**The Effect of Overconfidence Bias and Representativeness Bias on Investment Decision with Risk Tolerance as Mediating Variable**

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**INTRODUCTION**

Rational investors expect the maximum possible profit with minimum risks. Many factors influence investment decision making and one of the main factors is the psychological factor and personal character of investors. Psychological factors are factors that contribute to determining investor behavior, even though many parties state that investment psychology factors have the most role in investing and affect the results to be achieved. Psychological factors are even considered to be able to cause investors to do irrational and unpredictable things. However, most investors do not care about the extent to which these psychological factors affect their actions in making investment decisions. This statement is also the same as that conveyed by Barberis and Thaler (2003) which states that financial behavior has emerged by combining emotions and cognitive errors and their effects on investors and the decision-making process. Psychological factors are factors that contribute to determining investor behavior, even though n many parties state that those investment psychology factors have the most role in investing and affect the results to be achieved.

Behavioral finance states that human nature is irrational based on traditions, beliefs and norms, and human differences from that prove to be imperfect in decision-making (Tversky & Kahneman, 1979). Kurniawan (2019) stated that sometimes emotions, traits, knowledge, preferences and various things inherent in humans underlie the emergence of decisions to act and this makes investors lose self-control where they become too confident or even become too pessimistic.

Overconfidence bias and representativeness bias are biases that can affect an investor's decision-making, if these biases are not taken seriously they can harm the investor himself. Qadri & Shabbir (2013), Lim (2012), Qureshi et al. (2012) and Bashir et al. (2013) have found overconfidence has a significant positive impact on investors' decision-making. On the other hand, Atif (2014) and Kentharan (2014) found that overconfidence hurts decision-making.

In addition to overconfidence bias and representativeness bias, risk tolerance is also one of the factors that influence investment decisions. Nguyen et al (2015) state that financial risk tolerance is closely related to individual investment decision-making and is therefore measured based on routine questionnaires as part of the financial advisory process in many countries. Much research on investment decisions has been carried out, furthermore, researchers will conduct the research with the title “The Effect of Overconfidence Bias and Representativeness Bias on Investment Decisions with Risk Tolerance as Mediating Variable”.

**LITERATURE REVIEW**

**Behavioral Finance**

Behavioral Finance is the study of how individuals actually behave in making financial decisions, in particular that studies how psychology influences investors' investment decisions (Risman et al., 2021). These psychological factors are even considered to be able to cause investors to do things that are irrational and unpredictable. Sometimes emotions, traits, knowledge, preferences, and various kinds of things inherent in humans underlie the emergence of decisions in action. Pompian (2012) suggests that behavioral finance is a study of psychological factors that influence investors in making investment decisions. After receiving information and facts, investors make decisions based on cognitive factors and emotional factors.

**Investment Decision**

Subash (2012) explains that investment decisions can be defined as the process of choosing an alternative from various alternatives. Making investment decisions is an important challenge faced by investors. An investment decision is said to be optimal if the timing of the investment can maximize the expected utility. To maximize utility, a person will only invest if the expected benefits from the investment are greater than if the money is spent now.

**Overconfidence Bias**

Risman et al. (2021) defines overconfidence bias as an investment decision made because investors have too much confidence in their predictions and information. This condition is a normal thing that is also a reflection of a person's level of confidence to achieve or get something. Shefrin (2001) suggests that overconfidence is "related to how well people understand their own abilities and the limits of their knowledge. "Individuals who are overly confident in their abilities tend to think that they are better than they really are". The same is true for knowledge and individuals who are overconfident about their level of knowledge tend to think they know more than they actually do.

