Financial Literacy, Risk Tolerance, Overconfidence, Experienced Regret, and Demographic Factors on Investment Decisions

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Abstract

According to data released by the Indonesian Central Securities Depository (KSEI) in 2018-Sep 2021 there was an increase in Single Investor Identification on the capital market in Indonesia. This shows that the interest and awareness of investing is getting higher. Investment decisions must be made appropriately to avoid the risk of loss. This study aims to determine the effect of financial literacy, risk tolerance, overconfidence, experienced regret, gender, and income on investment decisions. The sample in this study was taken using a non-probability sampling method with purposive sampling technique and obtained as many as 129 investors respondents with domicile in Yogyakarta. Data were analyzed using multiple linear regression analysis. Data collection techniques by distributing questionnaires in the form of google form. The results of this study show that financial literacy, risk tolerance, overconfidence, and income have a significant positive effect on investors' investment decisions in Yogyakarta. Experienced regret has a significant negative effect on investment decisions. Gender has no effect on investment decisions.

Keywords: financial literacy, risk tolerance, overconfidence, experienced regret, income, gender, investment decision

1. Introduction

Along with the development of the era that is growing from all aspects such as aspects of technology, information, communication, to fashion, the needs of individuals from time to time are getting bigger as well. These developments cause the cost of living to increase so that individuals are required to earn income to meet their needs in the present and in the future. Over time, individuals will experience retirement where they can no longer work to earn income. Therefore, financial knowledge and the ability to manage finances are important for every individual so that they do not experience difficulties in achieving financial prosperity and do not bear financial risks in the future. One of the things that individuals can do to manage their finances can be realized through investment. Investment activity is an activity full of uncertainty. With this uncertainty, the shadow of the risk of loss is present in investment activities. Therefore, investment activities need to be accompanied by proper planning and knowledge in order to minimize investment losses.

Based on the Indonesian Capital Market Statistics data in 2021 issued by the Indonesian Central Securities Depository (KSEI), from year to year there has been an increase in the number of Single Investor Identification (SID) in the capital market in Indonesia. In addition, data from the Indonesian Capital Market Statistics per September 2021, investors in Indonesia are still dominated by men at 62.43%. The growth in the number of SID indicates that the interest and awareness of the people in Indonesia to invest has increased. However, along with this increase, some people have used it to offer fraudulent investments instead of offering high returns. Therefore, investment activities need to be accompanied by proper planning and thorough knowledge to minimize losses in investing.

Figure 1: Number and Growth of investors in Indonesia

Financial literacy is an understanding needed by investors because knowledge of financial literacy has an important role in making investment decisions. According to OJK (2020) financial literacy is knowledge, skills, and belief in someone that influences attitudes and behavior to improve the quality of decision making and financial management in order to achieve prosperity. According to the National Survey of Financial Literacy and Inclusion conducted by OJK in 2019, the financial literacy index in Indonesia was quite low at 38.03% while the financial inclusion index was 76.19%.

Profits and risks are inherent in investing activities so that investors do not only focus on getting high profits but also think about the risks they face. Risk tolerance is defined as the ability possessed by investors to accept an investment risk (Budiarto & Susanti, 2017). In dealing with these risks, one investor to another has different levels of tolerating each risk.

Investment decision making from time to time also involves psychological factors where an investor does not always think rationally and is not based on standard financial theory. Conditions of uncertainty in investing activities can cause bias that occurs in investors as well as psychological conditions that can affect a person's choice (Budiarto & Susanti, 2017). According to Pompian (2006) bias is divided into two, namely cognitive bias and emotional bias. Emotional bias consists of loss aversion bias, regret aversion bias, and status quo bias. According to Yohnson (2008) regret aversion can be divided into two, namely experienced regret and anticipated regret. While cognitive bias, for example overconfidence.

Overconfidence is defined as a feeling of overconfidence owned by individuals related to their abilities and knowledge about investment. An investor who has a high level of overconfidence will exaggerate their ability to evaluate a company as a potential investment (Pompian, 2006). With this situation, investors reject negative information such as investors should not buy shares.

Investment activities certainly provide a different experience for every investor. This experience plays a role in making investment decisions. Experienced regret is a feeling of regret caused by past mistakes in decision making so that it has an impact on future decisions (Wulandari & Irmani, 2014). According to Pompian (2006) individuals who experience remorse try to avoid two types of mistakes, namely commission errors and negligence errors.

