

Do Overconfidence and Herding Affect Stock Investment Decision? Indonesian Cases During Pandemic Covid-19

Dewi Tamara^{1*}

¹⁾ dtamara@binus.edu, Bina Nusantara University, Indonesia

*) Corresponding Author

ABSTRACT

Objective: To analyze the effect of overconfidence and herding on stock investment decision-making with risk perception as a mediating variable and financial literacy as a moderating variable.

Methodology: The survey was launched and replied by 99 stock investors. The data is analyzed using Structural Equation Modeling with the software Smartpls 3.0.

Findings: The results show that herding had a positive and significant effect on stock investment decisions. Overconfidence does not have either a direct or indirect effect on stock investment decisions. Risk perception also does not mediate overconfidence in stock investment decisions. The Herding variable has an effect on stock investment decisions. However, financial literacy does not moderate herding and stock investment decisions. This research contributes in several ways. Firstly, overconfidence is not proven to indirectly affect stock investment decisions through risk perception. In other words, risk perception does not have a mediation effect. Overconfidence also does not affect stock investment decisions directly. Secondly, herding affects stock investment decisions positively. Finally, financial literacy does not moderate herding and stock investment decisions.

Conclusion: The result showed that there was a significant positive effect of herding on stock investment decisions. Risk perception does not mediate overconfidence and stock investment decisions. Financial literacy does not moderate herding and stock investment decisions. Overconfidence also does not have a relation to stock investment position. In this research, the stock investment decision is mostly influenced by herding.

Keywords: Overconfidence; herding; risk perception; financial literacy; investment decisions

Submitted:

2022-07-20

Revised:

2022-10-12

Accepted:

2022-10-17

Article Doi:

http://dx.doi.org/10.22441/jurnal_mix.2022.v12i3.012

INTRODUCTION

The increasing number of individual stock investors in Indonesia during the pandemic can be explained by several factors. First, the large-scale social restriction and work from home policy (Aldin, 2020). People are looking for other sources of income in their working home hours by trying to invest in the stock market (Talwar, Talwar, Kaur, Tripathy, & Dhir, 2020). Second is the declining interest rate on risk-free government bonds from 6% (February 2019) to 3.5% in February 2021 which is the lowest interest rate in the history of bank Central Indonesia. Third, is the increasing number of influencers who share information related to stocks through their social media channels which in turn are seen by their followers (Kosasih, 2021; Prasidya, 2020). Apparently, the followers that follow these stock-related influencers are examples of herding behavior, without doing a deeper analysis of stock fundamentals or the companies (Chairunnisa, 2021; Rosdiana, 2020; Saratian, 2020 and Sulhia, 2022). An example of overconfidence is when investors tend to pick the next big stock, then they put a lot into these risky stocks (Management Study Guide, 2022).

The Indonesian Financial Authority Report shows that the increase in financial literacy in the past four years is only 8.33%, from 29.7% in 2016 to 38.03% in 2019 (National Survey of Financial Literacy and Inclusion 2019, 2020), while the number of new investors in Indonesian Stock Exchange, increased from 894 thousand accounts in 2016 to 3.8 million accounts in 2019 (growth 432.88%). Abdin, Qureshi, Iqbal, and Sultana (2022) conducted a study about the mediating effect of risk propensity from overconfidence to investment performance. This study found an indirect relationship via risk propensity. Another study by Pratiwi, Mustaruddin, and Wendy (2021) found that overconfidence has a positive effect on investment decisions and investment decisions mediate the effect of overconfidence on the perception of investment performance. This study was conducted on stock investors in Pontianak, West Kalimantan. The result is inconclusive between overconfidence and herding. Based on Charles Swab Asset Management (2021) overconfidence bias can lead investors to make risky investments that lead to bad outcomes. Some studies relating to investor behavior are negative information in Indonesia (Heriyanto, Ony, and Kewal, 2019), investment decisions on real assets (Yuniningsih and Taufiz), and systematic risk on stock performance in Consumption companies (Rahmawati, 2015), among others. The effectivity of free float to liquidity in the Jakarta Stock Exchange (Fitriani, Iqbal, and Andayani, 2020) is studied, and also about comparison of financial performance among Prospector and Defender in the Manufacturing sectors (Berlian, 2015). However, little is known about herding, risk perception, financial literacy, and stock investment decision in one framework.

