Peer-Reviewed Article

Jurnal Keuangan dan Perbankan
Volume 26, Issue 2 2022, page. 265-275
ISSN: 1410-8089 (Print), 2443-2687 (Online)
DOI: 10.26905/jkdp.v26i2.7021

Interaction between Gender and Cognitive Factor toward Investment Decision

Tiar Lina Situngkir[1], Nugraha[2], Disma[3], Yayat Supriyatna[4]
[1]*Universitas Singaperbangsa Karawang, Indonesia*
[2,3,4]*Universitas Pendidikan Indonesia, Bandung, Indonesia*
*Corresponding Author: tiarlina.situngkir@fe.unsika.ac.id

Abstract

This study aims to analyze whether there is an influence of irrational behaviour of individual investors in determining investment decisions. The irrational behaviour studied in this article are overconfidence and risk aversion. To increase the complexity, the moderating variables of gender and income level are used to sharpen the influence on investment decisions. The data used are primary data collected from 161 individual investor respondents. The data available in this study were analysed using the Moderated Regression Analysis Technique. From the data processing results, it was found that irrational behaviour proxied by overconfidence and risk aversion has an influence on investors in determining investment decisions. It is proven that risk aversion interacts with gender in influencing investment decisions. At the same time, gender does not interact with the independent variable in influencing investment decisions.

Keywords: interaction moderation; overconfidence; risk aversion; investment decision; behavioral financial.
JEL Classification: G4, G41

1. INTRODUCTION

Irrational, biased behavior provides movement or shock, leading to anomalies in the market (Pertiwi et al., 2019). This biased behavior occurs because there is an influence of psychological factors that occur on human behavior patterns. Human psychology that has a variety of biases turns out to have a significant influence in determining decisions (Nofsinger, 2018).

The efficient market that is believed to have been unable to explain the anomaly events that occurred in the market (Rossi & Gunardi, 2018). The market as a place to make a finance or investment often displays price movements that are not in accordance with the right circumstances (Venezia &Statman, 2019). The modern financial theory explains that markets provide all information evenly so that market participants can make rational decisions (Ramiah et al., 2015). This situation criticizes utility as efficient market support, unable to explain the cause of anomalies in the market (Valcanover et al., 2020).

Continuous research gives birth to prospect theories that provide new discourse in the world of financial conduct (Shukla et al., 2020). Behavioral finance explains that irrational investors occur because there are cognitive factors that influence investment decisions (Nugraha, 2021). Cognitive bias factors stimulate psychological factors that influence investor behavior in determining irrational investment decisions (Kumar &Goyal, 2016). Irrational investment decisions will negatively impact and even cause losses on investments made by investors (Sari & Nugraha, 2016)(Zahera & Bansal, 2018).

Research in developed countries such as the United States, the Netherlands, and the United Kingdom, has first contributed to the field of behavioral finance (Costa et al., 2017). The study describes the irrational decisions investors make investment decisions that impact on poor outcomes and even losses (Zahera & Bansal, 2018)(J. Y. Huang et al., 2016).

The study aimed to examine several cognitive factors bias, overconfidence, and risk aversion influence investment decisions. Overconfidence is the attitude of investors who feel they have knowledge and experience in making decisions (Wang &Zhou, 2017). According to , overconfidence is the overestimate behavior of the actual state of the individual, over replacement i.e. feeling better than others, overprovision is the belief in truth more than others. According to, excessive overconfidence triggers excessive investment, and weak overconfidence has a low investment impact, moderate overconfidence, proportional investment.

The results of the study by (Addinpujoartanto & Darmawan, 2020) found that regret aversion, loss aversion, and herding bias or significantly affect investment decisions. (Bouteska & Regaieg, 2018) proves overconfidence is more dominant than loss aversion exerts a significant influence in determining investment decisions. (Arifin & Soleha, 2019) explained the results of his research that risk becomes a consideration of overconfidence attitudes in determining decisions.

