Behaviour of Individual Investors in Stock Market: How Bias Affect on Decision Making

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ABSTRACT

The capital market has become a popular investment destination, this can be seen in the growth of investment in Indonesia. Investment growth in Indonesia has increased significantly, with the proven increase in the number of Single Investor Identification (SID). Before determining an investment decision, you have to consider a lot. There are many factors that influence investment decision making, including biased psychological factors that can make investors irrational. Therefore, the purpose of this study is to find out the effects of bias, namely self-attribution bias, overconfidence bias, and herding bias on investment decision making. The sample in this study were students of the Faculty of Economics and Business in East Java because students represented potential young investors to contribute in investing in the capital market. Respondents in this study were 200 respondents and data were processed using SPSS Statistics 24. Questionnaires were distributed online and tested for multiple regression. The results of this study are self-attribution bias overconfidence bias, and herding bias have positive effects on investment decision making. The high self-attribution bias can cause investors to make mistakes in interpreting the information obtained regarding the investments made. Then, impact of this overconfidence can affect investors in the way they exaggerate their ability to assess a company's potential as an investment destination, tend to take excessive risks when trading, and underestimate existing risks. Last one is herding, investors advised to be more careful in making decisions because biased herding behavior can have a negative impact on the investment decisions taken.

Keywords : *Self-Attribution Bias*; *Overconfidence Bias*; *Herding Bias*; *Investment Decision Making*

I. INTRODUCTION

The Indonesia Stock Exchange (IDX) recorded an increase of 31.11% from the position at the end of 2020 which reached 3,880,753 SID. In addition to increasing economic growth in Indonesia, the high level of investment will increase people's income so that people's welfare will also increase (Budiarto, 2017). The data shows that the public has a high interest in investing. Especially for youth, students are one of the groups that have the highest interest in investing. Investors listed on the Indonesian capital market are dominated by millennials, especially students. This is inseparable from the efforts made by the IDX as the securities manager by changing the unit of purchase of shares, which was originally a minimum purchase of 1 lot, which was 500 shares, now it is only 100 shares. This effort was made to attract more young investors, especially students.

In making decisions, it is possible that an investor will always involve psychological factors in his investment (Ratnadewi, 2014). The involvement of psychological factors then causes investors when making decisions to tend to be irrational and can lead to errors in predicting and analyzing their investments. This investor irrationality is further explained by behavioral finance theory (Shefrin, 2002).

Behavioral finance will involve emotions, traits, and preferences inherent in humans as intellectual and social beings who interact and underlie decisions when taking action (Wiryaningtyas, 2016). Meanwhile, prospect theory explains that human behavior is considered strange and contradictory in making a decision and is not always rational. Initially, an investor's investment decisions are made based on estimates and investment prospects. However, over time, there are other factors that influence decision-making when investing, namely a person's psychological factors. Even experts show that most of what influences a person when making a decision is the person's psychological factors (Pradhana, 2018).

The existence of psychological factors in making investment decisions causes an investor to behave biasedly. It is through this bias that causes investors to behave irrationally when making investment decisions (Halmawati, 2019). Pompian (2006) explains that bias is divided into two categories, namely cognitive bias and emotional bias. Cognitive bias is a deviation in the process of understanding, processing, and making decisions on information or facts. Overconfidence is one of Cognitive bias. Then emotional bias is a mistake that occurs because it focuses more on feelings and spontaneity than on facts. Examples of this bias that will be discussed are self-attribution bias and herding bias.

Self-attribution bias is an overconfidence bias which is part of emotional bias. Self-attribution bias is very influential when investors have experienced success in the past or when the decisions taken turn out to be profitable (Nofsinger and Hirschey, 2008). It was found that self-attribution bias has a positive influence on investment decisions (Mahina, et al., 2018; Mittal, 2019). Then Cremers and Pareek (2011) also stated that self-attribution bias affects investors when making transactions on the stock exchange by only accepting private information and rejecting public information. The investor believes that his decision will bring the same return as before. Based on previous research and statements, the authors formulate the hypothesis as follows:

H1: Self-Attribution bias has a positive effect on investment decision making.