Investors who are too confident to get more returns will use their superior skills and abilities (Chen et al. 2007). Vijaya (2014) shows that one of the behavioral factors Overconfidence has a significant and positive relationship with investment performance. This study is consistent with the results of the study by The results of this study are in line with the results of studies that show a significant correlation between overconfidence bias on investment decisions, including Waweru (2008), Qureshi et al. (2012), Bashir et al. (2013), Qadri & Shabbir (2013), Broihanne et al (2014), Bakar and Yi (2016), Khan et al. (2017) and Raut et al. (2018). Therefore, the hypothesis can be formulated as follows:

H1: Overconfidence bias has a positive and significant effect on investment decisions.

**Representativeness Bias**

According to Risman et al. (2021), Representativeness bias is Investors make investment decisions too quickly without deep analysis. In generally, investors only rely on past experience which is considered to be a reference for their current investment decisions.

Moosa and Ramiah (2017) say that we find people losing their temper and, in a number of cases, these people being blamed for the overreaction. But representativeness bias allows us to understand why people lose their temper because they have been exposed to a series of previous events plus a final trigger. This behavioral characteristic is also present in the stock market which allows representativeness bias. This research is in line with research conducted by Sohani Islam (2012), Waweru et al (2014), Badshah et al. (2016), Raut et al. (2018).

Based on this explanation, the second hypothesis is as follows:

H2: Representativeness bias has a positive and significant effect on investment decisions

**Risk Tolerance**

Baird & Thomas (1985) say that risk tolerance is defined as an individual's assessment of how risky a situation is in terms of a probabilistic estimate of the level of situational uncertainty, how controllable that uncertainty is, and confidence in the estimate are two important ways in which risk is interpreted and acted upon. Risk as a feeling refers to our spontaneous and impulsive reactions to danger and risk when analysis brings logic, reasoning and scientific considerations to support risk assessment and decision-making (Slovic et al. 2006).

Putri et al. (2017) examined the relationship between personality factors and risk tolerance for stock investment decisions on financial asset investors in the city of Surabaya and they used 2 test models. They found that personality relationships (openness to experience, conscientiousness, extraversion, agreeableness, and neuroticism) did not affect investors' risk tolerance because financial asset investors tend to be rational in their decision-making. This study is in line with the research conducted by Hariharan et al. (2000), Bailey and Kinerson (2005) and Yohnson (2005), Nguyen et al. (2016), Nurninda et al. (2020). Therefore we can propose a third hypothesis as follows:

H3: Risk tolerance has a positive and significant effect on investment decisions.

Risk tolerance is a consideration in making investment decisions based on overconfidence and bias, therefore risk tolerance can minimize and increase the effect of Overconfidence bias and Representativeness bias on investment decisions, thus the indirect effect hypothesis can be proposed as follows:

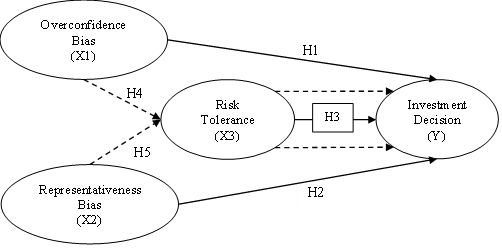
H4: Overconfidence bias indirectly affects investment decisions through risk tolerance.

H5: Representativeness bias indirectly affects investment decisions through risk tolerance.

**METHODOLOGY**

**Conceptual Models**

**Figure 1. Conceptual Models**



**Data Collection**

The research method used is a sample survey research method. The unit of analysis used in conducting the survey is individuals, namely investors in the Indonesian Capital Market who were taken randomly. The measurement scale used in this study is the Likert Scale. The population in this research is 200 individual investors who have transacted in the Indonesian Capital Market. In this research, the sampling method used simple random sampling. Data collection techniques in this study were questionnaires through online media and a literature study.

**Data analysis method**

The data analysis method used in this research is the Component or Variance Based Structural Equation Model where the data processing uses the Partial Least Square (SmartPLS) version 3.0 PLS program. PLS (Partial Least Square) is an alternative model of covariance-based SEM.