The objective of this research is to analyze the relationship between overconfidence and stock investment decision, examine the mediating effect of risk perceptions, analyze the relationship between herding and stock investment decision, and finally examine the moderating effect of financial literacy between herding and stock investment decision.

This research contributes to the discussion of whether overconfidence and herding will affect stock investment decisions when data showed an increasing number of new investors in Indonesia. Other contributions include the mediating effect of risk perceptions and the moderating effect of financial literacy. Risk perception does not show mediating effect both by direct and indirect testing, and financial literacy does not moderate herding and stock investment decision.

LITERATURE REVIEW

Overconfidence

Overconfidence can encourage excessive trading activity or carry out too many transactions (Pompian, 2006, p. 54; Rezael, 2013) which result in lower annual investment returns (Jordan, Miller, & Dolvin, 2015) due to high transaction costs. In addition, overconfident investors have portfolios that are less diversified (Pompian, 2006; Jordan, Miller, & Dolvin, 2015) and take on more risk than they can normally afford to bear. Moore and Healy (2008) explained that overconfidence relates to someone overestimating the chances of success from stock performance. Overconfidence is a behavior when someone feels he has better judgement than others, or when someone is excessively certain about his accuracy without realizing there is room for uncertainty as well.

Areiqat et al. (2019) and Gill et al. (2018) state that overconfidence is measured based on investment experience, level of confidence compared to others, willingness to consult with others, skills and knowledge of the stock market, own success, level of risk, predictability better than others, and stock options for the long term.

H1: *Overconfidence is positively associated with risk perception*

H3: *Overconfidence is positively associated with stock investment decision*

Risk Perception

Risk Perception is a person's idea of a probability and measure of risk that is subjective, guided by the availability and interpretation of information about relevant factors and relationships. In terms of investment, the perception of risk is related to the variance of portfolio returns (VanRaaij, 2016). Risk is an inherent feature of investment decisions. Risk perception can be seen as a way for investors to measure the inherent risk in a financial asset based on their concerns and experiences. An investor's risk perception is an important factor influencing investment decisions. Risk perception is how investors view the risk of financial assets on the basis of their experience and concerns. These include dependency on professional investment advice, unpredictability of returns, diversification of portfolios, knowledge about the financial assets, and chances for incurring loss (SindhuK & Kumar, 2014; Saratian, 2021). Furthermore, Ricciardi (2007) explained that risk perception related to risk tolerance will affect the decision of investors towards the level of investment. Chakraborty and Bairagi (2021) stated that decision-making from retail investors in stock is highly influenced by individual levels of perception. In their study, retail investors are more conservative in financial decision making and they are affected by emotional, affective, and cognition attributes. This study suggests that retail investors should learn more about how to diversify their portfolios and market to reduce the risk level in stock investment decision-making.

H2: *Risk Perception is positively associated with stock investment decisions*

Herding

Herding is the tendency of individuals to imitate the judgments of others, whether rational or irrational (Khan, 2020). Herding is the tendency of individuals to follow the crowd with the assumption that decisions made by the majority are always right (Bakar & Yi, 2016). Shekhar

& Prasad (2015) describe that herding is imitating the behavior of individuals and often leads to overall market inefficiency or individuals being influenced by the decisions of others in their decision-making. Herding in the stock market can be defined as a behavioral tendency of an investor to follow the decisions or choices of other investors without a centralized direction (Anum & Ameer, 2017; Hayat & Anwar, 2016). Under high uncertainty, self-assessment can go wrong, therefore it is more rational to follow others. According to Rahayu, Rohman dan Harto, (2021), the factors of investor herding are influenced by social and information about Book Value Per Share (BVPS). The social influence from expert investors is more powerful than the information about BPVS because it was treated as a signal to buy or sell the stock.

