be conducted that offers some specific information about the study's findings and how each variable affects the other variables. The following will be a discussion of each theory.

6. CONCLUSION

The results of this study provide clues about the positive influence of overconfidence and herding bias on risk perception. Research has also found that Overconfidence, herding bias, and Risk Perception positively affect investment decisions. This study has not found a mediating effect of risk perception on the relationship between overconfidence and herding bias on investment decisions.

This study has practical and theoretical implications. Theoretical implications, especially for developing financial behavioral theory in investment decisions. For practical implications for stakeholders in SME development, it is necessary to pay attention to the behavioral biases in SME owners. This study has limitations in terms of the sample and variables used. Further research is suggested to increase the number of samples and expand the research area. Subsequent research in more research examines other behavioral biases such as optimism, locus of control, mental accounting, and so on.

Consent

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

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