



The Effect of Financial Literacy, Risk Tolerance, Loss Aversion and Herding Bias On Individual Investors In Stock Investment Decision Making (Study on Students in Pekalongan City/Regency)

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ABSTRACT

This research examines Stock Investment Decision Making (Study of Students in Pekalongan City/Regency) through Financial Literacy, Risk Tolerance, Loss Aversion and Herding Bias. The type of research used in this research is correlational research with data collection methods using questionnaire data. In this research, 100 respondents were used as samples. The sampling method uses Purposive Sampling. The analytical tools used are multiple linear regression analysis and t test. Based on the analysis results, it is stated that Financial Literacy and Risk Tolerance have a positive and significant effect on investment decisions, Loss Aversion has an insignificant negative effect on investment decisions and Herding Bias has an insignificant positive effect on investment decisions.

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1. Introduction

The Capital Market is one of the important pillars in the growth of the Indonesian economy. For millennials, especially students, knowledge about investment is very important knowledge in order to create a sense or interest. Formake investments. If students are more open-minded about investing, it will create a sense of wanting to try and then curiosity to jump straight into the capital market. However, it is necessary to note that the motivating factors for students to invest are not only through investment. There are other factors, for example, the initial capital that must be deposited before investing, experience and business instincts. According to (Satria & Hartono, 2022) Millennial investors have the characteristic of daring to take risks to make more sustainable investment decisions. Because they believe that investment can create positive change, and want more evidence of performance, but remain committed to sustainable investment.

However, the fact is that many young people do not yet have an understanding of how to manage finances. (Mahmudah & Milzam, 2021). In addition, Millennials and Generation Z tend to spend rather than save or invest. (Din Jannah, 2019). Some young people who are entering a critical

phase have also planned to become entrepreneurs with innovation, but many of these plans have also failed. (Milasari, 2017). However, some young generations are still aware of investment plans which are part of managing finances so that the critical phase of the young generation can be achieved in their old age. Currently, investment has various forms, not limited to real sector investments such as buildings, land, or gold which generally require quite high costs to be able to invest in them. (Gunawan & Wiyanto, 2022). However, there are various types of investments that can be made by everyone.

This phenomenon indicates that the more diverse ways a person invests to prepare for their future. Stock investment is also one of the trends targeted by various groups. Stocks are chosen because with careful observation they can produce multiple profits in a faster time than other investments. The growth of the Indonesian capital market from 2019 to June 2022 showed significant growth. Until June-2022, the number of investors was recorded at 9,112,677 investors with the dominant age of investors under 30 years. More clearly, the distribution of investor ages is shown in Figure 1 below:

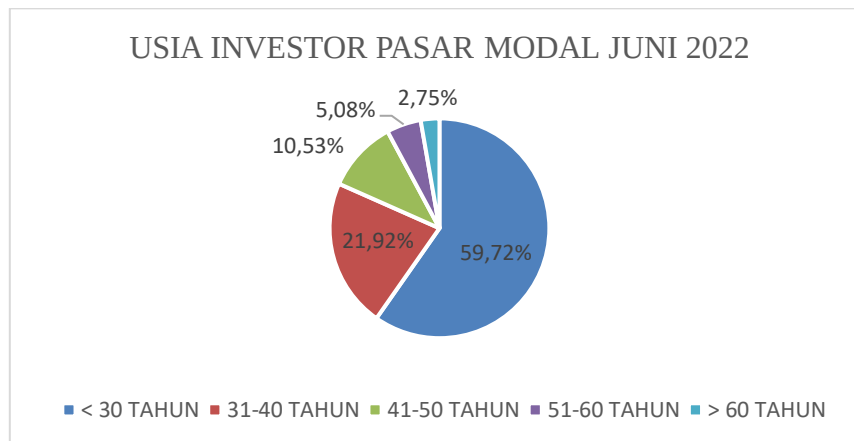


Figure 1. Age of Indonesian Capital Market Investors June 2022

Through a survey (OJK, 2021), it is known that in 2019, the Indonesian people had a financial literacy index of 38.08%. This figure indicates that out of every 100 people, there are still 38 people who are well literate. This financial literacy index has increased compared to the survey conducted in 2016, where the survey obtained a financial literacy index of 29.70%. This figure shows that from 2016 to 2019 there was an increase of 8 people who were well literate. This increase is in line with the increase in the number of investors so that financial literacy implicitly plays a role in influencing investment decisions

The significant increase in the number of investors with a financial literacy index that is still below 50% is what motivated the author to conduct this research, considering that investment is carried out not only by considering the returns obtained, but also the risks that will be faced. Risk according to Kountur in (Mumtazah & Anwar, 2022) defined as a state of uncertainty that must be faced by individuals and companies where this uncertainty has a detrimental nature.