Apergis (2021) provides the results of his research findings; the attitude of overconfidence is vulnerable experienced by individuals who have high incomes. (Yang &Zhu, 2016) explains that overconfidence occurs in men in trading compared to women, but there is no difference in overconfidence in increasing the volume of trade in the risky world situation. Field (Katper et al., 2019) found that overconfidence interacts with marital status and education in determining investment decisions.

Risk aversion is the attitude of individuals who dislike risk in the alternative options available. (M. Huang, 2018) Research (Ousman Abani et al., 2018) states that risk aversion influences investment decisions. (O'Donoghue & Somerville, 2018) states that risk aversion exerts a non-optimal influence on investment decisions. (Abdeldayem & Sedeek, 2018) optimistic managers and risk tolerance exert a significant positive influence on firm's leverage ratio, yet overconfidence managerial has no significant affected on firm's capital structure. Other risk aversion manager prefers to use lower leverage ratio level.

(Hibbert et al., 2013) In the group with more higher education, women were more at risk of aversion than men, yet women and men with equal levels of education, were both considered the risk. (L. Bogan et al., 2013) found that men are more risk-taker than women, but men can reduce loss aversion in determining investment decisions. (Nur Aini &Lutfi, 2019) stated that their research did not find a significant effect of risk aversion on investment decisions.

Aren & Nayman Hamamci (2020) their findings suggest that risk aversion triggered by neurotic and openness influences investment decisions. (Michailova et al., 2017) stated that trade performance influenced by overconfidence occurs in women, and risk aversion does not affect investment decisions. (Mumtaz et al., 2018) featuring heuristic and risk aversion have affected investment decisions. (Hillesland, 2019) explains the results of research in developing countries are different from countries regarding gender in terms of risk. According to him, in developed countries, women tend to be more at risk of aversion, while in developing countries, there is no significant difference between women and men looking at risk. The reason it presents is that diverse cultures need to be further investigated.

Based on previous research, this study adds complexity to moderation variables. The moderation variable used in the study was gender. The subject of the study was a group of academic civitas in college. The research aims to dissect the influence and interaction between overconfidence and risk aversion with gender in determining investment decisions.

2. HYPOTHESES DEVELOPMENT

Investments are made to achieve maximum returns in the future field (Smart et al., 2017). Market turmoil that often changes the research results in behavioral finance mentions bias factors that influence market movements. Behavioral finance believes bias psychology plays a role in influencing investors in determining investment decisions (Nofsinger, 2018). Investors influenced by biased behavior often make mistakes when they make investments (Zahera & Bansal, 2018).

The research in this article selects psychological bias factors in impacting investors in determining decisions in investing. The selection of the factor bias overconfidence to be the free variable studied. Overconfidence is the most dominant factor bias in influencing investment decisions (Costa et al., 2017). An investor who overconfidence is an investor feels he has more competence in the field involved (Wang & Zhou, 2017). At the time of determining the decision, investors who are overconfidence will make decisions not based on the situation but because they feel able and confident in their competence (Moore &Schatz, 2017). A positive overconfident attitude results in investment decisions that are favorable to investors, conversely the resulting investment decisions will cause losses that may lead to bankruptcy (Kumar & Goyal, 2016); (Supramono & Wandita, 2017).

Risk factors are one of the considerations in investment decisions (Smart et al., 2017). Some investors are seen as something to avoid (M. Huang, 2018). The behavior of investors in avoiding risk in choosing the investment alternative to be chosen can have an influence on the investment decisions (Ousman Abani et al., 2018). Previous research has stated that avoidance of risk is one factor that can give color to investor behavior in determining investment decisions (Mumtaz et al., 2018); (Lilleholt, 2019).

Investors calculate risk averse behavior by looking at the various alternatives available in investment options (O'Donoghue &Somerville, 2018). This behavior considers risk is a factor that will reduce the return on investment received (Smart et al., 2017).

