

Emotional Bias, Cognitive Bias and Herding Bias toward Investment Decision for Indonesian Investor

Haryati Setyorini¹, Ellen T. Sihotang², Sholikah F³

^{1,2,3} Universitas Hayam Wuruk Perbanas

ABSTRACT: In making investment decisions, the role of emotions is very important because of investors irrational symptoms in decision making. This study aims to analyze the effect of emotional bias, cognitive bias, and herding bias on the investment decision making of investors in Indonesia. The research approach used is a quantitative approach. By using primary data from respondents spread throughout Indonesia, this study uses the partial least squares as a data analysis technique. The research hypothesis is that there is a positive influence of emotional bias, cognitive bias and herding bias in the process of making investment decisions

KEYWORDS: Investment Decisions, Emotional Bias, Cognitive Bias, and Herding Bias

INTRODUCTION

The development of the capital market in Indonesia shows very encouraging conditions, namely as of November 2022 the number of investors can exceed 10 million investors. Based on data on November 3, 2022, PT Kustodian Sentral Efek Indonesia (KSEI), the number of capital market investors referring to the Single Investor Identification (SID) is 10,000,628 local investors. The following is a graph of SID growth (2019 – November 3, 2022)

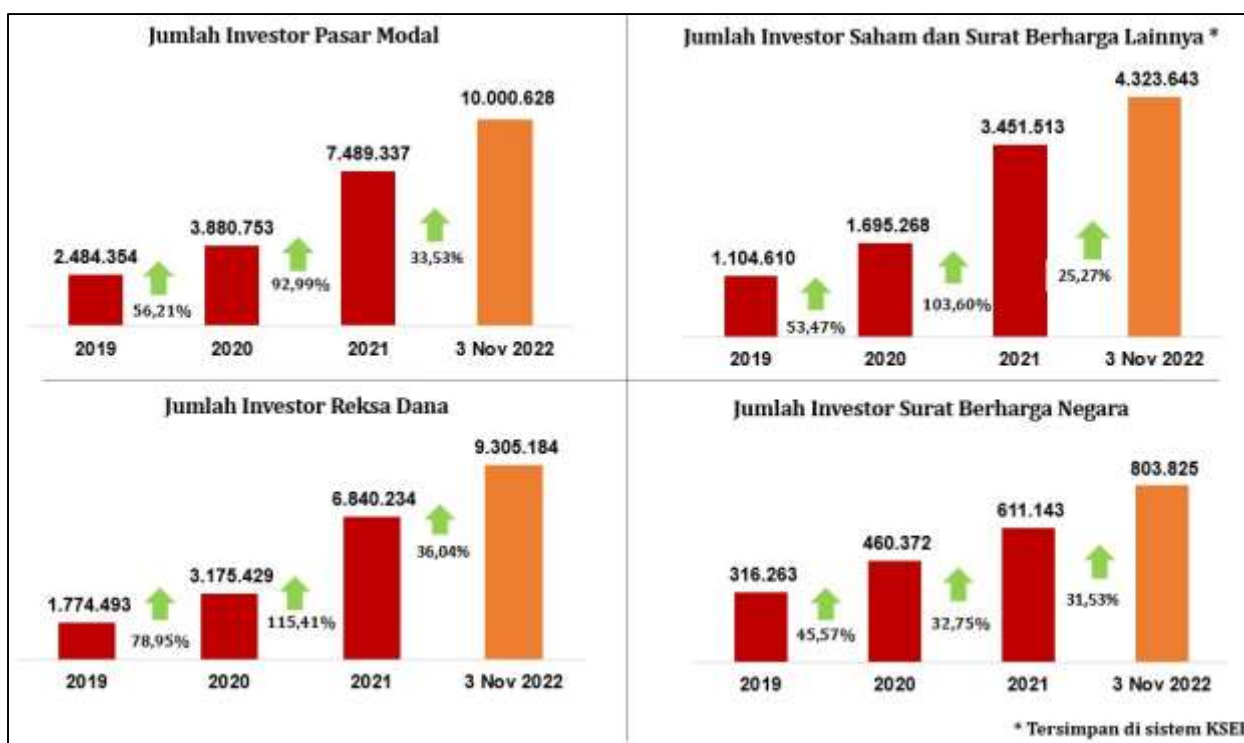


Figure 1.