Overconfidence is a bias that involves too much knowledge, skill and ability of a person to control situations and underestimate existing risks (Valsova, 2016). When it comes to investing, overconfidence seems to have a fairly convoluted immediate application involving projection of the future. Overconfidence is an attribute that influences individual risk perception because investors who are overconfident tend to make sudden decisions that reflect their risk-taking behavior. According to Odean (2018), he shows that overconfidence causes trading volume to increase and ultimately the financial market will be directly affected. Because, traders who are too confident believe that more precise information shows the results in the weight of the information is very significant. Based on previous research and statements, the authors formulate the hypothesis as follows:

H2: Overconfidence bias has a positive effect on investment decision making.

Herding in the financial context occurs when an investor in the financial market imitates the behavior of other investors 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 instead of carefully and rationally assessing their own decisions independently of the majority opinion (Valsova, 2016). Herding behavior is an irrational action taken by investors not based on their investment decisions based on available information or the company's fundamental value, but based on the actions of other investors or based on noise that occurs in the stock market. According to research by Messis and Zapranis (2019) it is said that the presence of herding is an additional risk factor for investors. So, the volatility measure is positively influenced by the presence of herding behavior. This is supported by the statement of Caparelli et al. (2010) which states that the herding effect is

one of the reasons for the occurrence of speculative bubbles. Herding factors can result in better decision making by gathering advantageous information. Based on previous research and statements, the authors formulate the hypothesis as follows:
H3: Herding bias has a positive effect on investment decision making.

These three factors, self-attribution bias, overconfidence bias, and herding bias are biases that can influence an investor's investment decision making. Based on the explanation above, what is interesting for the writer to conduct research is to find out the bias aspects inherent in investors when making decisions under conditions of uncertainty, which are influenced by psychological factors, so the writer is interested in conducting research with the title "The Influence of Self-Attribution Bias, Overconfidence Bias, and Herding Bias on Investment Decision Making.

II. RESEARCH METHOD

This study uses a quantitative approach which explains the effect of the independent variables on the dependent variable. The data source uses primary data which is data obtained directly from the object of research. The object of research is students of the Faculty of Economics and Business in East Java who invest in shares listed on the IDX. This study examines the behavioral aspects of bias that influence investor behavior in making stock investment decisions. By examining the variable aspects of influential behavioral bias, namely self-attribution bias, overconfidence bias and herding bias.

Research Models

A quantitative cross sectional research design has been used in this study. Quantitative study deals with measurable, quantitative properties of any phenomenon. This study is quantitative because data is collected from the population through questionnaire. This study is causal because the four independent variables are the factors (cause) which are affecting the investment performance decision (effect).