H4: *Herding is positively associated with stock investment decision*

Financial Literacy

Financial Literacy is a measurement of the extent to which individuals understand and use financial information. Conceptually, Houston (2010) describes that there are two general dimensions of financial literacy, namely understanding or knowledge of personal finance and the use of personal finance. Furthermore, Lusardi and Mitchell (2014) define financial literacy as an individual's ability to analyze information related to the economy and how they make financial decisions. Research by Larson et al. (2016) stated that the measurement of financial literacy can be done by using investors' knowledge about financial literacy, financial management, investment familiarity, and easy access to information. Adil, Singh, and Ansari (2021) provide results that financial literacy is strengthened the relation between overconfidence, risk-aversion, disposition, and herding significantly in female investors. They also explain that investors will have varieties in financial literacy and biases may also have variety in their investment proportion. Financial literacy moderates in a positive way on investment for both female and male investors. The logical explanation is when investors have good financial literacy, he or she will keep in mind herding with financial literacy before making decisions on stock investment.

H5: *Financial Literacy moderates the relation between herding and stock investment decision*

Stock Investment Decision Making

Investment decision-making is a decision making that involves gathering information, comparing available products and services, and choosing among these products. Decision-making can be done in an ideal way according to the expected utility, or by heuristics, a simplified and relatively easy process of comparing various available alternatives and then choosing one of these alternatives (VanRaaij, 2016, p. 18). Stock investment decision-making is measured based on the level of stock risk, increase in stock prices, adequacy of information, location, and time to invest (Gill et al., 2018; Keswani et al., 2019).

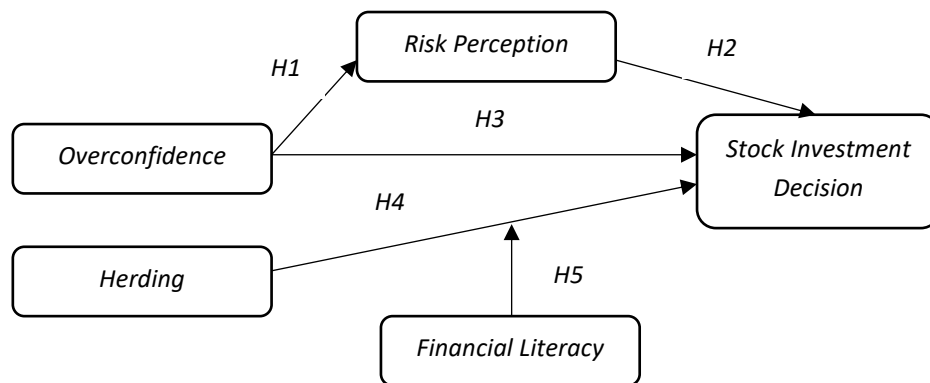


Figure 1. Research Model

METHOD

This study uses primary data from online surveys through social media. The survey was distributed to more than 200 respondents, but only 112 were filled in and only 99 were eligible for analysis. The response rate is 49,5%. Based on SurveyAnyRate in Fontanella (2021), the average response rate is 33%. The survey method of in-person survey has the highest response rate (57%). The average survey response rate on mail survey is 50%. In this case, the response rate of 49,5% in this research is quite good. The survey is filtered through using the first question which asks if the respondent is a stock investor. The survey consisted of 33 questions and a 5-point Likert scale. The data is analyzed using Structural Equation Modeling (SEM).

RESULTS AND DISCUSSION

Most respondents are male with a percentage of 70.7%, and the percentage of females only being 29.3%. The majority age is 36-45 years (33.3%), 18-25 years (28,3%), 26-35 years (31,3%), and 46-55 years (7.1%). 39% of respondents have an average income above 20 million rupiahs. Most respondents (56,9%) are graduates from university, another 22,2% finished master's degree, and 5,1% are of vocation level.

Table 1. shows the R square is 13,7%, where only 13.7% of the stock investment decision can be explained by overconfidence, risk perception, and herding. Overconfidence can only explain 3,5% of risk perception.