Demographic factors are also present in determining investment decisions. According to Robb and Sharpe (2009) in (Putri & Hamidi, 2019) demographic factors are the study of the characteristics, attitudes, and behaviors of a person who are affected by several factors such as gender, educational status, and income. According to Jamil and Khan (2016) male investors tend to be more willing to face risks in investing. Meanwhile, female investors tend to be more accurate and careful in making investments (Rahadjeng, 2011).

Income is of course also a factor to achieve social welfare. Whether individuals with small or large incomes, investment is necessary for every individual. Regardless of the level of individual income without being accompanied by knowledge and good financial management, financial well-being will be difficult to achieve (Atmaningrum et al., 2021)

2. Theoretical Review and Hypotheses

Behavioral Finance Theory

Behavioral finance is a science that studies a person's psychological and sociological factors in influencing individual, group, and entity financial decision making (Ricciardi & Simon, 2000). In research conducted by Statman (1995) regarding financial behavior, financial decision making which includes risk assessment and the way investors process information or frame information is influenced by investor behavior and psychology. Their behavior is often irrational, but it is something normal. Behavioral finance is an approach to the psychological influence of a person in investment decisions or activities related to finance (Arianti, 2018). According to Isbanah & Pradikasari (2018) the psychological influence of investors has an effect on irrational actions.

Standard Finance Theory

Standard financial theory is opposite to behavioral financial theory. According to Ricciardi & Simon (2000) on standard financial theory, investment decision making ignores psychological factors. Investors are considered as rational beings and have the knowledge to make investment decisions, but in reality, some investors have limited knowledge (Rahman & Gan, 2018). According to Ariani, etc. (2016) in Fridana & Assandimitra (2020) a rational attitude in making investment decisions can be reflected in his decisions based on financial literacy.

Investation decision

Investment decisions are policies taken by investors to get profits in the future after they have made several considerations or alternatives (Budiarto & Susanti, 2017). Investment decision making is based on two attitudes, namely rational and irrational (Hikmah et al., 2020). This rational attitude can be reflected through healthy thinking and can be accepted by others. Investment decision making based on financial understanding or financial literacy is a form that investors have a rational attitude. While irrational attitudes, investment decisions are motivated by unhealthy thinking and sometimes cannot be accepted by others. This irrational attitude is based on demographic factors and psychological factors (Hikmah et al., 2020). Investment decision making has three basics, namely the level of return, risk, and the relationship between return and risk (Putri & Hamidi, 2019).

Financial Literacy and Investment Decision

Good financial literacy can give birth to good financial planning for the future (Putra et al., 2016). Good financial literacy will minimize the emergence of financial problems or difficulties in the future. Financial difficulties are not only related to low income but also errors in managing finances will lead to problems such as not having financial planning and negligence in using credit cards (Mandagie et al., 2020). Budiarto & Susanti (2017) define financial literacy as knowledge of basic financial concepts and knowledge of financial products where it is useful for making effective decisions to achieve financial prosperity in the future. The higher the level of financial literacy you have, the more courageous you will be in making investment decisions. Someone who has good literacy will know better and minimize the risks they face (Wardani & Lutfi, 2019)

Research conducted by Fridana & Assandimitra (2020) shows that financial literacy has a positive effect on investment decisions for female students in Surabaya. These results are supported by Suprasta, et.al (2020) research. Based on the description above, the hypothesis in this study:

H_1: Financial literacy has a positive effect on investment decisions

Risk Tolerance and Investment Decision

Risk tolerance is the level of ability possessed by investors in accepting investment risk (Hamka et al., 2020). According to Pujiyanto & Mahastanti (2013) risk tolerance is another indicator in making investment decisions. Risk tolerance is a negative impact in the form of an acceptable risk and investors dare to take that risk to achieve their goals (Adielyani & Mawardi, 2020). Investors who have a high-risk tolerance will prefer high-risk instruments and with the hope of obtaining high profits (Wardani & Lutfi, 2019). Meanwhile, investors with a low level of tolerance in choosing investment instruments tend to be careful because they are afraid of high risk even though on the other hand, they also offer high returns.

Research conducted by Wulandari & Irmani (2014) resulted in risk tolerance having a positive effect on investment decisions. The same finding was found in the study of Fridana & Assandimitra (2020). Based on the description above, the hypothesis in this study:

H_2: Risk tolerance has a positive effect on investment decisions

Overconfidence and Investment Decision

Overconfidence is a bias towards situations where someone believes and thinks that their abilities are greater than their actual abilities (Rahman & Gan, 2018). Overconfidence can lead to overestimating their abilities and underestimating their predictions (Wulandari & Irmani, 2014). Individuals with overconfidence think their income is a reasonable opinion and consider other people's opinions as illogical and unreasonable opinions. They also do not think about the level of risk and make transactions or trade excessively (Gill et al., 2018).