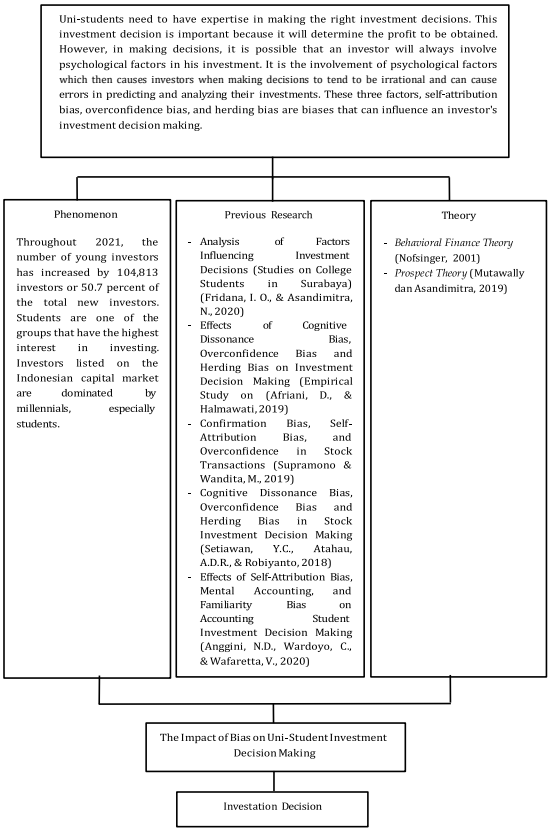

Figure 1. Research Models

Population and Sample

The population in this study totaled 104,813 investors with an age range of 18-25 years for the period December 2022. Using the slovin formula, this study used a minimum of 200 respondents as a sample. The sampling technique used was purposive sampling.

Definition and Measurement of Variables

Based on research problems and hypothesis development, the variables that will be studied in this research are the dependent variable is investment decision making. The independent variables in this research consist of self-attribution bias, overconfidence bias, and herding bias.

Table 1. Operational Definition & Measurement

Variables	Operational Definition	Measurement Indicators
Self-Attribution Bias (X1)	Wrong cognitive decisions result in individuals overdoing it when making investment choices based on their abilities (Mahina, 2018).	1) A well thought out investment plan 2) Confidence in abilities & knowledge 3) Investment losses from external factors 4) Analytical skills 5) Trust in information from relatives
Overconfidence Bias (X2)	Confidence in one's own abilities and knowledge as well as a high level of aggressiveness in buying and selling shares (Shefrin, 2002).	1) Above average investment skills 2) Above average analysis 3) Investment knowledge is better than other people 4) High self-confidence 5) Distrust of other investors' analysis
Herding Bias (X3)	Investment decisions that are based on non-rational behavior regarding the data provided or decisions of an issuer that are based on investors' attitudes and disturbances that may occur on the stock exchange (Subash, 2012).	1) Following other people's investment decisions 2) "Follow the Mass" attitude 3) Follow the behavior of investor groups 4) Rely on other investors' decisions 5) Lack of individual decisions
Investment Decision Making (Y)	Provision for most of the assets used in the capital investment process (Umairoh, 2012).	1) Investment results are in line with targets 2) Have knowledge of investment risks 3) Ability in investment risk analysis 4) Investment performance is in line with target 5) Able to read financial reports well 6) Have investment knowledge to take advantage 7) Investment performance results are satisfactory

Source: *Mahina, 2018; Shefrin, 2002; Subash, 2012; Umairoh, 2012.*

Data Collection Methods

The data collection technique was carried out by distributing questionnaires. The number of respondents was 200 investors. The concepts in this study are the concepts of cognitive dissonance bias, overconfidence bias, herding bias and the concept of decision making. The variable measurement scale used is a Likert scale with 5 points, namely from a scale of 1 (Strongly Disagree) to a scale of 5 (Strongly Agree).

Data Analysis Methods

The analysis technique in this study uses quantitative analysis. The analytical tool used in this research is multiple linear regression analysis. Multiple linear regression is a regression equation using two or more independent variables. Multiple linear regression analysis is used to measure the strength of the relationship between two or more variables, it also shows the direction of the relationship between the dependent variable and the independent variable (Ghozali, 2016).

The multiple linear equation model is as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e$$

Description:

Y	= Investment Decision
A	= Constant coefficient
β1, β2, β3	= Regression coefficients
X1	= Self-Attribution Bias
X2	= Overconfidence Bias
X3	= Herding Bias
e	= Confounding variable (error)

This multiple linear test is used to predict the probability of the influence of each investment decision variable. The variables in this study are self-attribution bias, overconfidence bias, and herding bias.

III. RESULTS AND DISCUSSION

Data Description

The number of samples used as the subject of this study amounted to 200 respondents according to calculations with the slovin formula. However, after sorting the questionnaire data according to the research criteria, the number of samples was reduced to 171 respondents. Furthermore, the questionnaire data were outliers using SPSS because there were extreme data so that the final total number of samples for testing using IBM SPSS 24 was 124 respondents.