Infacing risks, everyone has different preferences. Based on Halim's opinion in (Baihaqqi & Prajawati, 2023) It is explained that a person's risk preferences are divided into three groups, namely risk averse, risk neutral, and risk seeker. This preference will affect the investment decisions that will be made by a person. Investment decision-making itself is not only influenced by cognitive and emotional factors but there are also social factors that influence it. Research (Evelyn & Marheni, 2023) the existence of social variables that influence an investor in making decisions, namely herding. Herding is the behavior of investors who tend to follow the decisions of other investors in investing. From the problems explained above, researchers are interested in researching with the title, "The Influence of Financial Literacy, Risk Tolerance, Loss Aversion and Herding Bias on Individual Investors in Making Stock Investment Decisions (Study on Students in Pekalongan City/Regency)".



2. Literature Review

Theoretical basis

Signaling theory

The right investment decision will be able to produce optimal performance so that it gives a positive signal to investors that will increase the stock price and the company's value. This is in accordance with the statement of signaling theory, investment spending gives a positive signal regarding the company's growth in the future, so that it can increase the stock price which is used as an indicator for someone to invest. Brigham & Houston (2012).

Capital Market Investment Decisions

The most basic thing in investment decisions is return and risk. Because understanding the relationship between the expected profit (Return) and the risk (Risk) received from the investment made is a linear relationship. This means that the greater the expected profit, the greater the risk that must be faced. So that investors in order to minimize investment risk need to understand rationally and be careful in the decision-making process. (Zvi et al., 2014).

Financial Literacy

According to (Firdaus et al., 2022), *financial literacy* is the ability to manage finances so that life can be more prosperous in the future. According to several experts, it can be concluded that financial literacy is the level of knowledge, skills, and confidence of the community in managing their finances in order to achieve better goals in the future.

Risk Tolerance

Risk tolerance is an acceptable level of ability in taking a risk investment (Ainia & Lutfi, 2019). According to (Zvi et al., 2014), each investor has a risk tolerance level that can be divided into three, namely:

1. *Risk Averter* (Not risk-averse)
2. *Risk Neutral* (Risk Neutral)
3. *Risk Seeker* (Risk-loving)

Loss Aversion

Loss aversion behavior is an investor's attitude that feels higher pain when losing or experiencing a loss of capital owned compared to getting a profit in the same amount. An investor will have a tendency to avoid a loss because the loss obtained will bring more painful pain than getting a profit with the same value. (Evelyn & Marheni, 2023).

Herding Bias

Herding behavior can occur when the information a person has is more influenced by information from a public decision, group or other investor in making investment decisions. (Yuwono & Altiyane, 2023). Investors assume that other investors have better investment skills. Therefore, investors trust and follow decisions made by other investors who are considered to have better skills..

HYPOTHESIS

H1: Financial literacy has a significant positive effect on investment decision making.

H2: Risk tolerance has a significant positive effect on taking investment decisions

H3: Loss aversion has a significant positive effect on investment decision making.

H4: Herding bias has a significant positive effect on investment decision making.



3. Method, Data, and Analysis

The type of research used is causal research. The population of this study is students in Pekalongan Regency and City, this population is an infinite population because it cannot be known for certain the actual population size of retail investors who invest in stocks. So the minimum number of samples obtained is 97 respondents. To avoid damage in filling out the questionnaire, the researcher took 100 respondents. The research sample was taken using purposive sampling, which is the determination of samples based on certain criteria to be able to provide optimal information. The criteria set, in this technique are adjusted to the needs of the researcher (Ghozali, 2016).