Sources: KSEI, Nov 3, 2022

The graph shows that the increase achieved was 33.53% compared to 2021. This indicates that even in the midst of the Covid 19 pandemic, the number of investments and the number of local investors (Indonesian investors) are growing very rapidly. Therefore, this study wants to know and analyze what factors actually make this investment increase sharply.

Emotional Bias, Cognitive Bias and Herding Bias toward Investment Decision for Indonesian Investor

Investment decision is a process of selecting one or more investment alternatives that are more profitable. This means that the decisions taken have considered the expected rate of return and the possible risks that must be taken. Investment decisions can also be interpreted as decisions of a potential investor who is faced with a choice of decisions that promise future levels of profit for the funds invested. As the investment theory was first introduced by Irving Fisher in 1930 (Asri Marwan: 35), it starts from the condition that in the capital market there are two interested parties, namely the so-called borrowers or groups of borrowers or parties who lack funds and groups of creditors, or creditors, namely parties who have excess funds. This group is what we are familiar with, namely the group of savers and lenders.

In making investment decisions, the role of emotions is very large, as evidenced by the symptoms of investor irrationality in making decisions. The emotional aspect is actually very complex because it contains cognitive, psychological, social and behavioral aspects. According to Elster (1998) emotion is "the psychological state of arousal triggered by beliefs about something". In other words, it can be said that emotion is a situation where a person is faced with a decision making that is influenced by belief in something. So an investor because of his belief in management's ability to manage a company may overestimate the company's price, even though his fundamental data does not describe a good condition, but an investor with his belief because of his emotional influence will still invest in the stock. Research conducted by Bechara (2005) states that subconscious anticipatory emotional signals are an important component of the decision-making system. This will provide a hunch that encourages to take certain alternatives in decision making. The second factor is cognitive bias, namely a thinking process that is not based on rational considerations and is not equipped with strong reasons, so that it is possible for perceptual deviations, judgmental deviations, illogical or often called irrational interpretations to occur. There are three main groups in cognitive bias, namely: 1. The behavior group for simplifying decision-making processes (heuristics), which consists of: availability, hindsight and representativeness. 2. The reaction bias group towards information, which consists of: overaction, conservatism, anchoring and adjustment as well as confirmation bias. 3. Group bias in information comprehension and self-adjustment which consists of: excessive optimism, overconfidence, framing effect, disposition effect, and mental accounting.

The next factor is herding, namely the tendency of investor behavior to follow market consensus and follow the behavior of other investors without conducting an economic fundamental analysis. So, what happens is when the stock price drops, the shares will be sold because they see other investors selling the shares they own.

LITERATURE REVIEW

Typical investor behavior can be rational and irrational. For rational investors, they always respond the information and make choices that are normatively acceptable (Subash, 2012). There are some assumptions that influences the decision-making investor behavior. Such as, emotional bias, cognitive bias and herding bias.