Validity and Reliability Test

The data has fulfilled the validity and reliability tests. The validity test using the product moment correlation table from Pearson shows that overall the statement items used in the questionnaire are valid with a significance level of 0.05 and r count > r count (0.361). Based on the reliability test, the Cronbach alpha coefficient value of the four variables was > 0.60, so that the instrument was declared reliable.

Classic Assumption Test

The normality test was carried out by the Kolmogorov-Smirnov test using SPSS 24. Based on Table 1, the significance value is 0.193 > 0.05 which means that the data meets the normality assumption. Based on Table 2, the VIF values for each independent variable, namely self-attribution bias, overconfidence bias, and herding bias < 10 and the tolerance value is between 0.10 and 1. These results indicate that there is no multicollinearity between the independent variables in regression models.

Table 2. Normality Test

		Unstandardized Residual
Asymp. Sig (2-tailed)	Sig.	0,193

Source: *Processed by author, 2023.*

Table 3. Multicolinerarity Test

Variable	Collinearity Tolerance	VIF	Result
Self-Attribution Bias	0,710	1, 409	No multicollinearity
Overconfidence Bias	0,621	1,610	No multicollinearity
Herding Bias	0,834	1,199	No multicollinearity

Source: *Processed by author, 2023.*

Table 4. Heteroscedasticity Test

Variable	t_{count}	Sig	Result
Self-Attribution Bias	-1,298	0,197	No Heteroscedasticity
Overconfidence Bias	2,871	0,005	No Heteroscedasticity
Herding Bias	1,338	0,183	No Heteroscedasticity

Source: *Processed by author, 2023.*

Table 3 shows that the variable self-attribution bias has a significance value of 0.005, overconfidence bias of 0.005, and

herding bias of 0.183, all of which have a significance value of more than 0.05. These results indicate no heteroscedasticity. Thus, it can be concluded that overall the regression model in this study has fulfilled the classical assumption test.

Hypothesis Test

In order to find the effect of self-attribution bias (X1), overconfidence bias (X2), herding bias (X3) on investment decision making (Y) using statistical analysis, namely the multiple regression analysis model. From the results of calculations using the SPSS program. The results of the regression analysis can be seen in the following table.

Table 5. Multiple Linier Regression

Variable	Unstandarized Beta	t_{count}	Sig	Result
Self-Attribution Bias	0,475	3,028	0,003	Positive
Overconfidence Bias	0,573	6,049	0,000	Positive
Herding Bias	0,369	3,817	0,000	Positive

Source: *Processed by author, 2023.*

The results of the multiple regression equation above provide an understanding that progress in self-attribution bias (X1), overconfidence bias (X2), herding bias (X3) has a positive effect on investment decision making (Y).

The value of the constant (a) gives a positive value of 2.470, meaning that if the variable self-attribution bias, overconfidence bias, and herding bias are considered constant = 0, then the level of investment decision making is 2.470.

The self-attribution bias variable is 0.475 and gets a significant value < 0.05, positive sign, this indicates that if the self-attribution bias increases by 1% and other variables are constant, investment decision making will increase by 0.475.

The variable overconfidence bias is 0.573 and the result is a significant value <0.05, marked positive. This indicates that if the self-overconfidence bias increases by 1% and other variables are constant, investment decision making will increase by 0.573.

The herding bias variable is 0.369 and gets a significant value <0.05, which is positive, this indicates that if the herding bias increases by 1% and the other variables are constant, investment decision making will increase by 0.369.

Based on the results of the regression equation above, it can be concluded that the investment decision making variable (Y) is followed by self-attribution bias (X1), overconfidence bias (X2), and herding bias (X3). The dominant factor influencing investment decision making is overconfidence bias as indicated by the largest regression coefficient value compared to the overconfidence bias variable, which is equal to 0.573.