4. Result and Discussion

Validity Test

Validity measurement can be measured in two ways, namely by looking at Sig. (2-tailed) or comparing r_{table} with r_{count} . Validity measurement in this study by calculating the correlation value of each question or score by looking at the criteria if the Sig.2-tailed value < 0.05 , then the statement can be said to be "valid". The following is a summary of the validity test results as follows:

Table 1 Summary of Validity Test Results

No	Research Variables	Statement Items	Sig.2 (tailed)	Standard	Conclusion
1	Financial Literacy	FL.1	0,000	< 0.05	Valid
2		FL.2	0,000	< 0.05	Valid
3		FL.3	0,000	< 0.05	Valid
4		FL.4	0,000	< 0.05	Valid
5	Risk Tolerance	RT.1	0,000	< 0.05	Valid
6		RT.2	0,000	< 0.05	Valid
7		RT.3	0,000	< 0.05	Valid
8	Loss Aversion	LA.1	0,000	< 0.05	Valid
9		LA.2	0,000	< 0.05	Valid
10		LA.3	0,000	< 0.05	Valid
11		LA.4	0,000	< 0.05	Valid
12	Herding Bias	HB.1	0,000	< 0.05	Valid
13		HB.2	0,000	< 0.05	Valid
14		HB.3	0,000	< 0.05	Valid
15		HB.4	0,000	< 0.05	Valid
16	Investment Decisions	KI.1	0,000	< 0.05	Valid
17		KI.2	0,000	< 0.05	Valid
18		KI.3	0,000	< 0.05	Valid
19		KI.4	0,000	< 0.05	Valid
20		KI.5	0,000	< 0.05	Valid
21		KI.6	0,000	< 0.05	Valid

Source: Primary Data processed 2023

From the table statement above, it can be seen that all variables have a Sig. (2-tailed) value of less than 0.05 and the r_{table} value $< r_{count}$. Thus, it can be concluded that all instrument questions are declared valid.



Reliability Test

Measurement of reliability in this study using the Cronbach-Alpha (α) statistical test with the criterialf the Cronbach's Alpha value > 0.6 then the question can be said to be "Reliable" whereas, if the Cronbach's Alpha value < 0.6 then the question can be said to be "Not Reliable. The following is a summary of the reliability test results as follows

Table 2 Summary of Reliability Test Results

Research Variables	Cronbach's Alpha	Standard	Conclusion
Financial Literacy	0.842	> 0.6	Reliable
Risk Tolerance	0.778	> 0.6	Reliable
Loss Aversion	0.791	> 0.6	Reliable
Herding Bias	0.836	> 0.6	Reliable
Investment Decisions	0.855	> 0.6	Reliable

Source: Primary Data processed 2023

The results of the table above show that the Cronbach's Alpha variables of Financial Literacy, Risk Tolerance, Loss Aversion and Herding Bias as well as Investment Decisions are stated to be reliable because the Cronbach's alpha value is > 0.6 .

Classical Assumption Test

Testing with classical assumptions consisting of Normality Test, Multicollinearity Test and Heteroscedasticity Test as follows:

a) Normality Test

The test was conducted using the One-Sample Kolmogorov-Smirnov test by looking at the asymp. Sig. 2-tailed above 0.05, below are the results of the normality test output based on its statistical analysis.

Table 3 Normality Test Results
One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		100
Normal Parameters ^{a,b}	Mean	,0000000
	Std. Deviation	2.81628471
Most Extreme Differences	Absolute	,081
	Positive	,063
	Negative	-,081
Test Statistics		,081
Asymp. Sig. (2-tailed)		,108 ^c

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

Based on the table above, it is known that the significance value of the Kolmogorov Smirnov Test is 0.108 or the significance value is more than 0.05 ($p\text{-value} > 0.05$), so it is concluded that the data in this study is normally distributed.

b) Multicollinearity Test

Decision-making criteria for the use of tolerance values and VIF according to(Ghozali, 2016)is if the tolerance value > 0.10 or the VIF value < 10 then there is no multicollinearity among the independent variables. Conversely, if the tolerance value ≤ 0.10 or the VIF value ≥ 10 then



there is multicollinearity among the independent variables. The complete results of the multicollinearity test can be seen in the following table.