The research adds to the demography factor in the research model being tested, moderation variables sharpen free variables in controlling bound variables (Cozby & Bates, 2018). The use of this moderation factor provides complexity in research. By using the moderation factor the research further sharpens the influence on bound variables (Kumar & Goyal, 2016); (Chavali, K. and Mohanraj, 2016).

Gender is used as a moderation variable with the aim of sharpening the influence of the free variables studied (Morsy, 2020). Gender differences influence actions over the risks faced in determining investment decisions (M. Huang, 2018). Gender differences occur in risk aversion behavior in determining investment decisions (L. Bogan et al., 2013). Overconfidence occurs in gender differences. Gender differences indicate different overconfidence behaviors in determining investment decisions (Hokky, 2018).

The hypothesis tested in the study is whether there is an influence and interaction between overconfidence, risk aversion, and gender to investment decisions.

3. METHOD, DATA, AND ANALYSIS

The research method is quantitative research with Moderation Regression Analysis (MRA). This MRA method is used because it is very simple and can indicate the exist or absence of interaction between independent variables and moderation against bound variables (Hayes, 2018).

Primary data is collected using online google questionnaires. Questionnaires contained questions related to independent variables studied, namely overconfidence and risk aversion. Answers are provided using the interval scale. For the most satisfactory answer provided the number 5 is very agreeable, while for the low answer provided the number 1 is disapproval.

The question indicator provided for variable overconfidence is six (6), while the question indicator provided for variable risk aversion is five (5), So that the regression equation of these variables is as follows:

Table 1. Regression Model

Multiple Regression Equations independent variables against dependent variables
$Y = a + b1X1 + b2X2 \ldots\ldots 1$
Description: Y = Investment decision, X1 = variable Risk Aversion, X2 = variable Overconfidence
Free variable regression equation with variable moderation against bound variable
$Y = a + b1X1 + b3X1W1 \ldots\ldots 1$
$Y = a + b2X2 + b5X2W1 \ldots\ldots 2$
Description: Y = Investment decision, X1 = variable Risk Aversion, X2 = variable Overconfidence
W1 = Variable of Gender Moderation,

Then the questionnaire was disseminated to respondents through the WhatsApp group in the academic community of Singaperbangsa Karawang University. Respondents have made investments with various types of assets selected. Data retrieval technique by random sampling according to available data and has filled out questionnaires properly and correctly. Respondents who filled out the questionnaire properly and correctly amounted to 161 respondents.

4. RESULTS

This research data was processed by employing regression moderation analysis. The statistical test showing the results is as follows:

Multicollinearity Test

Coefficient value shows a value of 14.2% is still below 95% which means, the data tested there is no multicollinearity. It is then reinforced with VIF 1.02 data that is smaller than 10 which confirms that the test variable data is free from multicollinearity.

Autocorrelation Test

The autocorrelation test showed Durbin Watson's 2.138, which is greater than the threshold of 1.76, meaning that the variable data tested did not have autocorrelation.

Heteroskedasticity Test

Heteroskedasticity test results showed numbers of more than 5% consisting of 0.106 and 0.591, meaning there was no heteroskedasticity in the variable data tested.

Normality Test

The normality test proved that the data varies overconfidence is 0.111, and the variable risk aversion data is .081 is the second variable distributed normally because the value is above 5%. As for variable investment decisions, the value of 0.00 means significant. Data is not normally distributed. To overcome this, transformation and data can be distributed normally with a value of 0.146 which is greater than 5% and means that the data has been distributed normally.

Systematically all series of tests are summarized in the table below:

Table 2. Classic Assumption Test

Data Test	Criteria	Result	Note
Mutlicorrelation	< 95 %	14.2 %	Good
Autocorrelation	> 1.76	2,138	Good
Heteroskedasticity	> 5 %	0.106 and 0.591	Good
Normality	> 5 %	0.111 and 0.081	Good

Sources: data processed

Hypotheses Testing

The purpose of the study was to determine the influence and interaction between risk aversion (X1) and overconfidence(X2) on investment decisions, with variables of gender moderation (W1) in determining investment decisions (Y). So, the frame of mind of the hypothesis carried out in this study is described as follows:

- 1 a and 2 a, there is an effect of x1 and x2 in determining investment decisions.
- 3 a and 3 b, there are variables of gender moderation and income levels alongside variables X1 and X2 in sharpening the influence in determining Y.