According to Budiarto & Susanti (2017) investors with low levels of overconfidence are more careful in making investment decisions, while investors with high levels of overconfidence tend to be bolder in making investment decisions. Research conducted by Adielyani & Mawardi (2020) shows that overconfidence has a positive effect on stock investment decisions for millennial investors in Semarang. Similar results were found in research (Hamka et al., 2020). Based on the description above, the following hypothesis is obtained:

H_3: Overconfidence has a positive effect on investment decisions

Experienced Regret and Investment Decision

Experienced Regret is a regret that arises because of investors' mistakes in the past that affect investment decisions in the future (Wulandari & Irmani, 2014). In conditions of uncertainty, a person's feelings of regret affect decision making (Pompian, 2006). According to Wardani & Lutfi (2019), someone who has had a bad experience in investing tends to be careful in choosing investments and prefers low-risk investments. Meanwhile, someone who has a positive experience in investing will prefer investments with high risk and with a certain rate of return. Research conducted by (Suprasta & Mn, 2020) experienced a negative effect on investment decisions. Based on the description above, the following hypothesis is obtained:

H_4: Experienced regret has a negative effect on investment decisions

Gender and Investment Decision

Both men and women have different special conditions, these differences can be seen from the physical, biological, and psychological aspects (Rahadjeng, 2011). Arti & Sunita (2011) in their research on behavioral differences between men and women in investment decisions. As a result, male investors are more aware than investment, female investors are less confident in investment decisions so that the satisfaction obtained is also low and female investors are more careful in making stock investment decisions, especially if there are few investment funds available. Fitria, etc. (2019) conducted research, the results showed that demographic factors consisting of gender, age, educational background, income, education level, and occupation had a significant effect on the investment decisions of the millennial generation in Bandung. Based on the description above, the following hypothesis is obtained:

H_5: Gender has a significant effect on Investment Decisions

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Income and Investment Decision

According to Dea (2017) in Putri & Hamidi (2019) income is the result obtained for the sacrifices made by someone in the form of material so that their needs are fulfilled, with this income, decision making will be easier by diverting some of their income to invest. The level of income owned by individuals has a role in investment planning where it is adjusted to their income (Atmaningrum et al., 2021). From this statement, it can be said that individuals with higher incomes tend to invest in larger amounts and have more opportunities than individuals with lower incomes. Research conducted by Fitrial, etc. (2019) shows that income has an effect on investment decisions. Based on the description above, the hypothesis in this study:

H_6: Income has a positive effect on investment decisions

3. Method

Population and Sample

The population in this study are investors who are domiciled in Yogyakarta. According to Sugiyono (2013), if the population is large, it is impossible for researchers to study all of these populations due to limited funds, manpower and time, so that researchers can use samples taken from that population (Sugiyono, 2013). Sampling using non-probability sampling method with purposive sampling technique. The sample size was calculated using the formula and obtained a minimum sample of 96 respondents. However, the number of samples that were collected by researchers was 129 respondents.

Data and Data Collection Techniques

This research is a quantitative research method. In this study, data collection was carried out through a questionnaire technique. Questionnaire is a technique used to collect data by giving questions or statements to respondents to be answered (Sugiyono, 2013). Researchers distributed questionnaires addressed to investors in Yogyakarta in the form of google forms which were distributed online.

Variables definition and indicators

In this study, the researcher used six independent variables including financial literacy, risk tolerance, overconfidence, experienced regret, gender and income and used one dependent variable, namely investment decisions. The following is a definition of each variable and its indicators:

Table 1: Research variable and Indicators

VARIABLE	VARIABLE DEFINITION	INDICATOR
FINANCIAL LITERATION (FLI)	Financial literacy is knowledge of basic financial concepts and knowledge of financial products where it is useful for making effective decisions in order to achieve financial prosperity in the future (Budiarto & Susanti, 2017)	*1) GENERAL KNOWLEDGE OF FINANCE 2) DEPOSITS AND LOANS 3) INSURANCE 4) INVESTMENT (CHEN & VOLPE, 1998)*
RISK TOLERANCE (RTO)	Risk tolerance is the level of ability possessed by investors in accepting investment risk (Hamka et al., 2020)	*1) WILLINGNESS TO INVEST AT HIGH, MODERATE OR LOW RISK 2) PREFERRED TYPE OF INVESTMENT 3) PERCENTAGE ON INVESTMENT ASSET PORTFOLIO (WARDANI & LUTFI, 2019)*
OVERCON-FIDENCE (OCF)	*OVERCONFIDENCE IS A BIAS IN INDIVIDUALS WHERE THEY BELIEVE AND ASSUME THAT THEIR ABILITIES ARE HIGHER THAN THEIR ACTUAL ABILITIES (RAHMAN & GAN, 2018)*	*1) HAVE FAITH IN THE SUCCESS OF THE PLAN 2) HAVE THE ABILITY TO PREDICT STOCKS CORRECTLY 3) HAVE THE ABILITY TO IDENTIFY FUTURE WINNING STOCKS 4) HAVE CONFIDENCE THAT INVESTMENT PERFORMANCE IS BETTER THAN THE AVERAGE OF OTHER INVESTORS 5) HAVE CONFIDENCE IN INVESTMENT SKILLS ABOVE THE AVERAGE OF OTHER INVESTORS 6) HAVE CONFIDENCE THAT INVESTMENT EXPERIENCE IS BETTER THAN OTHER INVESTORS 7) HAVE A BETTER KNOWLEDGE OF INVESTMENT INFORMATION THAN OTHER INVESTORS (KHAN ET AL., 2016)*
EXPERIENCED REGRET	*EXPERIENCED REGRET MERUPAKAN PENYESALAN PADA INDIVIDU YANG TERJADI*	*1) BAD EXPERIENCE WHEN INVESTING SO ONE IS*

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(ERE)	*KARENA PENGALAMAN BURUK DALAM BERINVESTASI YANG MEMPENGARUHI PENGAMBILAN KEPUTUSAN INVESTASI.*	*RELUCTANT TO REINVEST* *2) EXPERIENCE OF FRAUD IN INVESTING* *3) FEELINGS OF REGRET HAVING MADE AN INVESTMENT* *4) EXPERIENCE BIG LOSSES WHEN INVESTING* *(WARDANI & LUTFI, 2019)*
GENDER (GEN)	*GENDER IS THE DIVISION OF ROLES AND DUTIES OF MEN AND WOMEN WHO ARE DECIDED BY THE COMMUNITY BASED ON THE NATURE OF MEN AND WOMEN.*	*1) MALE* *2) FEMALE*
INCOME (INC)	*INCOME IS THE AMOUNT OF MONEY RECEIVED BY INDIVIDUALS FROM WORK OR MONEY EARNED FROM PARENTS*	*1) RP 1.000.000 TO RP 3.000.000* *2) RP 3.000.000 TO RP 5.000.000* *3) MORE THAN RP 5.000.000*
INVESTMEN DECISION (IND)	*INVESTMENT DECISIONS ARE POLICIES TAKEN BY INDIVIDUALS IN ORDER TO GAIN FUTURE PROFITS THROUGH PLACING FUNDS IN ONE OR VARIOUS INVESTMENT INSTRUMENTS.*	*1) RETURN ON INVESTMENT* *2) RISK* *3) THE TIME FACTOR* *(PUTRI & HAMIDI, 2019)*

Characteristics of Respondents

Respondents in this study were investors in Yogyakarta and obtained as many as 129 respondents spread over five districts in Yogyakarta. Respondents in this study were dominated by 72 (55.8%) male respondents and 57 (44.2%) female respondents with a majority income level of Rp. 1,000,000 to Rp. IDR 3,000,000 as much as 72 (55.8%). Income 3,000,000 s.d. Rp 5,000,000 as many as 23 respondents (17.8%) then more than Rp 5,000,000 as many as 34 respondents (26.4%).

Data analysis

This study uses Multiple Linear Regression Analysis because there are six independent variables of the study. The multiple linear regression model in this study is shown by the following equation:

$$IND = A + B_1FLI + B_2RTO + B_3OCF + B_4ERE + B_5GEN + B_6INC + \mathcal{E}$$

WHERE:

IND : INVESTMENT DECISION
A : CONSTANT
B_1-B_6 *: COEFICIENT OF REGRESSION*
FLI : FINANCIAL LITERACY
RTO : RISK TOLERANCE

OCF : *OVERCONFIDENCE*
ERE : *EXPERIENCED REGRET*
GEN : *GENDER*
INC : *INCOME*
$\mathcal{E}$: *ERROR TERM*

4. Results and Discussion

The results of hypothesis testing in this study can be seen in table 2. If a significance value <0.05 (α) is obtained, then the hypothesis is proven while if the significance value is > 0.05 (α) then the hypothesis is not proven. Tests were carried out using the SPSS Statistics 23 application.