Herd instinct bias, emotional biases, and information processing biases in investment decisions. The results of this study indicate that overconfidence, herding bias, confirmation bias, and recency bias have an effect on investment decisions whereas endowment bias has no effect on investment decisions, (Armansyah Fuad, 2022). This research contributes partly to financial behavior, especially to investor behavior in investment decisions and suggests that investment decision making is influenced by the psychological factors of the investors themselves. So that investors, especially individual investors, can use the research results to better understand the impact of financial behavior bias and how it impacts and how individual investors can use information in matters relating to irrational behavior. The similarity with this research is that both of them use the herding variable as one of the independent variables. Meanwhile, the difference is that this study uses emotional and cognitive biases as other independent variables, whereas previous studies used information processing biases as variables. I wayan Oka and Kadek Susanti (2021) stated that the effect of herding bias and overconfidence bias on decision making. This research was conducted to determine the effect of herding bias and overconfidence bias on investment decision making. The method used was SPSS with 124 respondents aged over 17 years and had already made an investment. The results of this study indicate that herding bias and overconfidence bias have a positive and significant effect on investment decision making. The similarity with the research that will be conducted is that both of them use the herding variable as one of the independent variables. While the difference is that in research conducted using emotion-based as the independent variable and as the dependent variable are Indonesian investors, while previous research used companies, namely 124 MSMEs. Chris Setiawan, et.al., (2018) the results of this study indicate that: (i) cognitive dissonance bias has no significant effect on investment decisions; (ii) overconfidence bias has a positive and significant effect on investment decisions; (iii) herding bias has no significant effect on investment decisions. This means that investors tend to use emotional aspects and not based on cognitive and social aspects in making investment decisions. As a result, investors are too confident in their abilities and the results of investment decisions are not optimal and will result in a risk of loss. The similarities with the research that will be conducted are that both use cognitive variables and herding bias in making investment decisions. Furthermore, Fransisca et.al., (2018), the results of the VAR analysis test, namely the Granger causality test, show that there is a dynamic interaction between size and herding bias and between stock returns and herding bias. Based on the analysis of variance decomposition and impulse response, it can be seen that the market capitalization variable (size) plays a more significant role in explaining the CSAD variable compared to the stock return variable.

Emotional Bias, Cognitive Bias and Herding Bias toward Investment Decision for Indonesian Investor

Behavioral finance theory is based on classical and neoclassical economic theory and behavioral finance which is a study that seeks to understand investor behavior when making an investment decision (Selden 1912). Analysis of opportunities and challenges in an ever-changing economic situation influences investor behavior in making investment decisions. Behavioral finance (behavioral finance) seeks to explain and improve investors' understanding of the logic of thinking or reasoning, including emotional processes and their influence on decision making. When viewed from a human perspective, behavior finance seeks to explain the what, why and how of finance and investment (Ricciardi & Simon, 2000; Statman, 2008; Zaleskiwieicz, 2015). For example, behavior finance, studying financial markets and providing explanations for many stock market anomalies (e.g. January Effect, speculative market bubbles, crashes).

Emotional bias and Investment Decision

Emotional bias is an impulse more than a reasonable (rational) calculation to take an action accompanied by a strong feeling. So that in this case an investor will use his emotional impulse in making decisions (irrational) so that the investment decisions taken can result in large profits if indeed the conditions and situations are supportive, but can bring losses if the predicted conditions are not supportive. There are two things that will be examined in emotional bias later, namely loss aversion bias and regret aversion bias. Based on the arguments, the following hypothesis is proposed :

H1 : Emotional bias has a significant positive effect on investment decision making.

Cognitive Bias and Investment Decisions

Cognitive bias is a psychological bias which is the process of accepting reasoning, with thoughts or interpretations that can drive investor behavior in making investment decisions. In this study, we will examine how cognitive bias is, in this case, one of which is overconfidence, how it affects investment decisions. Based on these arguments, the hypothesis that can be proposed is:

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

Herding Bias and Investment Decision

Herding is the phenomenon of individuals deciding to follow others and imitating group behaviors rather than deciding independently and automatically on the basis of their own, private information. Also called herding bias is join in behavior, in which a person in his actions will tend to follow others. Likewise, an investor will tend to follow the behavior of other investors in making investment decisions. An investor will position other investors as influencers who have a major influence on the performance shown previously. Even though the fundamental analysis that should be carried out to find out the extent to which a company's performance is not carried out so that the decisions taken tend to be irrational. This is what is currently happening a lot in our society which results in huge losses due to just the join in or herd behavior. Based on this argument, the hypothesis that can be proposed is:

H3: Herding bias has a significant positive effect on investment decision making

RESEARCH METHODS

In this study, the subjects are 153 individual investors who are the members of securities companies by sampling respondents who invest in the IDX (Indonesian Stock Exchange) with the sampling in the convenience sampling method through distribution of questionnaire to online respondents, with the categories a minimum age is 18 years old, the education, has the experience a minimum 1 year in investment. The data obtained then processed descriptively and statistically using the PLS-SEM (Partial Least Square-Structural Equation Modelling) approach. PLS-SEM is designed to solve the problems in multiple regression and aims to produce a model that transforms a set of correlated explanatory variables into a new set of variables that are not mutually correlated. PLS-SEM analysis is divided into two stages, namely, the outer model and the inner model. The validity and the reliability of the indicators on the latent variables can be seen using the outer model, while the test for the influence between latent variables can be seen through the inner model. The outer model in this study is divided into two, namely, explanatory factor and confirmatory factor analyses. Explanatory Factor Analysis (EFA) is used in the indicator measuring the latent variable is formative, while confirmatory factor analysis (CFA) is used in the indicator measuring the latent variable is reflective. In CFA, an indicator is called valid if loading factor value of the indicator measuring the latent variable is greater than 0.4 and the Average Variance Extracted (AVE) value > 0.5 (Hair Jr.et.al., 2017). The indicator is called reliable if the value of Composite Reliability (CR) and Cronbach Alpha (CA) > 0.7 . Whereas in the EFA, indicator called valid when a loading factor value the indicator measuring the latent variable is greater than 0.4 with a significance value < 0.05 , while the value of CR and CA > 0.7 the indicator called reliable.

The inner model describes the relationship between latent variables. The inner model divided into two stages, called hypothesis testing and the coefficient of determination. In hypothesis testing, the relationship between latent variables is called significant if the p-value $< \alpha = 0.05$ or t-count > 1.96 . While the coefficient of determination, there are three criteria, that is the influence between the latent variable is called strong if the value of $R^2 > 0.67$, moderate if $0.33 < R^2 < 0.67$; weak if the value of $0.19 < R^2 \leq 0.33$; and called very weak when $R^2 \leq 0.19$ (Chinn 1998; Hwang & Takane, 2004, Ghozali, 2014). Measurements for the endogenous and exogenous variables in this study were collected using a 5-points Likert scale. The indicator used in this study is refer to research conducted previously as shown in the table as follows:

Emotional Bias, Cognitive Bias and Herding Bias toward Investment Decision for Indonesian Investor

Table 1. Measurement Items:

Construct	Items	Code	References
Investment Decision An individual's decision to invest their capital in one or more assets in order to generate profit in the future	Allocation of funds is made only for investment	KI 1	Umairoh (2012)
	It is hope that the capital owner will get benefit	KI 2	
Emotional Bias typically occur spontaneously based on the personal feelings of an individual at the time a decision is made. They may also be deeply rooted in personal experiences that also influence decision-making.	Tends to avoid losses	EB 1	Khan et.al.,(2017)
	Stick to the same investment to avoid losses.	EB 2	
	Fear and uncertain about the same investment losses.	EB 3	
	Avoid the risk of the same losses.	EB 4	
	Stick to the same condition	EB 5	
	Prefer securities that are considered more familiar and which they like	EB 6	
Cognitive Bias is a psychological bias which is the process of accepting reasoning, with thoughts or interpretations that can drive investor behavior in making investment decisions.	Based on the initial information obtained.	CB 1	Pompian, 2006
	There was doubt when any other information.	CB 2	
Herding Bias the phenomenon of individuals deciding to follow others and imitating group behaviors rather than deciding independently and automatically on the basis of their own the	When the investors buy shares, I am often influenced to buy the shares too.	HB 1	Subash (2012)
	After participating in investing, I tend to follow other investors decision without needing to know the reasons behind these decisions.	HB 2	
	When I know other investors are selling shares that I also own, I often sell those shares too.	HB 3	
	When I know other investors don't invest in that stock either.	HB 4	
	I often experience losses when my investment turns out to be unprofitable.	HB 5	
	I often experience regrets as a result of following other investors selling shares even though the price still has a chance to rise.	HB 6	