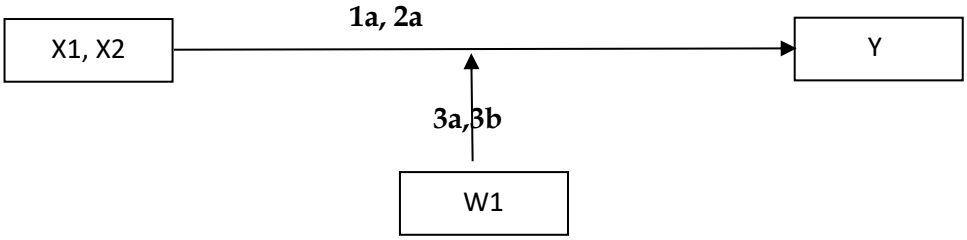

Figure 1. Framework hypothesis

The classical assumption has been exceeded, then the data is processed by regreing the free variable consisting of overconfidence and risk aversion. Next, tested the interaction

of variable overconfidence and risk aversion with gender using SPSS, i.e. process v 3.5 (Hayes, 2018)

Summary of the results in table 3 depicted the results of variable tests in this study found that the data used was able to explain information by 38.8%. The rest there are other factors beyond variables in the study. Simultaneous regression models display a value of 0.00 below the p-value of 5%, which means variable overconfidence and risk aversion influence investment decisions. The probability value yield of each variable shows risk aversion worth 0.003 and overconfidence show 0.000, meaning that each of these shows both free variables, namely risk aversion and overconfidence, has an influence on investment decisions, answering hypothesis 1a and 2a.

Coefficient results of variable interaction X1. M1 is worth -0.7604, the variable moderation interaction test with free variables explained that variable risk aversion (X1) with (W1) indicates a probability value of 0.0042. This value is < 5%, meaning there is an interaction between risk aversion and gender in this study. Gender has the effect of sharpening the influence of risk aversion in determining decisions. The effect of gender differences weakens risk averse behaviors affecting investment decisions, answering hypothesis 3a.

The coefficient of variable overconfidence (X2) and gender (W1) interaction is positive 0.3981. The probabilities value indicates 0.17. This value is >5%, meaning that there is no interaction between overconfidence and variable moderation; in this case, it is gender positively in determining investment decisions, proving the result of hypothesis 3b.

Table 3. Moderated Regression Analysis

Model Fit and Quality	**Indices**	**Coefficient**	**Criteria**	**Result**	**Note**
R squared	More than 20%			38.8 %	Good
Annova			Sign < 5%	0.000	Good
Risk Aversion (X1)			< 5%	0.003	Significant
Overconfidence (X2)			< 5%	0.000	Significant
Interaction X1. M1	-0.7604		< 5%	0.0042	Significant
Interaction X2. M1	0.3981		< 5%	0.17	No Significant

Data: source processed

The data explains that simultaneously and partially, the two independent variables, overconfidence and risk aversion, direct investment decisions. Research shows that the interaction only occurs between gender and risk aversion negatively significantly sharpens the influence of decision-making. Meanwhile, there is no interaction between overconfidence and gender, meaning that gender does not sharpen the influence of overconfidence in influencing investment decisions.

So investors need to be more attentive and careful in maintaining the psychological factor of the two biased variables that have been proven in this study to have a positive partial and simultaneous influence in determining investment decisions.