The testing steps to be carried out are the Evaluation of Measurement Model (Outer Model) Evaluation of the Structural Model and Hypothesis Testing (Inner Model). In outer model discuss about convergent validity, discriminant validity, and composite reliability. And in inner model discuss R-square result, goodness of fit model, and hypothesis testing results (path coefficients).

**RESULTS AND DISCUSSION**

**Characteristics of Respondents**

**Table 1. Characteristics of Respondents**

|  |  |  |  |
| --- | --- | --- | --- |
| **No.** | **Characteristic** | **Frequency** | **Percentage (%)** |
| 1 | **Gender** |  |  |
|  | Male | 101 | 51 |
|  | Female | 99 | 50 |
|  | Total | 200 | 100 |
| 2 | **Age** |  |  |
|  | < 20 years | 1 | 1 |
|  | 20 - 30 years | 154 | 77 |
|  | 31 - 40 years | 28 | 14 |
|  | 41 - 50 years | 12 | 6 |
|  | > 50 years | 5 | 3 |
|  | Total | 200 | 100 |
| 3 | **Last Education** |  |  |
|  | High school | 28 | 14% |
|  | Diploma | 76 | 38% |
|  | Bachelor | 83 | 42% |
|  | Post graduated | 11 | 6% |
|  | Others | 2 | 1% |
|  | Total | 200 | 100 |
| 4 | **Job Status** |  |  |
|  | Working full time | 165 | 83% |
|  | Working part time | 7 | 4% |
|  | Work casually / temporarily not working | 17 | 9% |
|  | Retired and not working | 0 | 0% |
|  | Retired and working part time/casual | 1 | 1% |
|  | Others | 10 | 5% |
|  | Total | 200 | 100 |
| 5 | **Monthly Income** |  |  |
|  | < Rp 2.000.000,- | 15 | 8% |
|  | Rp 2.000.000,- s/d Rp 4.000.000,- | 37 | 19% |
|  | Rp 4.000.001,- s/d Rp 6.000.000,- | 75 | 38% |
|  | Rp 6.000.001,- s/d Rp 8.000.000,- | 20 | 10% |
|  | > Rp 8.000.000,- | 53 | 27% |
|  | Total | 200 | 100 |

This result showed that total of 200 respondents there were 101 men and 99 women. The Characteristic of respondents based on age in table 1 was dominated by aged 20-30 years or 77% of the total respondents while the smallest number of respondents are aged under 20 years by 1% or 1 person from the total respondents.

The characteristics of the respondents are classified as follows:

1. Based on education level, more people invest in the Indonesian capital market is mostly done by people with a last educational background of bachelor's by 42%, and fewer people than people with a last educational background of others by 1%.
2. Based on job status, who invest the most in the capital market are people who do work full time 83% and those who don't invest at all are people who are retired and not working by 0%.
3. Based on their monthly income who get the highest income is in the age range 20-30 years or 77% of the total respondents while the smallest respondents is aged under 20 years by 1% or 1 person from the total respondents.

**Evaluation of Measurement Model (Outer Model)**

1. **Convergent Validity**

Convergent validity measures the magnitude of the correlation between the construct and the latent variable.

**Table 2. Convergent Validity Test Results (Modification 2)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variabel** | **Indicator** | **Outer**  **Loading** | **Description** |
| Overconfidence Bias | OB6 | 0.891 | Valid |
| OB8 | 0.909 | Valid |
| OB9 | 0.782 | Valid |
| Representativeness Bias | RB4 | 0.872 | Valid |
| RB7 | 0.827 | Valid |
| RB8 | 0.779 | Valid |
| Risk Tolerance | RT1 | 0.765 | Valid |
| RT2 | 0.784 | Valid |
| RT3 | 0.702 | Valid |
| RT4 | 0.708 | Valid |
| RT5 | 0.785 | Valid |
| Investment Decision | KI2 | 0.770 | Valid |
| KI5 | 0.721 | Valid |
| KI8 | 0.762 | Valid |
| KI9 | 0.789 | Valid |
| KI10 | 0.737 | Valid |
| KI15 | 0.817 | Valid |
| KI18 | 0.771 | Valid |
| KI19 | 0.798 | Valid |
| Source: Output PLS 2021 | | | | |

Based on the table above, the outer loading value >0,7 indicates that that the value has reached convergent validity because it has a loading factor value above 0.70.