Sources: empirical study

RESULTS AND DISCUSSION

This study employs primary data from the respondents all over Indonesia through e-questionnaire that had distributed during June 2023, with 153 able data were obtained. The following is the description of the respondents. Based on table 2, can be explained that based on the location obtained that majority the investor s from Surabaya 35.7%, or about 55 respondents, Jakarta 8.6%, and the rest came from Malang, Semarang, Yogyakarta, Bali and some of East Indonesia. Second criteria of the respondents is gender. The result is 68.6% or 105 respondents are male, and 31.4% or 48 respondents are female. Based on age, describe that 62.9% or 101 respondents in the range of more than 36 years old, 12.8% in the range of 32 – 36 years old, 10% in the range of 27- 31 years old, 8% in the range of 22-31 years old and the rest 7.1% in the range of 18- 21 years old. About the other criteria shown in the table below:

Table 2. Respondents Description:

Demographics	Category	Respondents	Percentage
Domicile	Surabaya	55	35.7%
	Jakarta	13	8.6%
	Malang	7	4.6%
	Semarang	9	5.9%
	Yogyakarta	6	3.9%
	Gresik	7	4.6%
	Bojonegoro	2	1.3%
	Kediri	3	2.0%
	Lombok	2	1.3%
	Bali	7	4.6%
	Batam	8	5.2%
	Manado	5	3.3%

Emotional Bias, Cognitive Bias and Herding Bias toward Investment Decision for Indonesian Investor

	Flores-NTT	2	1.3%
	Kalimantan	4	2.6%
	Papua	2	1.3%
	Others	21	13,8%
Gender	Male	105	68,6%
	Female	48	31,4%
Age	18 – 21 years old	11	7.1%
	22 – 26 years old	11	7,1%
	27 – 31 years old	15	10.0 %
	32 – 36 years old	20	12,9%
	>36 years old	96	62.9%
Working Status	Students	9	5,7%
	Lecturer	13	8,6%
	Professionals	17	11,4%
	Private employees	26	17,1%
	Government employees	22	14,3%
	Entrepreneurs	33	21,4%
	State-owned enterprises (BUMN)	4	2,9%
	Others	29	18,6%
Total Revenue (take home pay)	≤ Rp 10.000.000,00	90	58,5%
	Rp 10.000.001 – Rp 12.499.999	11	7.2%
	Rp 12.500.000 – Rp 14.999.999	7	4,3%
	≥ Rp 15.000.000	45	30,5%
Period of investment	< 1 year	44	28,6%
	– 5 years	41	27,1%
	– 10 years	26	17,1%
	> 10 years	42	27,2%
Objective of investment	Short term investment	33	21,4%
	Long-term investment'	21	31,4%
	Both short term and long-term investment	99	47,1%

Sources: Processed questionnaire result

Statistical Result

The data was processed using WarpPLS version 8.0 through several stages with the Partial Least Square Structural Equation Modeling (PLS-SEM) method and path estimate. The measurement model there are two: outer model and inner model. Outer (partial least square is more appropriate approach for prediction purposes. This model was developed as an alternative for situations where the theory is weak or the available indicators do not meet the reflexive measurement model. Inner model is evaluated by looking at the variance percentage and looking at the R-squared value and seeing the coefficient of the structural path. The outer and inner model as detail are shown below:

Outer Model

Measurement of indicator (outer Model) is carried out by looking at Convergent validity, construct reliability, average variance Extracted-AVE, Discriminant validity, cross loading and model un-dimensionality. Convergent validity is measuring the validity of indicators as a measure of variables that can be seen from the outer loading of each variable indicator. /an indicator is said to have good reliability if the outer loading value for each indicator is >0.70 . If using default convergent validity value >0.70 , loading value below 0.70 are removed from the model. Construct reliability is measuring the reliability of latent variable constructs. The value that is considered reliable must be above 0.70 . Construct reliability also called Cronbach alpha. Average Variance Extracted-AVE is used to determine whether the discriminant validity requirement is met. The minimum value to state that reliability has been achieved is 0.50 . Discriminant validity aims to test to what extent the latent construct really differs from other constructs. A high discriminant validity value indicated that a construct is unique and able to explain the phenomenon being measured. A construct is called valid by comparing the root value of AVE with the correlation value between latent variables. Cross loading is another method to determine discriminant validity, namely looking at the cross-loading value. If the loading value of each item on the construct is greater than the cross-loading value. Model un-dimensionality is used to ensure that there are no problem in measurement. Un-dimensionality test was performed using indicators of composite reliability and Cronbach's alpha. For these two indicators the cut value is 0.7 .