5. DISCUSSION

The model in the study was to test the influence of variable overconfidence and risk aversion on investment decisions. To add complexity to the study, a moderation variable consisted of gender. Biased behavior is one of the consideration factors in contributing to

investors in determining investment decisions (Nofsinger, 2018). Although all information and data are available in certain situations, bias factors remain in investors because of psychological factors . This condition triggers the development of financial behavior theory to grow and develop and become land that still needs to be explored in various forms of research in the world of finance (Zahera & Bansal, 2018).

The results of the study in this article show that simultaneously and partially each variable, overconfidence and risk aversion exert an influence on investment decisions. This proves that the theory states that bias factors influence investment decisions. Some previous studies are in line with the research by (Kumar & Goyal, 2016); (Shukla et al., 2020).

The results of research in this article are also in line with the results of research (Waiqotul, 2017) in the study explaining that investment decisions are influenced by factor bias overconfidence. Variable overconfidence is a biased behavior that has an impact with a variety of contributions in determining investment decisions. According to, overconfidence causes investor make decisions correctly.

(Moore & Schatz, 2017) Explaining overconfidence leads to overestimate to the actual situation, overreplacement i.e. feeling better than others, overprovision, i.e. belief in truth more than others. As a result of overconfidence, investors become excessive transaction activities (Yang &Zhu, 2016).

Overconfidence also often ignores the risks that may occur because they feel they have similar experiences and competence to overcome problems (Bouteska &Regaieg, 2018). Overconfidence also effects on high-income individuals (Apergis, 2021). According to Pikulina et al. (2017) excessive overconfidence triggers excessive investment, weak overconfidence has a low investment impact, moderate overconfidence, and proportional investment. Overconfidence feels that he has the ability and experience that is expected to be able to make the expected contribution in determining promising investment decisions in the future (Moore &Schatz, 2017). Overconfidence triggers irrational behavior that influences non-optimal investment decisions (Sari &Nugraha, 2016). In contrast to the results of the study (Ghasemya & Ebrahimb, 2015) found that overconfidence is insignificant and does not interact with gender in influencing investment decisions.

Investments need to consider risk (Smart et al., 2017). A cautious attitude towards risk makes some risk-averse investors are investors who risk aversion. (M. Huang, 2018). Different opinions state the risk can be attractive and provide a high return on investment. (Bi & Cai, 2019) risk aversion behavior exerts influence in determining investment decisions, in line with the results of research (Ousman Abani et al., 2018).

(O'Donoghue & Somerville, 2018) Risk aversion has a non-optimal effect on investment decisions. Our results in line with (Hibbert et al., 2013) found that there are gender differences in risk aversion attitudes. (L. Bogan et al., 2013) found that men are more risk-taker than women. In contrast to the results of the study, (Nur Aini & Lutfi, 2019) stated that their results did not find a significant effect of risk aversion on investment decisions.

(Aren & Nayman Hamamci, 2020) Their findings suggest that risk aversion triggered by neuroticism and openness influences investment decisions. (Michailova et al., 2017) stated that trade performance is influenced by overconfidence in women, and risk aversion does not affect investment decisions. Hillesland (2019) explains the results of research in developing countries are different from countries regarding gender in terms

of risk. According to him, in developed countries, women tend to be more at risk of aversion. In contrast, there is no significant difference between women and men looking at risk in developing countries. The reason it presents is that diverse cultures need to be investigated further.

6. CONCLUSION AND LIMITATION

Behavioral financial describes irrational investors occur due to cognitive bias factors. Although data and information in the market is fully available but in fact cognitive factors play a role in affecting investment decisions.

The results of this study have proven that the behavior of overconfidence and risk aversion has an impact on investment decisions made by investors. Another finding was that there was an impact between the gender and risk aversion behavior in determining investment decisions. The results of this study need to be of concern in determining decisions for individual investors. Errors in determining decisions will give the results that are not maximal even bankruptcy.

Research in the field of finance is still very broad, it takes a long journey to make an even greater contribution. Cost behavior cannot yet explain how income and price are determined because of bias, but studying behavioral finance can provide a discourse for investors to drain irrational behavior that influences in determining decisions. So that by being able to overcome irrational behavior is able to reduce adverse effects in the future. Investors pay more attention to the situation, information and financial data in studying the world of investment. Continue to increase financial and investment knowledge by diligently studying so that they are able to plunge in the world of diverse investments according to the needs of investors.