Table 1. Result of R Square

Variables	R Square
Stock Investment Decision	0,137
Risk Perception	0,035

Table 2 shows the factor loading, Composite Reliability, and AVE where all of them fulfill the criteria (CR > 0.7, AVE > 0.5).

Table 2. Factor Loading, Composite Reliability, and AVE

Variables	Code	Indicators	Factor Loadings	Composite Reliability	AVE
Stock Investment Decision	PKIS4	<i>I feel it is risky to invest in stocks market</i>	0,662	0,785	0,551
	PKIS5	<i>I am willing to take high risk in exchange for high expected share returns</i>	0,846		
	PKIS6	<i>I understand all the fundamentals of the company that I am confident in making my investments</i>	0,707		
Overconfidence	CONF1	<i>I think that I am an experienced investor</i>	0,587	0,868	0,530
	CONF3	<i>I believe only on my own investment judgment before making stock investment decisions</i>	0,608		
	CONF4	<i>I believe that my skills and knowledge of stock market can help me to outperform the market</i>	0,599		
	CONF5	<i>I am more successful than other people in my community</i>	0,826		
	CONF7	<i>I feel I can predict future share prices better than others</i>	0,835		
Herding	HERD1	<i>Other investors' decisions of choosing stock types have impact on your investment decisions</i>	0,744	0,844	0,580
	HERD3	<i>Other investors' decisions of buying stocks have an impact on your investment decisions</i>	0,586		
	HERD4	<i>Other investors' decisions of selling stocks have an impact on your investment decisions</i>	0,859		
	HERD5	<i>I usually react quickly to the changes of other investors' decisions and follow their reactions to the stock market</i>	0,816		
	Risk Perception	RISK2	<i>The higher an investments' yield or rate of return, the</i>		

		<i>greater is its associated risk</i>			
	RISK5	<i>The more money one has, the more investment risk one can take</i>	0,787		
	RISK6	<i>My broker decides the best investment level for me</i>	0,850		
Financial Literacy	LK1	<i>I know pretty much about Finance</i>	0,664	0,858	0,679
	LK2	<i>I feel less knowledgeable about Finance</i>	0,855		
	LK3	<i>Compared to most other people, I know less about Finance</i>	0,919		

Table 3: Hypothesis Testing

Hypothesis	Path Coefficients	T-statistic	P-Values	Result
H1 : Overconfidence to Risk Perception	-0,186	1,077	0,141	Rejected
H2 : Risk Perception to Stock Investment Decision	0,105	0,852	0,197	Rejected
H3 : Overconfidence to Stock Investment Decision	-0,152	1,135	0,128	Rejected
H4 : Herding to Stock Investment Decision	0,277	3,027	0,001	Accepted
H5 : Financial Literacy to Herding and Stock Investment Decision	0,006	0,046	0,482	Rejected

Table 3 shows the hypothesis results. The first hypothesis (H1) states that overconfidence has a positive effect on risk perception. The results show that H1 is rejected because the t-values is 1.077. This shows the negative effect of overconfidence, namely the higher the overconfidence of investors, the lower the investor's perception of risk on the investment they will make. Investors believe that their experience and knowledge of the stock market is quite good. But in reality, the average investor has more than one security to make a stock sale and purchase transaction. Not infrequently in the two securities they use, investors have the same portfolio. This means that investors still want to control risk through their trading securities. However, investors are overconfident that they will not sell the shares in their portfolio even though the stock price shows a decline because they believe the stock price will increase again according to their predictions. On the other hand, investors are still trying to minimize the risk of losses by selling some shares. It shows that overconfidence does not mean investors are more willing to take risks Dittrich et al (2005) prove that investors who over-evaluate their investment decisions or are overconfident, their level of confidence decreases along with the increasing uncertainty felt by individuals in an investment choice. Xue et al (2015) also found that overconfidence reduces the perception of risk in the decision-making process. However, Javed

et al (2017) disagree because they state that overconfidence affects risk perception because it increases investors' tolerance for risk which can ultimately boost investment performance.