Table 4 Multicollinearity Test Results
Coefficients^a

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.	Collinearity Tolerance	Statistics VIF
1	(Constant)	24,995	2,040		12,253	,000		
	FinLiteracy	,576	,235	,496	2,449	,016	,221	4,516
	RTolerance	,701	,284	,468	2,469	,015	,253	3,954
	Laversion	-,280	,175	-,236	-1,602	,112	,419	2,389
	HerdingB	,355	,230	,293	1,546	,125	,253	3,957

a. Dependent Variable: Kep.Invest

Based on the table above, it is known that the tolerance value for the variables Financial Literacy, Risk Tolerance, Loss Aversion and Herding Bias is more than 0.10. And the VIF value for the variables Financial Literacy, Risk Tolerance, Loss Aversion and Herding Bias is less than 10.0 so it can be concluded that there is no multicollinearity.

c) Heteroscedasticity Test

Testing heteroscedasticity can also be seen from the Glejer test on independent variables. As a basic understanding, residual is the difference between the observed value and the predicted value and absolute is the absolute value. The presence of heteroscedasticity means that there are variables in the model that are not the same (constant). So, assuming that if the significant value is > 0.05 then there is no heteroscedasticity disturbance. Meanwhile, if the significant value is < 0.05 then there is heteroscedasticity disturbance.

Table 5 Heteroscedasticity Test Results
Coefficients^a

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	2,576	1,052		2,449	,016
	FinLiteracy	,004	,121	,008	,036	,972
	Rtolerance	,085	,146	,118	,579	,564
	Laversion	,016	,090	,027	,173	,863
	HerdingB	-,092	,118	-,157	-,774	,441

a. Dependent Variable: absres

From the table above, it is known that the significance value of the variables Financial Literacy, Risk Tolerance, Loss Aversion and Herding Bias is less than 0.05. Because the significance value of all variables is more than 0.05, it can be concluded that the data in this study did not experience heteroscedasticity interference.

Model Feasibility Test

The model feasibility test basically shows whether all independent or free variables included in the model have a joint influence on the dependent/bound variable. (Ghozali, 2016). Testing criteria jlf the significant value is < 0.05 then the Model Fits. The following are the results of the model feasibility test that has been carried out.



Table 6. Model Feasibility Test Results

		ANOVA				
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	126,576	4	31,644	3,828	,006b
	Residual	785,214	95	8,265		
	Total	911,790	99			

a. Dependent Variable: Kep.Invest

b. Predictors: (Constant), HerdingB, LAversion, RTolerance, FinLiteracy

Based on the results of the model feasibility test seen in the ANOVA table above, it can be seen that the level of significance is 0.006. Because the significance value is less than 0.05, it can be stated that the fit model or regression model is suitable for testing "the effect of Financial Literacy, Risk Tolerance, Loss Aversion and Herding Bias on Investment Decisions".

Multiple Linear Regression Analysis

The results of the multiple linear regression calculations can be seen in the following table:

Table 7. Results of Multiple Linear Regression Analysis

		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	24,995	2,040		12,253	,000
	FinLiteracy	,576	,235	,496	2,449	,016
	RTolerance	,701	,284	,468	2,469	,015
	LAversion	-,280	,175	-,236	-1,602	,112
	HerdingB	,355	,230	,293	1,546	,125

a. Dependent Variable: Kep.Invest

Based on the table above, the multiple regression analysis model used in this study can be formulated as follows:

$$KI = \alpha + \beta_1 FL + \beta_2 RT + \beta_3 LA + \beta_4 HB + e$$

$$KI = 24,995 + 0,576FL + 0,701RT - 0,280LA + 0,355HB + e$$

From the results of the regression equation analysis, it can be interpreted as follows:

- The regression coefficient of Financial Literacy is positive. This means that if Financial Literacy increases, while other variables are considered constant, then the Investment Decision will increase by 0.576 units.
- The regression coefficient of Risk Tolerance is positive. This means that if Risk Tolerance increases, while other variables are considered constant, then the Investment Decision will increase by 0.701 units.
- The regression coefficient of Loss Aversion is negative. This means that if Loss Aversion increases, while other variables are considered constant, then the Investment Decision will decrease by -0.28 units.
- The regression coefficient of Herding Bias is positive. This means that if Loss Aversion increases, while other variables are considered constant, then the Investment Decision will increase by 0.355 units.