Emotional Bias, Cognitive Bias and Herding Bias toward Investment Decision for Indonesian Investor

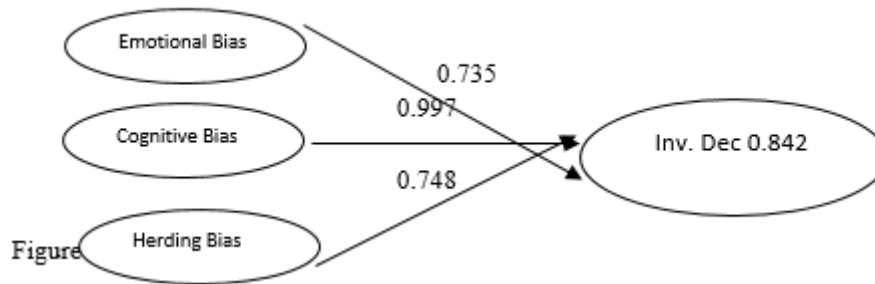


Figure 2: the result of PLS-SEM method

Table 3 also show the value composite reliability and Cronbach's Alpha has a value above 0.7 so this result indicates that the reliability criteria have been met. It can be concluded that the indicators are able to measure investment decision variables, are emotional bias, cognitive bias and herding bias.

Table 3: Outer Model

Description	CR	CA	AVE	VIF's	R squared	Adjusted R-Squared
Emotional Bias	0.794	0.620	0.564	1.700		
Cognitive Bias	1.000	1.000	1.000	1.000		
Herding Bias	0.861	0.820	0.556	3.548		
Investment Decision	0.747	0.329	0.597	1.040	0.300	0.286

Furthermore, measuring the path coefficients between constructs is carried out to see the significance and the strength of the relationship and also the test the hypothesis. Path coefficient value range from -1 to +1 value, the stronger the relationship between the two constructs. A relationship that is closer to -1 indicates that the relationship is negative (Sarstedt et al., 2017)

Table 4. Path Analysis and Hypothesis Testing

Path	Coefficients	p-value	Effect Size	Conclusion
Emotion Bias → Investment Decision	0.465	0.000	0.513	
Cognitive bias → Investment Decision	0.283	0.218	0.283	
Herding Bias → Investment Decision	0.190	0.029	0.021	

Based on outer model can be concluded that all items or indicators have met the validity and reliability requirements and there is no multicollinearity between indicators. So, the next step is an analysis of the inner model.

Table 5. Direct effect on inner model

	Original sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P values
Emotional bias → Investment Decision	0.363	0.385	0.066	5.525	0.000
Cognitive bias → Investment Decision	0.109	0.109	0.088	1.233	0.218
Herding bias → Investment Decision	-0.211	-0.217	0.096	2.192	0.029

The Output Path Coefficients as shown in the table above is to look at the magnitude of the direct effect of each independent variable on dependent variable. The magnitude of the parameter coefficient for the variable Emotional Bias on Investment Decisions is 0.363, which means that there is a positive influence of Emotional Bias on Investment Decision. Or it can be interpreted that the better the value of emotional bias, the more investment decision will increase. An increase in one unit of Emotional bias will increase investment decision by 36.3%. Based on calculations using bootstrap or resampling, where the results of the estimated coefficient test of Emotional bias on investment decision the bootstrap result is 0.385 with a t-value of 5.525, the p-value is $0.000 < 0.05$ so Accept H1 or which means that the direct effect of emotional bias on investment decision is statistically significant or significant.