1. **Discriminant Validity**

**Table 3. Discriminant Validity Test Results (Cross Loadings)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Overconfidence Bias | Representativeness Bias | Risk Tolerance | Investment Decision | |
| OB6 | 0.891 | 0.400 | 0.505 | 0.572 | |
| OB8 | 0.909 | 0.354 | 0.557 | 0.504 | |
| OB9 | 0.782 | 0.415 | 0.306 | 0.566 | |
| RB4 | 0.341 | 0.872 | 0.595 | 0.710 | |
| RB7 | 0.424 | 0.827 | 0.608 | 0.527 | |
| RB8 | 0.358 | 0.779 | 0.370 | 0.555 | |
| RT1 | 0.205 | 0.561 | 0.765 | 0.543 | |
| RT2 | 0.227 | 0.600 | 0.784 | 0.552 | |
| RT3 | 0.652 | 0.389 | 0.702 | 0.577 | |
| RT4 | 0.438 | 0.387 | 0.708 | 0.595 | |
| RT5 | 0.468 | 0.485 | 0.785 | 0.495 | |
| KI2 | 0.598 | 0.485 | 0.581 | 0.770 | |
| KI5 | 0.470 | 0.583 | 0.456 | 0.721 | |
| KI8 | 0.446 | 0.670 | 0.568 | 0.762 | |
| KI9 | 0.707 | 0.447 | 0.485 | 0.789 | |
| KI10 | 0.405 | 0.541 | 0.712 | 0.737 | |
| KI15 | 0.492 | 0.465 | 0.483 | 0.817 | |
| KI18 | 0.372 | 0.551 | 0.544 | 0.771 | |
| KI19 | 0.412 | 0.711 | 0.685 | 0.798 | |
| Source: Output PLS, 2021 | | | | |  | |

Based on table 3. it can be seen that the correlation of the Overconfidence Bias construct with its indicators (OB6 of 0.891, OB8 of 0.909, OB9 of 0.782) is higher than the correlation of the Overconfidence Bias indicator with other constructs, then the correlation of the Representativeness Bias construct with its indicators (RB4 is 0.872, RB7 is 0.827, RB8 of 0.779) is higher than the correlation of the Representativeness Bias indicator with other constructs, then the correlation of the Risk Tolerance construct with its indicators (RT1 of 0.765, RT2 of 0.784, RT3 of 0.702, RT4 of 0.708, and RT5 of 0.785) is higher than the correlation of the Risk Tolerance indicator with other constructs, then the correlation of the investment decision construct with its indicators (KI2 of 0.770, KI5 of 0.721, KI8 of 0.762, KI9 of 0.789, KI10 of 0.737, KI15 of 0.817, KI18 of 0.771, KI19 of 0.798) is higher than the correlation of Investment Decision indicators with other constructs. This result concluded that the indicator is valid because it has the highest loading factor value for the target construct compared to the loading factor of other constructs.

**Table 4. Discriminant Validity Test Results (Fornell Lacker Criterium)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Overconfidence Bias | Representativeness Bias | Risk Tolerance | Investment Decision |
| Overconfidence Bias | 0.863 |  |  |  |
| Representativeness Bias | 0.449 | 0.827 |  |  |
| Risk Tolerance | 0.537 | 0.646 | 0.750 |  |
| Investment Decision | 0.631 | 0.729 | 0.739 | 0.771 |
| Source: Output PLS, 2021 | | | |  |

Based on Table 4 above, it can be concluded that the square root of the Average Variance Extracted (AVE) for each construct is greater than the correlation between one construct and another in the model. So it can be concluded that the construct in the estimated model meets the criteria for discriminant validity.