The second hypothesis (H2) states that the perception of risk has a positive effect on stock investment decision-making. However, the hypothesis is rejected. It means that the data does not support that perception of risk impacts stock investment decision-making. The respondent, although a majority (39.4%) have an average income of more than Rp. 20 million per month, might not be a risk taker. They will not invest in stocks because the risk is higher. This study is in line with Mulyani, Fitra, and Honesty (2021), where their research also found that risk perception did not have an impact on investment decision-making for respondents in Padang, Indonesia.

The third hypothesis (H3) states that overconfidence has a positive effect on stock investment decision-making. The result is rejected because the t-values is 1.135 (< 1.65) and the coefficient is negative. It means that when the respondents are more overconfident, the more likely they are to not decide to invest in stocks. The result is the opposite of Pratiwi, Mustaruddin, and Wendy (2020). They find that the higher the overconfidence investors have, the more confident they will be to invest in stock, as per the respondents in Pontianak, Indonesia.

The fourth hypothesis (H4) states that herding has a positive effect on stock investment decision-making. This hypothesis is accepted because the t-values is 3.027. This shows the positive effect of herding, namely the higher herding from investors will encourage stock investment decisions. In line with the results of this study, the heuristic factor, in this case, overconfidence, has a negative effect on investment decision-making, namely lowering the quality of investment decisions (Ahmad & Shah, 2020), lowering investment performance (Kengatharan & Kengatharan, 2014), and lowering investment returns due to the tendency in making inappropriate or risky investments (Shah, Ahmad, & Mahmood, 2018).

The fifth hypothesis is financial literacy moderates the relationship between herding and stock investment decision. Table 4 shows that the f square value is less than 0.02, which is weak moderation (Henseler & Fassott, 2010), and the hypothesis is rejected. Financial literacy is weakening the relationship between herding and stock investment decision. The explanation might be that the respondents feel that they no longer needed financial literacy because they can just join stock investment groups on social media where they receive and follow the information shared by other members.

Table 4. Moderating Effect

Moderating Effect	Coefficients	F square	T-statistic	P-Values	Result
Financial Literacy Moderates the Herding to Stock Investment Decision	0,006	0,000	0,046	0,482	Rejected

Table 5 shows that both direct and indirect mediating effects are not significant ($p > 0.05$). Both coefficients show a negative direction. This indicates a complementary mediating effect (Baron & Kenny, 1986). Investors measure risk based on their inherent concerns and experiences in a financial asset and understand that higher risk means higher returns. The result from Lambert et al (2012) in Montpellier, France, also shows that risk perception does not have a mediating

effect between overconfidence and investment decisions. However, Ishfaq et al. (2017) whose research was conducted in Pakistan stated that perceived risk mediates the relationship between overconfidence and investment decisions. The experimental result from Lambert et al (2012), investors from bankers were strongly influenced by overconfidence, but risk aversion has no effect on investment decisions. The possible explanation is when investors feel overconfident, he or she already includes risk perception in their stock investment decision.

Table 5. Mediation Effect

Mediating Effect	Coefficients	T-statistic	P-Values	Result
Overconfidence to Risk Perception to Stock Investment Decision	-0,020	0,448	0,313	Rejected

According to Barsbai, Schmidt, and Zirpel (2022), overconfidence increases the willingness to take risks. They found that the farmer with overconfidence will cultivate riskier crop portfolios. Moreover, overconfidence and risk-taking are more prevalent for farmers who live close to the market or if they are net sellers. In the end, the risk-taking behavior made the high volatility of agricultural income for farmers.

CONCLUSION

This study aims to examine whether overconfidence and herding affect stock investment decisions for stock investors in Indonesia. The results showed that there was a significant positive effect of the herding variable on investment decision-making for stock investors. This reinforces the notion that the behavior of Indonesian investors follows the flow of most investments when buying or selling certain stocks in the hope of improving their investment performance. Risk perception does not have a mediating effect from overconfidence to stock investment decisions. It is most likely that investors include risk perception when deciding to invest in stock. In practice, Indonesian investors join a trading group on social media to get information and recommendations about which stocks to buy or sell, so it is likely that overconfidence came from this reasoning, the more investors, the bolder they become.