The behavioral complexity of each individual is very diverse. Future research needs to add a variety of mediation variables or moderation in increasing complexity in building research frameworks, such as ethnicity, race, and so on.

This research has the limitation of not being able to provide more detailed information from each variable. And also, the sample used in this study is limited to investors who are within the Singaperbangsa Karawang University. Hopefully in the future this will be a trigger to do further research.

REFERENCES

Abdeldayem, M.M., & Sedeek, D. S. (2018). Managerial behavior and capital structure decisions; do overconfidence, optimism and risk aversion matter? *Asian Economic and Financial Review*,*8*(7), 925–945. https://doi.org/10.18488/journal.aefr.2018.87.925.945

Addinpujoartanto, N. A., & Darmawan, S. (2020). The Influence of Overconfidence, Regret Aversion, Loss Aversion, and Herding Bias Against Investment Decisions in Indonesia. *Journal of Economic and Business Research, 13*(3), 175–187.

Apergis, N. (2021). Overconfidence and US stock market returns. *Finance Research Letters*, 102186. https://doi.org/https://doi.org/10.1016/j.frl.2021.102186

Aren, S., & Nayman Hamamci, H. (2020). Relationship between risk aversion, risky investment intention, investment choices. *Kybernetes*, *49*(11), 2651–2682. https://doi.org/10.1108/K-07-2019-0455

Arifin, Z., & Soleha, E. (2019). Overconfidence , Attitude Toward Risk , and Financial Literacy : A Case in Indonesia Stock Exchange. *Review of Integrative Business and EconomicsResearch*,*8*(4),6722. https://sibresearch.org/uploads/3/4/0/9/34097180/riber_8-s4_10_k19-110_144-152.pdf

Bi, J., & Cai, J. (2019). Optimal investment–reinsurance strategies with state dependent risk aversion and VaR constraints in correlated markets. *Insurance: Mathematics and Economics*, *85*,1–14. https://doi.org/https://doi.org/10.1016/j.insmatheco.2018.11.007

Bouteska, A., & Regaieg, B. (2018). Loss aversion, overconfidence of investors and their impact on market performance evidence from the US stock markets. *Journal of Economics, Finance and Administrative Science*. https://doi.org/10.1108/jefas-07-2017-0081

Chavali, K. and Mohanraj, M. . (2016). "Impact of demographic variables and risk tolerance on investment decisions: an empirical analysis",. *International Journal of Economics and Financial Issues*, *Vol. 6 No.* , 169-175.

Costa, D. F., de Melo Carvalho, F., de Melo Moreira, B.C., & do Prado, J. W. (2017). Bibliometric analysis on the association between behavioral finance and decision making with cognitive biases such as overconfidence, anchoring effect and confirmation bias. *Scientometrics,111*(3), 1775–1799. https://doi.org/10.1007/s11192-017-2371-5

Cozby, P.C., & Bates, S.C. (2018). *Methods in Behavioral Research* (THIRTEENTH). McGraw-Hill Education, 2 Penn Plaza, New York, NY 10121.

Dervishaj, B. (2018). Psychological Biases, Main Factors of Financial Behaviour - A Literature Review. *European Journal of Natural Sciences and Medicine, 1*(2), 25. https://doi.org/10.26417/ejnm.v1i2.p25-35

Ghasemya, A. A., & Ebrahimb, A. (2015). The Effect of Gender; Age and Educational Level on Overconfidence and Lo. *Asian Journal of Research in Marketing*, *4*(3), 75–85.

Hayes, A. F. (2018). Introduction to Mediation , Moderation , and Conditional Process Analysis Findings In addition .... In *the Guilford Press* (Issue March).