1. **Composite Reliability**

Table 5. Hasil Pengujian Composite Reliability & Cronbach’s Alpha

|  |  |  |  |
| --- | --- | --- | --- |
| Variable | Composite Reliability | Cronbach’s Alpha’s | Description |
| Overconfidence Bias | 0.897 | 0.826 | Reliable |
| Representativeness Bias | 0.866 | 0.770 | Reliable |
| Risk Tolerance | 0.865 | 0.804 | Reliable |
| Investment Decision | 0.921 | 0.902 | Reliable |
| Source: Output PLS, 2021 | | | |

Based on table 5. the results of testing composite reliability and Cronbach's alpha show a satisfactory value because all latent variables have a composite reliability value and Cronbach's alpha ≥0.70. This means that all latent variables are said to be reliable.

**Evaluation of the Structural Model and Hypothesis Testing (Inner Model)**

1. **R-square result**

Table 6. Endogen Variable R2 Value

|  |  |
| --- | --- |
| Variable Endogen | R-square (R2) |
| Risk Tolerance | 0.494 |
| Keputusan Investasi | 0.707 |
| Source: Output PLS, 2021 |  |

From table 6, it can be seen that the effect of the independent latent variables (Overconfidence Bias and Representativeness Bias) on Risk Tolerance gives an R-square value of 0.494 which can be interpreted that the variability of the Risk Tolerance construct which can be explained by the variability of the Overconfidence Bias and Representativeness Bias constructs is 49.4%, while 50.6% is explained by other variables outside the studied.

Investment decisions have an R-square value of 0.707, so it can be interpreted that the constructed variable of investment decisions can be explained by the variability of the construct’s Overconfidence Bias, Representativeness Bias, and Risk Tolerance is 70.7% while 29.3% is explained by other variables outside the researched.

1. **Goodness of fit model**

The predictive relevance value is obtained by the formula:

Q2 = 1 – (1-R1) (1-Rp)

Q2 = 1 – (1-0.494) (1-0.707)

Q2 = 0.852

The calculation results above show the predictive relevance value of 0.852 (>0). The model is said to be feasible to have relevant predictive value. Based on the above calculation, 0.852 (85.2%) relates the Investment Decision variable which is explained by the Overconfidence Bias, Representativeness Bias, and Risk Tolerance variables, while the remaining 14.8% is explained by variables outside the model.

1. **Hypothesis testing results (path coefficients)**

Table 7. Hypothesis Testing Results

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable | Original Sample | Standard Deviation | T-statistics | P values | Description |
| Overconfidence Bias → Investment Decision | 0.274 | 0.063 | 4.374 | 0.000 | Positive - Significant |
| Representativeness Bias → Investment Decision | 0.383 | 0.054 | 7.145 | 0.000 | Positive - Significant |
| Risk Tolerance → Investment Decision | 0.344 | 0.071 | 4.854 | 0.000 | Positive - Significant |
| Overconfidence Bias → Risk Tolerance → Investment Decision | 0.310 | 0.061 | 5.054 | 0.000 | Positive - Significant |
| Representativeness Bias → Risk Tolerance → Investment Decision | 0.507 | 0.058 | 8.757 | 0.000 | Positive - Significant |
| Source: Output PLS, 2021 | | | | | |

The path coefficient value shows the direction of the variable relationship whether positive or negative. If the original sample value <0 then the effect is negative but if the original sample value >0 then the effect is positive. The result above shows that all the original sample values are >0 indicating that all the directions of the variable are positive.

The path coefficient value shows the direction of the variable relationship whether significant or not if the statistical value is greater than the T-table value of 1.96. The result above shows that all the t-statistics values are >1,96 indicating that all the directions of the variable are significant.