The limitation of this study, first, the characteristics of the respondents are heterogeneous so they cannot describe the characteristics of the population. Therefore, further research can reach more respondents and then group them based on their characteristics, for example, investors with the same trading experience. Second, the time for collecting the data is too short and only once. Future research can use a longitudinal data collection method to examine whether an investor's psychology is influenced by their experience or length of time trading stocks. Third, this study specifically targets stock investors, even though the data shows that an increase in the number of investors investing in other investment instruments such as mutual funds, bonds, and so on also shows an increase (KSEI, 2021). Likewise, the phenomenon of cryptocurrency investment is experiencing an increase in popularity in Indonesia (Mutia, 2021). Therefore, further research can expand the scope of research to reach other investment instruments to get a broader picture of investor behavior in Indonesia. Fourth, the financial literacy variable as a moderating variable and risk perception as a mediating variable in the study may not be

appropriate. Future research can investigate these variables as independent variables in investment decisions.

This research shows that herding is the factor that influences stock investment decision-making. One explanation is that investors can access information on stock movement through digital platforms and from groups in social media. Investors can follow webinars and various talk shows before deciding to buy or sell their stocks portfolio. This phenomenon must be addressed by the stock exchange and authorities to increase new investment products and improve the security of the stock trading infrastructure. The herding behavior of Indonesian stock market investors is difficult to avoid because it makes a crowd in the market. Finally, the government should quantify the income from this stock trading volume and enact effective tax regulations to increase state revenues.

REFERENCES

- Adil, M., Singh, Y & Ansari, M.S. (2022). How Financial Literacy Moderate Association Between Behavior Biases and Investment Decision. *Asian Journal of Accounting Research Vol 7 no 1 (2022) pp 17-30, DOI 10.1108/AJAR-09-2020-0086*
- Aldin, I. U. (2020, July 3). *Efek WFH, Investor Ritel Lokal di Pasar Modal Meningkat selama Pandemi*. Retrieved from Katadata: <https://katadata.co.id/febrinaiskana/finansial/5f0001d78338d/efek-wfh-investor-ritel-lokal-di-pasar-modal-meningkat-selama-pandemi>
- Anum, & Ameer, B. (2017). Behavioral Factors and Their Impact on Individual Investors' Decision Making and Investment Performance: Empirical Investigation from Pakistani Stock Market. *Global Journal of Management and Business Research, 17(1)*, 61 - 70.
- Areiqat, A. Y., Abu-Rumman, A., Al-Alani, Y. S., & Alhorani, A. (2019). Impact of Behavioral Finance on Stock Investment Decisions Applied Study on A Sample of Investors at Amman Stock Exchange. *Academy of Accounting and Financial Studies Journal, 23(2)*, 1-16.
- Bakar, S., & Yi, A. N. (2016). The Impact of Psychological Factors on Investors' Decision Making in Malaysian Stock Market: A Case of Klang Valley and Pahang. *Procedia Economics and Finance, 35*, 319 – 328.
- Baron, R., & Kenny, D. (1986). The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic and Statistical Considerations. *Journal of Personality and Social Psychology, 51(6)*, 1173-1182.
- Barsbai, I., Schmidt, U., & Zirpel, U., (2022) Overconfidence and Risk Taking in the Field : Evidence from Ethiopian Farmers, *Economic Development and Cultural Change, Vol 70, Number 3*.
- Berlian, F., (2015) Komparasi Kinerja Keuangan Antara Kelompok Perusahaan Bertipologi Prospector dan Defender pada Emiten Sektor Manufaktur Bursa Efek Indonesia, *Mix : Jurnal Ilmiah Manajemen Vol V, No 3, Oktober 2015*.
- Charles Swab Asset Management (2021), <https://www.schwabassetmanagement.com/content/overconfidence-bias>
- Dittrich, D. A., Güth, W., & Maciejovsky, B. (2005). Overconfidence in Investment Decisions: An Experimental Approach. *The European Journal of Finance, 11(6)*, 471–491. doi:10.1080/1351847042000255643
- Fitriani, D., Iqbal, S., & Andayani, W., (2020). Efektifitas Free Float dalam Mendongkrak Likuiditas Bursa Efek Indonesia, *Mix : Jurnal Ilmiah Manajemen Vol 10, No 1, Februari 2020*.