Hypothesis Testing

To test the hypothesis, a t-statistic test is carried out. The t-statistic basically shows how far the influence of one explanatory or independent variable individually explains the variation in the dependent variable. (Ghozali & Chariri, 2014). The following are the results of partial hypothesis testing (t-test). The results of the t-test are as follows:

Table 8. t-Test Results
Coefficients^a

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	24,995	2,040		12,253	,000
	FinLiteracy	,576	,235	,496	2,449	,016
	RTolerance	,701	,284	,468	2,469	,015
	LAversion	-,280	,175	-,236	-1,602	,112
	HerdingB	,355	,230	,293	1,546	,125

a. Dependent Variable: Kep.Invest

Based on the results of the hypothesis test as above, the following conclusions can be drawn:

a. The Influence of Financial Literacy on Investment Decisions

Based on table 8, it is known that the t-value of the Financial Literacy variable is 2.449 with a significance value of 0.016. Because the significance value of the t-test is less than 0.05 ($0.016 < 0.05$). This means that Financial Literacy has a positive and significant effect on investment decisions, so it can be concluded that the first hypothesis is accepted which states that Financial Literacy has a positive and significant effect on investment decisions.

b. The Influence of Risk Tolerance on Investment Decisions

Based on table 8, it is known that the t-value of the Risk tolerance variable is 2.469 with a significance value of 0.015. Because the significance value of the t-test is less than 0.05 ($0.015 < 0.05$). This means that Risk tolerance has a positive and significant effect on investment decisions, so it can be concluded that the second hypothesis is accepted which states that Risk tolerance has a positive and significant effect on investment decisions.

c. The Influence of Loss Aversion on Investment Decisions

Based on table 8, it is known that the t-value of the Loss aversion variable is -1.602 with a significance value of 0.112. Because the significance value of the t-test is more than 0.05 ($0.112 > 0.05$). This means that Loss aversion has a negative but insignificant effect on investment decisions, so it can be concluded that the third hypothesis is rejected, which states that Loss aversion has a positive and significant effect on investment decisions.

d. The Influence of Herding Bias on Investment Decisions

Based on table 8, it is known that the calculated t value of the Herding bias variable is -1.546 with a significance value of 0.125. Because the significance value of the t test is more than 0.05 ($0.125 > 0.05$). This means that Herding bias has a negative but insignificant effect on investment decisions, so it can be concluded that the fourth hypothesis is rejected which states that Herding bias has a positive and significant effect on investment decisions.

DISCUSSION

a. The Influence of Financial Literacy on Investment Decisions

It is known that the t-value of the Financial Literacy variable is 2.449 with a significance value of 0.016. Because the significance value of the t-test is less than 0.05 ($0.016 < 0.05$). This means that Financial Literacy has a positive and significant effect on



investment decisions, it can be concluded that the first hypothesis is accepted which states that Financial Literacy has a positive and significant effect on investment decisions. In this case, an investor must be able to have knowledge about financial management, where the level of knowledge about financial management owned by the investor will encourage investment, this is based on the hope of prosperity in the future by making investments. Therefore, financial literacy can be said to have an influence on investment decision making. This also means which means that the higher the financial literacy a person has, the more likely they are to use financial publications in making investment decisions. This is in line with research conducted (Baihaqqi & Prajawati, 2023), (Yulianis & Sulistyowati, 2021) and (Firdaus et al., 2022) which states that financial literacy is important to have a positive influence on investment decisions.