The magnitude of the parameter coefficient for the variable X2 on Y is 0.109, which means that there is a positive effect of Cognitive bias on investment decision. Or it can be interpreted that the better the value of cognitive bias, the more investment decision will increase. A one-unit increase in cognitive bias will increase investment decision by 10.9%. Based on calculations using bootstrap

Emotional Bias, Cognitive Bias and Herding Bias toward Investment Decision for Indonesian Investor

or resampling, where the results of the estimated coefficient test cognitive bias on investment decision bootstrap result are 0.109 with a t-count value of 1.233, the p value $0.218 > 0.05$ so accept H_0 or which means that the direct effect of cognitive bias on investment decision is not significant or not statistically significant.

The magnitude of the parameter coefficient for variable herding bias on investment decision is -0.211, which means that there is a negative effect of herding bias on investment decision. Or it can be interpreted that the better the value of herding bias, the lower investment decision will be. An increase in one unit of herding bias will decrease investment decision by 21.1%. Based on calculations using bootstrap or resampling, where the results of the estimated coefficient test herding bias on investment decision the bootstrap results is -0.217 with a t-count value of 2.192, the p-value is $0.029 < 0.05$ so accept H_1 or which means that the direct effect of herding bias on investment decision is statistically significant or significant. So, in this model, emotional bias and herding bias have a significant effect on investment decision because the p value < 0.05 . Meanwhile, cognitive bias has no significant effect on investment decision because the p-value is > 0.05 .

Indirect effect is the effect of the independent variable on the dependent variable through an intermediate variable. In this model there are no intermediate variable so that indirect effects are not needed. Total effects are the effects which are a combination or sum of the direct and indirect effect, so the total effect is automatically equal in value the direct effect. So, the conclusion of the outer and inner model as describe below:

- All indicators' p value for their latent variables are < 0.05 so that all indicators are valid and reliable for their constructs.
 - The direct effect of emotional bias and herding bias on investment decision is significant, but cognitive bias is not significant.
- Output other tests of the model are carried out by looking at the R-Square value which is goodness fit model test as shown in the following figure:

	R Square	R Square Adjusted
Investment Decision	0.215	0.199

(taken from the outer stage model data). The coefficient of determination R^2 is a way to access how much the endogenous construct can be explained by an exogenous construct. The coefficient of determination R^2 is expected to be between 0 and 1. R^2 values of 0.75, 0.50 and 0.25 indicate that the model is strong, moderate and weak (Sarstedt et al., 2017). Chin provides criteria for R^2 values of 0.67, 0.33 and 0.19 as strong, moderate and weak (Chin, 1998 in Ghazali and Latan 2015).

For example, the square value of the effect of emotional bias, cognitive bias and herding bias on investment decision is 0.215 with an adjusted R square value is 0.199. It can be explained that the independent variable emotional bias, cognitive bias and herding bias simultaneously influences investment decision by 0,199 or 19.9% $> 19\%$, the effect of the independent variable emotional bias, cognitive bias and herding bias on investment decision is weak. In addition to assessing whether or not there is a significant relationship between variables, a researcher should also assess the magnitude of the influence between variables with the effect size or f square (Wong, 2013). The f^2 value is 0.02 as small, 0.15 as medium and 0.35 as large. Values less than 0.02 can be ignored or considered to have no effect (Starsdedt, et.al., 2017)

CONCLUSIONS AND SUGGESTION

Based on the results of the research that has been done, it can conclude that the variables emotional bias and herding bias have a significant effect on investment decision on the capital market in Indonesia, while the cognitive bias has no effect on investment decision. Emotional bias, cognitive bias and herding bias simultaneously influences investment decision by 0,199 or 19.9% $> 19\%$, the effect of the independent variable emotional bias, cognitive bias and herding bias on investment decision is weak only 19%. This condition means that the investment decision it influence by another factors 81%, it can be estimated that the economic condition and several factors can influenced

The suggestion to the future researcher can added more variable that can be as the additional measurements of investor decisions.