- Gill, S., Khurshid, M. K., Mahmood, S., & Ali, A. (2018). Factors Effecting Investment Decision Making Behavior: The Mediating Role of Information Searches. *European Online Journal of Natural and Social Sciences*, 7(4), 758 - 767.
- Hayat, A., & Anwar, M. (2016). Impact of Behavioral Biases on Investment Decision; Moderating Role of Financial Literacy. *SSRN*, 1-14.
- Heriyanto, Ony, J.G., & Kewal, S.S., (2019) Perilaku Investor atas Informasi Negatif dalam Suatu Industri, *Mix : Jurnal Ilmiah Manajemen*, Vol 9, No 1, Februari 2019.
- Henseler, J., & Fassott, G. (2010). Testing Moderating Effects in PLS Path Models: An Illustration of Available Procedures. In *Handbook of Partial Least Squares* (pp. 713–735). Berlin: Springer. doi:10.1007/978-3-540-32827-8_31
- Houston, S. J. (2010). Measuring Financial Literacy. *The Journal of Consumer Affairs*, 296-316.
- Ishfaq, M., Maqbool, Z., Akram, S., Tariq, S., & Khurshid, K. M. (2017). Mediating Role of Risk Perception between Cognitive Biases and Risky Investment Decision: Empirical Evidence from Pakistan's Equity Market. *Journal of Managerial Sciences*, 11(3), 265-278.
- Javed, H., Bagh, T., & Razzaq, S. (2017). Herding Effects, Over Confidence, Availability Bias and Representativeness as Behavioral Determinants of Perceived Investment Performance: An Empirical Evidence from Pakistan Stock Exchange (PSX). *Journal of Global Economics*, 6(1), 1-13. doi:10.4172/2375-4389.1000275
- Jordan, B. D., Miller, T. W., & Dolvin, S. D. (2015). *Fundamentals of Investments: Valuation and Management* (7 ed.). New York: McGraw-Hill Education.
- Kengatharan, L., & Kengatharan, N. (2014). The Influence of Behavioral Factors in Making Investment Decisions and Performance: Study on Investors of Colombo Stock Exchange, Sri Lanka. *Asian Journal of Finance & Accounting*, 6(1), 1-23. doi:10.5296/ajfa.v6i1.4893
- Keswani, S., Dhingra, V., & Wadhwa, B. (2019). Impact of Behavioral Factors in Making Investment Decisions and Performance: Study on Investors of National Stock Exchange. *International Journal of Economics and Finance*, 11(8), 80-90. doi:doi:10.5539/ijef.v
- Khan, D. (2020). Cognitive Driven Biases, Investment Decision Making: The Moderating Role of Financial Literacy. *SSRN Electronic Journal*, 1-25. doi:10.2139/ssrn.3514086
- Kosasih, D. T. (2021, January 30). *4 Hal yang Bikin Investor Pemula Meningkatkan di Pasar Modal*. Retrieved from Liputan 6: <https://www.liputan6.com/saham/read/4470931/4-hal-yang-bikin-investor-pemula-meningkat-di-pasar-modal>
- KSEI. (2021, Maret). *Demografi Investor*. Retrieved from KSEI Indonesia Central Securities Depository: https://www.ksei.co.id/files/Statistik_Publik_Maret_2021-v1.pdf
- Lambert, J., Bessiere, V., & N'Goala, G. (2012). Does expertise influence the impact of overconfidence on judgement, valuation and investment decision? *Journal of Economic Psychology* 33, 1115-1128.
- Larson, L. R., Eastman, J. K., & Bock, D. E. (2016). A Multi-Method Exploration of the Relationship between Knowledge and Risk: The Impact on Millennials' Retirement Investment Decisions. *Journal of Marketing Theory and Practice*, 24(1), 72 - 90. doi:10.1080/10696679.2016.1089765
- Lusardi, A., & Mitchell, O. S. (2014). The Economic Importance of Financial Literacy: Theory and Evidence. *Journal of Economic Literature*, 52(1), 5-44. doi:10.1257/jel.52.1.5
- Management Study Guide, (2022), Overconfidence Bias, <https://www.managementstudyguide.com/overconfidence-bias.htm>
- Mulyani, E., Fitra, H., & Honesty, F.F.(2021), Investment Decisions : The Effect of Risk Perceptions and Risk Propensity for Beginner Investor in West Sumatra, *Advance in Economics, Business and Management Research*, vol 192.