b. The Influence of Risk Tolerance on Investment Decisions

It is known that the t-value of the Risk tolerance variable is 2.469 with a significance value of 0.015. Because the significance value of the t-test is less than 0.05 ($0.015 < 0.05$). This means that Risk tolerance has a positive and significant effect on investment decisions, it can be concluded that the second hypothesis is accepted which states that Risk tolerance has a positive and significant effect on investment decisions. Measuring the level of risk tolerance is very important before making an investment, this is to reduce the level of loss if an investment fails. Each investor has a different level of risk tolerance, namely risk averter (Not fond of risk), risk neutral (Neutral to Risk) and risk seeker (Likes Risk). Differences in risk tolerance can be caused by, among other things, age, status, career, socio-economic, income, wealth and income prospects timeframe (Gunawan & Wiyanto, 2022). Therefore, it can be said that risk tolerance has a positive influence on investment decision makers. In other words, The higher the risk tolerance, the better the investment decision.. This is in line with research conducted by (Ainia & Lutfi, 2019), (Budiyanto & Sari, 2023) and (Yuwono & Altiyane, 2023) show that risk tolerance has a positive and significant influence on investment decisions.

c. The Influence of Loss Aversion on Investment Decisions

It is known that the t-value of the Loss aversion variable is -1.602 with a significance value of 0.112. Because the significance value of the t-test is more than 0.05 ($0.112 > 0.05$). This means that Loss aversion has a negative but insignificant effect on investment decisions, it can be concluded that the third hypothesis is rejected which states that Loss aversion has a positive and significant effect on investment decisions. This is because investors tend to be happier when they get money than when they lose money. For example, if someone gets a 2% profit on their portfolio, they will feel happy but when they get a 2% loss they will be very tormented. The torment due to this loss is greater than when getting a profit that is the same as the loss. When economic and political conditions are uncertain, it has a major influence or impact on the economy. These conditions can be difficult for investors because of limitations and obstacles that are quite difficult to overcome. Conditions like this can cause investors to be overly worried or afraid in making decisions. In conditions like this, investors tend to feel more tormented. This research is in line with (Evelyn & Marheni, 2023) and (Marwan, 2015) which states that loss aversion has a negative effect on investment decision making.



d. The Influence of Herding Bias on Investment Decisions

It is known that the t-value of the Herding bias variable is -1.546 with a significance value of 0.125. Because the significance value of the t-test is more than 0.05 ($0.125 > 0.05$). This means that Herding bias has a negative but insignificant effect on investment decisions, it can be concluded that the fourth hypothesis is rejected which states that Herding bias has a positive and significant effect on investment decisions. Herding in the financial context occurs when an investor in the financial market imitates the behavior of another investor or a larger group of investors. The classic case of herding in finance is the tendency of individual investors to follow the majority investment decisions not carefully and rationally, but to assess their own decisions independently of the majority opinion. And not all majority opinions can benefit investors. This study supports research conducted by (Yuwono & Altiyane, 2023) and (Mumtazah & Anwar, 2022) found a significant positive effect.

5. Conclusion and Suggestion

Based on data processing and data results referring to the formulation of the problem and research objectives in the previous chapter, several conclusions can be formulated as follows:

- 1) It is known that the t-value of the Financial Literacy variable is 2.449 with a significance value of 0.016. Because the significance value of the t-test is less than 0.05 ($0.016 < 0.05$). This means that Financial Literacy has a positive and significant effect on investment decisions, so it can be concluded that the first hypothesis is accepted which states that Financial Literacy has a positive and significant effect on investment decisions.
- 2) It is known that the t-value of the Risk tolerance variable is 2.469 with a significance value of 0.015. Because the significance value of the t-test is less than 0.05 ($0.015 < 0.05$). This means that Risk tolerance has a positive and significant effect on investment decisions, so it can be concluded that the second hypothesis is accepted which states that Risk tolerance has a positive and significant effect on investment decisions.
- 3) It is known that the t-value of the Loss aversion variable is -1.602 with a significance value of 0.112. Because the significance value of the t-test is more than 0.05 ($0.112 > 0.05$). This means that Loss aversion has a negative but insignificant effect on investment decisions, so it can be concluded that the third hypothesis is rejected which states that Loss aversion has a positive and significant effect on investment decisions.

It is known that the calculated t value of the Herding bias variable is -1.546 with a significance value of 0.125. Because the significance value of the t test is more than 0.05 ($0.125 > 0.05$). This means that Herding bias has a negative but insignificant effect on investment decisions, so it can be concluded that the fourth hypothesis is rejected which states that Herding bias has a positive and significant effect on investment decisions

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