Hibbert, A.M., Lawrence, E. R., & Prakash, A. J. (2013). Does knowledge of finance mitigate the gender difference in financial risk-aversion? *Global Finance Journal*, *24*(2), 140–152. https://doi.org/https://doi.org/10.1016/j.gfj.2013.07.002

Hillesland, M. (2019). Gender differences in risk behavior: An analysis of asset allocation decisions in Ghana. *World Development*, *117*, 127–137. https://doi.org/https://doi.org/10.1016/j.worlddev.2019.01.001

Hokky, G. (2018). *The effect of behavioral finance and demographic factors on investment decisions*. Widya Mandala Catholic University Surabaya.

Huang, J. Y., Shieh, J.C. P., & Kao, Y.C. (2016). Starting points for a new researcher in behavioral finance. *International Journal of Managerial Finance*, *12*(1), 92–103. https://doi.org/10.1108/IJMF-05-2015-0111

Huang, M. (2018). Time-varying diversification strategies: The roles of state-level housing assets in optimal portfolios. *International Review of Economics and Finance*. https://doi.org/10.1016/j.iref.2018.02.001

Katper, N. K., Azam, M., Karim, N. A., & Zia, S. Z. (2019). Behavioral biases and investors' decision-making: The moderating role of socio-demographic variables. *International Journal of Financial Engineering, 06*(03), 1950020. https://doi.org/10.1142/s2424786319500208

Kumar, S., & Goyal, N. (2016). Evidence on rationality and behavioural biases in investment decision making. *Qualitative Research in Financial Markets*, *8*(4), 270–287. https://doi.org/10.1108/QRFM-05-2016-0016

L. Bogan, V., R. Just, D., & S. Dev, C. (2013). Team gender diversity and investment decision-making behavior. *Review of Behavioral Finance*, *5*(2), 134–152. https://doi.org/10.1108/RBF-04-2012-0003

Lilleholt, L. (2019). Cognitive ability and risk aversion: A systematic review and meta analysis. *Judgment and Decision Making*, *14*(3), 234–279.

Michailova, J., Mačiulis, A., & Tvaronavičienė, M. (2017). Overconfidence, risk aversion and individual financial decisions in experimental asset markets. *Economic Research-EkonomskaIstrazivanja,30*(1),1119–1131. https://doi.org/10.1080/1331677X.2017.1311234

Moore, D. A., & Schatz, D. (2017). The three faces of overconfidence. *Social and Personality Psychology Compass, 11*(8), 1–14. https://doi.org/10.1111/spc3.12331

Morsy, H. (2020). Access to finance – Mind the gender gap. *The Quarterly Review of Economics and Finance*. https://doi.org/https://doi.org/10.1016/j.qref.2020.02.005

Mumtaz, A., Saeed, T., & Ramzan, M. (2018). Factors affecting investment decision-making in Pakistan stock exchange. *International Journal of Financial Engineering, 5*(04), 1850033.

Nofsinger, J. R. (2018). The Psychology of Investing. In *The Psychology of Investing* (Sixth Edit). Taylor and Francis. https://doi.org/10.4324/9781315506579

Nugraha. (2021). EPISTIMOLOGY OF FINANCIAL MANAGEMENT IN THE PROCESS OF BUILDING SPEECH FINANCIAL LITERACY. *Great Teacher's Inaugural Address,*1–78.

Nur Aini, N. S., & Lutfi, L. (2019). The influence of risk perception, risk tolerance, overconfidence, and loss aversion towards investment decision making. *Journal of Economics, Business & Accountancy Ventura*, *21*(3), 401. https://doi.org/10.14414/jebav.v21i3.1663

O'Donoghue, T., & Somerville, J. (2018). Modeling Risk Aversion in Economics. *Journal of Economic Perspectives*, *32*(2), 91–114. https://doi.org/10.1257/jep.32.2.91

Ousman Abani, A., Hary, N., Rious, V., & Saguan, M. (2018). The impact of investors' risk aversion on the performances of capacity remuneration mechanisms. *Energy Policy*, *112*, 84–97. https://doi.org/https://doi.org/10.1016/j.enpol.2017.10.008