REFERENCES

- Ackert F. Lucy, Deaves, Richard, 2010. *Behavioral Finance, Psychology, Decision Making and Market*. South Western Publishing. Cengage Learning
- Armansyah Fuad R, 2022, Herd Bias, Emotional Bias and Information Processing Biases in Investment Deceision, JMK Vol 20 No.2 September 2022
- Asri Marwan, 2013, Keuangan Keperilakuan, BPFE – UGM Yogyakarta
- Chinn, W.W. (1998). The partial least square approach to structural equation modelling. In G A . Mercoulides (Ed). *Modern methods for business research (pp 295 -336)*. Lawrence Elbaum Associates
- Chris Setiawan Yehezkiel, et., al., Cognitive Dissonance Bias, Overconfidence accounting and Financial Review, 1e Bias dan Herding Bias dalam Pengambilan Keputusan Investasi Saham, Accounting and Finance Review, 1(1): 17-25, 2018
- Fransisca Maria, et., al., Herding Behavior in Indonesian Investor, International Research Journal of Business Studies, vol. 11 No.2, 2018

Emotional Bias, Cognitive Bias and Herding Bias toward Investment Decision for Indonesian Investor

- 7) Ghozali, I (2014), *Structural equation modeling, metode alternative dengan partial Least Square (PLS)*. Badan Penerbit Universitas Diponegoro.
- 8) Hadrian, I Gede, Pengaruh Overconfidence, Herding Effect, Self-Monitoring terhadap Pengambilan Keputusan, *Jurnal Manajerial dan Kewirausahaan*, Vol II. No. 3/2020 Hal: 595-602
- 9) Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM). In SAGE (2nd ed.).
- 10) Hwang, H. & Takane Y. (2004). Generalized structured component analysis. *P sychometrika* 69 (1), 81-99, <https://doi.org/10.1007/BF02295841>
- 11) I Wayan Rona, Kadek Sinarwati, Pengaruh Herding Bias dan Overconfidence Bias terhadap Pengambilan Keputusan Investasi, *Jurnal Studi Akuntansi Keuangan Indonesia*, Vol.4, No. 2 tahun 2021
- 12) Khan, A.R, Azeem M. & Sarwar Sk. (2017) Impact of overconfidence and loss aversion biases on investment decision. Moderating role of risk perception. *International Journal of Transformation in Accounting, Auditing & taxation*, 1(1), 23-35
- 13) KSEI (Indonesia Central Securities Depository). (2022). *Statistik pasar modal Indonesia November 2022*. Retrieved from https://www.ksei.co.id/publications/demografi_investor
- 14) Latan & Ghazali, (2015) *Partial Least Square: Konsep, Teknik dan Aplikasi SmartPLS*. Semarang Badan Penerbit Universitas Diponegoro
- 15) Pompian, Michel M. *Behavioral Finance and Wealth Management*, New York. John Wiley & Sons. Inc. 2006
- 16) Ricciardi, V., & Simon, H. (2000). What is behavioral finance? *Business, Education, and Technology Journal*, Fall: 1-9
- 17) Sarstedt, M. Ringle, C.M. & Hair, J. F (2017). Partial Least Squares Structural Equation Modeling. *Handbook of Market research*, 1-40
- 18) Selden, G. C. (1921). *Psychology of the stock market*. New York, NY: Ticker Publishing Company
- 19) Subash, R. (2012). Role of Behavioral Finance in Portfolio Investment (Decisions: Evidence from India
- 20) Statman, M. (2008). What is behavioral finance? In F. J. Fabozzi (Ed.), *Handbook of Finance*. <https://doi.org/10.1002/9780470404324.hof002009>
- 21) Umairah, P. (2012). Cognitive bias dan emotion bias dalam pengambilan keputusan investasi portfolio. Skripsi pada Universitas Kristen Satya Wacana, Salatiga, Indonesia
- 22) Zaleskiewicz, T. (2015). Behavioral finance. In M. Altman (Ed.), *Handbook of contemporary behavioral economics: Foundations and developments*. Routledge. <https://doi.org/10.4324/9781315703879-52>