**CONCLUSION**

Based on the results of the analysis that has been done, the conclusions that can be obtained from this research are follows:

1. There is a direct positive and significant effect on the relationship between Overconfidence Bias and Investors' Investment Decisions in the Indonesian Capital Market.
2. There is a direct positive and significant effect on the relationship between Representativeness Bias and Investors' Investment Decisions in the Indonesian Capital Market.
3. There is a direct positive and significant influence on the relationship between Risk Tolerance and Investors' Investment Decisions in the Indonesian Capital Market.
4. There is an indirect influence on the relationship between Overconfidence Bias and Investor Investment Decisions in the Indonesian Capital Market through Risk Tolerance.
5. There is an indirect influence on the relationship between Representativeness Bias and Investor Investment Decisions in the Indonesian Capital Market through Risk Tolerance.

**REFERENCES**

Akhtar, F., Thyagaraj, K. S., & Das, N. (2017). The perceived Investment Performance of Individual Investors is Related to the Big-Five and the General Factor of Personality (GPF). *Global Business Review,* 19(2), 342–356. doi: 10.1177/0972150917713527.

Atif Kafayat., 2014. Interrelationship of Biases: Effect Investment Decisions Ultimately. *Theoretical and Applied Economics* XXI 6(595), 85-110. Retrieved from https://www.researchgate.net/.

Awais.M., Laber.M.F., Rasheed.N.,& Khursheed. A. (2016). Impact of Financial Literacy and Investment Experience on Risk Tolerance and Investment Decisions: Empirical Evidence from Pakistan. *International Journal of Economics and Financial Issues*, 6(1), 73-79. Retrieved from http: www.econjournals.com.

Badshah, W., Irshad, S., Hakam, U. (2016). Effect of Representativeness Bias on Investment Decision Making. *Management and Administrative Sciences Review,* 5(1), 26-30. Retrieved from: www.absronline.org/journals.

Baghani, M. R. & Sedaghat, P. (2014).Effect of Risk Perception and Risk Tolerance on Investors' Decision Making in Tehran Stock Exchange.*International Academic Journal of Accounting and Financial Management*, 1(1), 79-87. Retrieved from www.iaiest.com.

Bailey, Jeffrey J. & Kinerson, Chris. 2005. Regret Avoidance and Risk Tolerance.Jurnal. Association for FinancialCounseling and Planning, Vol 16 (1)Hal 23-28

Baird, I. S., & Thomas, H. (1985).Toward a Contingency Model of Strategic Risk Taking. *The Academy of Management Review*, 10(2), 230.doi:10.2307/257965.

Bakar, S., & Yi, A. N. C. (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. doi: 10.1016/s2212-5671(16)00040-x. Barber, B. M., & Odean, T. (1998). Boys will be Boys: Gender, Overconfidence, and Common Stock Investment. SSRN Electronic Journal. doi:10.2139/ssrn.139415.

Barberis, N., Shleifer, A., & Vishny, R. (1998). A model of investor sentiment. Journal of Financial Economics, 49(3), 307–343.

Bashir, T., Javed, A., Ali, U., Meer, U. I., Naseem, M. M., 2013. Empirical Testing of Heuristics Interrupting the Investor’s Rational Decision Making. European Scientific Journal 9(28), 432-444.

Broihanne, M. H., Merli, M., & Roger, P. (2014). *Overconfidence, risk perception and the risk-taking behavior of finance professionals. Finance Research Letters, 11(2), 64–73.* doi: 10.1016/j.frl.2013.11.002

Chen, G., Kim, K. A., Nofsinger, J. R., & Rui, O. M. (2007). Trading performance, disposition effect, overconfidence, representativeness bias, and experience of emerging market investors. *Journal of Behavioral Decision Making*, 20(4), 425–451. doi: 10.1002/bdm.561.

De Bondt, W. P. (1993). Betting on trends: Intuitive forecasts of financial risk and return. International Journal of Forecasting, 9(3), 355–371

Dhar, R. & Kumar, A. (2001). A Non-Random Walk Down The Main Street: Impact of The Price Trends on Trading Decision of Individual Investor. *Yale International Center For Finance*. Retrieved from https://www.semanticscholar.org/.