Pertiwi, T. K., Yuniningsih, Y., & Anwar, M. (2019). The biased factors of investor's behavior in stock exchange trading. *Management Science Letters*, *9*(6), 835–842. https://doi.org/10.5267/j.msl.2019.3.005

Pikulina, E., Renneboog, L., & Tobler, P. N. (2017). Overconfidence and investment: An experimental approach. *Journal of Corporate Finance*, *43*,175–192. https://doi.org/10.1016/j.jcorpfin.2017.01.002

Ramiah, V., Xu, X., & Moosa, I. A. (2015). Neoclassical finance, behavioral finance and noise traders: A review and assessment of the literature. *International Review of Financial Analysis, 41,*89–100. https://doi.org/10.1016/j.irfa.2015.05.021

Rossi, M., & Gunardi, A. (2018). Efficient market hypothesis and stock market anomalies: Empirical evidence in four European countries. *Journal of Applied Business Research, 34*(1), 183–192. https://doi.org/10.19030/jabr.v34i1.10111

Sari, M., & Nugraha, N. (2016). *Cognitive Bias and Risk Preferences Analysis of Ponzi Scheme Investors*. *15,*134–137. https://doi.org/10.2991/gcbme-16.2016.23

Shukla, A., Rushdi, N. J., & Katiyar, R.C. (2020). Impact of behavioral biases on investment decisions 'a systematic review.' *International Journal of Management, 11*(4), 68–76. https://doi.org/10.34218/IJM.11.4.2020.009

Smart, S.B., Gitman, L. J., & Joenk, M.D. (2017). Fundamentals of Investing. In 13th Edition (Ed.), *The Journal of Finance* (Vol. 32, Issue 1). Pearson. https://doi.org/10.2307/2326926

Supramono, S., & Wandita, M. (2017). Confirmation Bias, Self-Attribution Bias, and Overconfidence in Stock Transactions. *Journal of Finance and Banking, 21*(1), 25–36. https://doi.org/10.26905/jkdp.v21i1.1224

Valcanover, V.M., Sonza, I.B., & da Silva, W. V. (2020). Behavioral Finance Experiments: A Recent Systematic Literature Review. *SAGE Open*, *10*(4). https://doi.org/10.1177/2158244020969672

Venezia, I., & Statman, M. (2019). A Second Generation Behavioral Finance. *Behavioral Finance*, 3–21. https://doi.org/10.1142/9789813279469_0001

Waiqotul, J. (2017). FUNDAMENTAL ANALYSIS, INTEREST RATES, AND OVERCONFIDENCE OF INVESTMENT DECISION MAKING IN INVESTORS IN SURABAYA. *Expectant: Journal of Business and Management, Vol 1,*(No. 2). https://doi.org/http://dx.doi.org/10.25139/ekt.v0i0.338.

Wang, Y., & Zhou, Y. (2017). The role of managers' overconfidence on the irrational investment. *14th International Conference on Services Systems and Services Management, ICSSSM 2017 - Proceedings*. https://doi.org/10.1109/ICSSSM.2017.7996241

Yang, X., & Zhu, L. (2016). Ambiguity vs risk: An experimental study of overconfidence, gender and trading activity. *Journal of Behavioral and Experimental Finance*, *9*, 125–131. https://doi.org/https://doi.org/10.1016/j.jbef.2016.01.003

Zahera, S. A., & Bansal, R. (2018). Do investors exhibit behavioral biases in investment decision making? A systematic review. *Qualitative Research in Financial Markets*, *10*(2), 210–251. https://doi.org/10.1108/QRFM-04-2017-0028

Zahera, S. A., & Bansal, R. (2019). A study of prominence for disposition effect: a systematic review. *Qualitative Research in Financial Markets*, *11*(1), 2–21. https://doi.org/10.1108/QRFM-07-2018-0081