- Pompian, M. M. (2006). *Behavioral Finance and Wealth Management : How To Build Optimal Portfolios That Account for Investor Biases*. New Jersey: John Wiley & Sons, Inc.
- Pratiwi, W., Mustaruddin, Wendy, (2021) The Effect of Overconfidence and Herding on Perceptions of Investment Performance in the Capital Market With Investment Decision as Mediation and Financial Literacy as Moderators, Universitas Tanjungpura, Pontianak, Indonesia
- Rahayu, S., Rohman, A., & Harto, P., (2021), *Herding Behavior Model in Investment Decision on Emerging Markets : Experimental in Indonesia*, *Journal of Asian Finance, Economics and Business Vol 8 no 1 (2021) 053-059*
- Rahmawati, (2015), Determinan Risiko Sistematis dan Kinerja Saham pada Sektor Industri Barang Konsumsi pada Bursa Efek Indonesia, *Mix : Jurnal Ilmiah Manajemen*, V(3), Oktober 2015
- Ricciardi, V., (2007), A Literature Review of Risk Perception Studies in Behavioral Finance : The Emerging Issues, Tennessee Tech University, Social Science Research Network (SSRN).
- Saratian, E. T. P., Arief, H., Ramli, Y., dan Soelton, M. (2020). Moody's Rating for Palm Oil Plantation in Papua, Indonesia. *Archives of Business Research*, 8(8), 262-280. Retrieved from 10.14738/abr.88.8922
- Saratian, E. T. P., Yuliantini, T., Soelton, M., Arief H., Oktaviar C. (2021). Investment Rating for Replanting Palm Oil Plantation Companies in Sumatera, Indonesia. *American International Journal of Business Management*, 4(3), 56-65.
- Shekhar, D., & Prasad , R. (2015). Impact of Herd Behavior on Investment Decision of Investors And Stock Market Price Volatility – An Empirical Study. *UNNAYAN*, 2, 1-7.
- Sindhu K, P., & Kumar, R. (2014, June). Influence of Risk Perception of Investors on Investment Decisions: An Empirical Analysis. *Journal of Finance and Bank Management*, 2(2), 15-25.
- Survei Nasional Literasi dan Inklusi Keuangan 2019*. (2020, December 1). Retrieved April 17, 2021, from OJK: <https://www.ojk.go.id/id/berita-dan-kegiatan/publikasi/Pages/Survei-Nasional-Literasi-dan-Inklusi-Kuangan-2019.aspx>
- Talwar, M., Talwar, S., Kaur, P., Tripathy, N., & Dhir, A. (2020). Has Financial Attitude Impacted the Trading Activity of Retail Investors During the COVID-19 Pandemic? *Journal of Retailing and Consumer Services*. doi:10.1016/j.jretconser
- VanRaaij, W. F. (2016). *Understanding Consumer Financial Behavior: Money Management in an Age of Financial Illiteracy*. New York: Palgrave Macmillan.
- Xue, Y., Sun, S., Zhang, P., & Meng, T. (2015). Impact of Cognitive Bias on Improvised Decision-Makers' Risk Behavior: An Analysis Based on the Mediating Effect of Expected Revenue and Risk Perception. *Management Science and Engineering*, 9(2), 31-42. doi:10.3968/6843
- Yuniningsih, Taufiq, M., (2019), Investor Behavior in Determining Investment of Real Asset, *Mix : Jurnal Ilmiah Manajemen* 9(2), Juni 2019.