Table 6. Partial Test (T-Test)

Variable	t_{count}	Sig	Result
Self-Attribution Bias	3,028	0,003	Significant
Overconfidence Bias	6,049	0,000	Significant
Herding Bias	3,817	0,000	Significant

Source: *Processed by author, 2023.*

If the sig. < 0.05 or t count > t table, then the independent variable is stated to have a positive effect on the dependent variable. table in this study is t(α/2;n-k-1) = t(0.025;120) = 1.980. In accordance with the table above, the t-test results calculated for each variable are:

The significant value of the self-attribution bias variable (X1) is 0.003 <0.05 and the count value is 3.028 > table of 1.980 meaning that there is an effect of self-attribution bias (X1) on investment decision making (Y).

The significant value of the overconfidence bias variable (X2) is 0.000 <0.05 and the count is 6.049 > table is 1.980 meaning that there is an influence of overconfidence bias (X2) on investment decision making (Y).

The significant value of the herding bias variable (X3) is 0.000 <0.05 and the count value is 3.028 > table of 1.980 meaning that there is an effect of herding bias (X3) on investment decision making (Y).

Discussion

Effect of Self-Attribution Bias on Investment Decision Making

From the test results, the variable self-attribution bias has an influence on investment decision making, the significant value of the variable Self-Attribution Bias (X1) is 0.001 ≥ 0.05 and β1 of 0.475 which indicates that Ha1 has a positive effect on the perception of profit sharing on investment decision making proven correct and accepted.

That is, the higher the self-attribution bias in an investor, the higher the investment decisions taken. The high self-attribution bias can cause investors to make mistakes in interpreting the information obtained regarding the investments made. In this study, students who were respondents believed that the benefits they got came from good analytical skills related to stock price fluctuations. They feel able to predict high returns with low risk.

Effect of Overconfidence Bias on Investment Decision Making

This study shows that there is an influence of overconfidence bias on investment decision making. The significant value of the Overconfidence Bias variable (X2) is with a value of 0.001 ≥ 0.05 and β1 of 0.573 which indicates that Ha2 has a positive influence on the perception of profit sharing on investment decision making which is proven to be correct and accepted.

This research is linear with the prospect theory which states that human behaviour is not always rational and can be contradictory when making decisions. Overconfidence bias refers to an unwarranted belief in one's reasoning, judgment, and cognitive abilities. The

impact of this overconfidence can affect investors in the way they exaggerate their ability to assess a company's potential as an investment destination, tend to take excessive risks when trading, and underestimate existing risks.

Effect of Herding Bias on Investment Decision Making

From the test results, the herding bias variable has an influence on investment decision making, the significant value of the herding bias variable (X3) is with a value of 0.001 $\geq$ 0.05 and β1 of 0.369 indicating that Ha3 has a positive influence on the perception of profit sharing on investment decision making proven correct and accepted.

Herding refers to the change in investor behavior from previously rational to irrational through imitating the decisions of others, when they have to make decisions for themselves. Herding happens because investors feel they lack knowledge compared to other investors. In the context of the abundance of information out there, investors face difficulties in evaluating that information. Finally, they choose to take shortcuts by imitating the decisions of other investors or institutions that are deemed capable of processing this information.

IV. CONCLUSION

Based on the results of research conducted by researchers on the effect of self-attribution bias, overconfidence bias, and herding bias on the investment decision making of students at the Faculty of Economics and Business in East Java, the following conclusions can be drawn.

a. Self-Attribution Bias (X1) has a positive effect on investment decision making. That is, the higher the self-attribution bias in an investor, the higher the investment decisions taken.
b. Overconfidence Bias (X2) has a positive effect on investment decision making. This means that respondents have a high level of self-confidence, so they tend to be brave in making investment decisions.
c. Herding Bias (X3) has a positive effect on investment decision making. This happens because investors feel they lack knowledge compared to other investors. Finally, they choose to take shortcuts by imitating the decisions of other investors or institutions that are deemed capable of processing this information.

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