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.

Grether, D. M. (1992). *Testing bayes rule and the representativeness heuristic: Some experimental evidence. Journal of Economic Behavior & Organization, 17(1), 31–57.* doi:10.1016/0167-2681(92)90078-p

Hariharan, G. (2000). *Risk tolerance and asset allocation for investors nearing retirement. Financial Services Review, 9(2), 159–170.* doi:10.1016/s1057-0810(00)00063-9.

Hirshleifer, D. (2001). Investor Psychology and Asset Pricing. *The Journal of Finance,* 56(4), 1533–1597. doi: 10.1111/0022-1082.00379.

Islam Khan, M. T., Tan, S.-H., & Chong, L.-L. (2016). The effects of stated preferences for firm characteristics, optimism and overconfidence on trading activities. *International Journal of Bank Marketing*, 34(7), 1114–1130. doi: 10.1108/ijbm-10-2015-0154.

Kahneman, D., &Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica: Journal of the Econometric Society*, 263-291. doi: 10.2307/1914185.

Khan, A. R., Azeem, M., & Sarwar, S. (2017). Impact of Overconfidence and Loss Aversion Biases on Investment Decision: Moderating Role of Risk Perception. *Intenational Journal of Transformation in Accounting, Auditing & Taxation*, 23-34.

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.doi: 10.5296/ajfa.v6i1.4893.

Kurniawan, R. (2019, November 15). Pengaruh Behavioral Finance dalam Pengambilan Keputusan Investasi. *Indonesia Value Investor.*Retrieved from http://www.finansialku.com.

Malmendier, U. and S. Nagel (2011). Depression Babies: Do Macroeconomic Experiences Affect Risk-Taking? *Quarterly Journal of Economics,* 126(1), 373-416. doi: 10.1093/qje/qjq004.

Misra, S., Sridevi, V., Saha, S., Ghosh R. (2019). Overconfidence versus Herd Mentality Bias: An Investment Decision. *International Journal of Psychosocial Rehabilitation.* 23(3), 957-978. doi: 10.37200/IJPR/V23I3/PR190382.

Moosa, I. A., & Ramiah, V. (2017). Loss Aversion Bias, the Disposition Effect and Representativeness Bias. *The Financial Consequences of Behavioural Biases,* 71–92. doi: 10.1007/978-3-319-69389-7\_4.

M. Pompian, (2010). Behavioral Finance and Wealth Management: How to Build Investment Strategies That Account for Investor Biases (2nded). New Jersey: John Wiley & Sons, Inc.

Nguyen, Linh T.M.; Gallery, Gerry; and Newton, Cameron, The Influence of Financial Risk Tolerance on Investment Decision-Making in a Financial Advice Context, Australasian Accounting, Business and Finance Journal, 10(3), 2016, 3-22. doi:10.14453/aabfj.v10i3.2

Nofsinger, J. R. (2005). Social Mood and Financial Economics.*Journal of Behavioral Finance*, doi:10.120710.1207/s15427579jpfm0603\_4.

P. Aruna and Rajashekar, H. (2016). Factors Influencing Investment Decisions of Retail Investors - A Descriptive Study. International Journal of Business and Management Invention, 5(12), 06-09. Retrieved from www.ijbmi.org.

Putri, F. K., Bramanti, W. G., Hakim, M. S. (2017). Pengaruh Faktor Kepribadian terhadap Toleransi Risiko Keputusan Investasi Saham.*Jurnal Sains Dan Seni ITS*. 6(1), 7-11. Retrieved from https://media.neliti.com/media/publications/134660-ID-pengaruh-faktor-kepribadian-terhadap-tol.pdf.

Qadri, S. U., Shabbir, M. (2014). An Empirical Study of Overconfidence and Illusion of Control Biases, Impact on Insvestor’s Decision Making: An Evidence from ISE*. European Journal of Business and Management* 6(14), 38-44. doi: 10.1.1.734.9410.

Qureshi, S. A., Rehman, K., Hunjra, A. I., 2012. Factors Affecting Investment Decision Making of Equity Fund Managers. Wulfenia Journal, Vol. 19, No. 10, 280-291.

Rahman A., & Risman, A. (2021), Is Behavior Finance Affected By Income, Learning Finance And Lifestyle? The Euraseans, 4 (29), 29-40

Raut, R. K., Das, N., & Mishra, R. (2018). Behaviour of Individual Investors in Stock Market Trading: Evidence from India. *Global Business Review, 097215091877891.* doi: 10.1177/0972150918778915.

Raut, R. K., Das, N., & Kumar, R. (2018). Extending the Theory of Planned Behaviour: Impact of Past Behavioural Biases on the Investment Decision of Indian Investors. *Asian Journal of Business and Accounting*, 11(1).

Risman, A., Prowanta, E. & Siswanti, I. (2021). Behavioral Corporate Finance. Yogyakarta. Penerbit KBM Indonesia.

Ritter, J. R. (2003). Behavioral Finance. *Pacific-Basin Finance Journal*, 429-437. doi: 10.1016/S0927-538X(03)00048-9.

Shefrin, H., & Statman, M. (1985). *The Disposition to Sell Winners Too Early and Ride Losers Too Long: Theory and Evidence. The Journal of Finance, 40(3), 777.* doi:10.2307/2327802

Shefrin, H. (2001). Behavioral corporate finance*. Journal of Applied Corporate Finance*, 14(3), 113-126. doi: 10.1111/j.1745-6622.2001.tb00443.

Sina, P. G. 2014. Representativeness Bias dan Demografi dalam Membuat Keputusan Keuangan. *Jurnal Manajemen*, 14(1), 81-96.

Sina, P. G. (2015, March 15). Psikologi Keuangan 3. *Kompasiana Beyond Blogging.* Retrieved from https://www.kompasiana.com/.

Subash, R. (2012). Role of Behavioral Finance in Portofolio Investmen Decision: Evidance from India. Charles University in Prague

Sugiyono. 2013. *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Bandung: Alfabeta.

Slovic, P., & Peters, E. (2006). Risk Perception and Affect. *Current Directions in Psychological Science*, 15(6), 322–325. doi: 10.1111/j.1467-8721.2006.00461.

Smart, S. B., Gitman, L. J., Joehnk, M. D. (2017).*Fundamental of Investing* (13thed). England: Pearson Education.

Sohani, I, (2012). Behavioral finance of an inefficient market. Global Journal of Management and Business Research. 12, 14.

Vijaya, E. (2016). An Empirical Analysis Of Influential Factors on Investment Behaviour of Retail Investors’ In Indian Stock Market: A Behavioural Perspective. *Journal in Management and Social Science*, 2(12), 296-308. Retrieved from http://www.ijmr.net.in.

Waweru, N. M., Munyoki, E., & Uliana, E. (2008). *The effects of behavioural factors in investment decision-making: a survey of institutional investors operating at the Nairobi Stock Exchange. International Journal of Business and Emerging Markets, 1(1), 24.* doi: 10.1504/ijbem.2008.019243

Yadollahi F., J., Nouri, P., Ahmadi K., A., Taghi, T., M. (2014). Identifying the Main Factors Influencing the Formation of Overconfidence Bias in Entrepreneurs: A Qualitative Content Analysis Approach. *International Journal of Academic Research in Business and Social Sciences*, 4(4),456-469, doi: 10.6007/IJARBSS/v4-i4/815.

Yohnson. 2008. Regret Aversion dan Risk Tolerance Investor Muda Jakarta dan Surabaya. Jurnal Manajemen dan Kewirausahaan, vol. 10 No. 2, September 2008: 163-168.