Table 2: Hypotheses Test Result

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.899	.332		2.708	.008
	FLI	.397	.069	.341	5.734	.000
	RTO	.161	.047	.225	3.391	.001
	OCF	.254	.046	.332	5.550	.000
	ERE	-.076	.035	-.122	-2.173	.032
	GEN	-.002	.063	-.002	-.030	.976
	INC	.122	.041	.187	2.955	.004

a. Dependent Variable: IND

The influence of financial literacy on investment decisions

Based on table 2, financial literacy has a significance level of 0.000 which is smaller than the 0.05 significance level and with a coefficient of 0.347 which indicates a positive direction. From these tests, it can be concluded that H1 is accepted, which means that the financial literacy variable has a significant positive effect on investment decisions. The results of this study are supported by research conducted by Hikmah, etc. (2020) that financial literacy has a significant positive effect on investment decisions of the Batam people.

Respondents in the study were investors in Yogyakarta where aspects of financial literacy including general knowledge about finance, savings and loans, insurance and investment were familiar to them. The understanding and application of financial literacy by investors will produce the right investment decisions. However, financial literacy is not only related to its understanding but also to its implementation. The understanding and application of financial literacy by investors will produce mature investment decisions. Rational investors in making investment decisions based on financial literacy (Putra et al., 2016). The higher the quality of financial literacy owned by investors, the more appropriate investment decisions, such as how they allocate their funds and what kind of investments are feasible.

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Effect of risk tolerance on investment decisions

Based on table 2, risk tolerance has a significance level of 0.001 which is smaller than the 0.05 significance level and with a coefficient of 0.161 which indicates a positive direction. From this test, it can be concluded that H2 is accepted, which means the risk tolerance variable has a significant positive effect on investment decisions. The results of this study are in line with research conducted by Fridana & Assandimitra (2020) and Wardani & Lutfi (2019) which shows that risk tolerance has a positive effect on investment decisions.

In investing, one investor with other investors has the ability to accept different risks. Before making an investment decision, investors will certainly consider and evaluate what type of instrument they will choose. This is done in order to adjust their ability to accept risk. If investors have high risk tolerance or risk seekers, they will be more daring in making investment decisions. In addition, they tend to invest in risky and aggressive instruments so that a high level of risk tolerance will improve their investment decisions.

The effect of overconfidence on investment decisions

Based on table 2, overconfidence has a significance level of 0.000 which is smaller than the 0.05 significance level and with a coefficient of 0.254 which indicates a positive direction. From this test, it can be concluded that H3 is accepted, which means that overconfidence has a positive effect on investment decisions. These results are in line with research by Adielyani & Mawardi (2020), Budiarto & Susanti (2017) & Khan, etc. (2016) overconfidence has a positive effect on investment decisions.

This finding is in line with the behavioral finance theory that psychological and sociological conditions play a role in making individual, group and entity financial decisions. Individuals with high overconfidence will improve their investment decisions because they believe with the knowledge and abilities they have their investment plans will succeed. In addition, they also feel they have superior information.

Effect of experienced regret on investment decisions

Based on table 2, experienced regret has a significance value of 0.32 which is smaller than the 0.05 significance level and the coefficient of -0.76 shows a negative direction. So it can be concluded that H4 is accepted where experienced regret has a significant negative effect on investment decisions. This result is in line with the research of Suprasta, etc. (2020) where experienced regret has a negative effect on investment decisions.

According to Yohnson (2008) in Putra, etc. (2016) experienced regret is a bad experience that happens to someone that causes a person to experience regret or disappointment in making investment decisions or even accepting the risk of results from previous investment decisions. This finding is consistent with behavioral theory of finance where according to Statman (1995) financial decisions which consist of risk assessment and the way investors frame information are influenced by investor behavior and psychology. This bitter experience causes investors to experience regret, which causes them to be more careful in making investment decisions and may even discourage them from investing. In contrast, investors who have positive experiences will be better able to accept high risks and improve investment decisions.

The influence of gender on investment decisions

Based on table 2, gender has a significance value of 0.976 which is greater than the 0.05 significance level and the coefficient value is -0.02. From these results it can be concluded that H4 is rejected where the gender variable does not have a negative effect on investment decisions. In Putri & Hamidi's research (2019), gender does not influence the decision to invest.

Both men and women are certainly no stranger to investing. In an increasingly developing and modern era, both men and women have the same availability to access knowledge about investment. Investment is a necessity in the future regardless of gender to ensure their lives when they enter retirement. Rahadjeng (2011) explains that men and women have special differences in their physical, biological and psychological aspects. Female investors tend to be more careful in making investment decisions. However, gender does not determine individual decisions in investing, both men and women have the same potential and opportunities in making investment decisions.

Effect of income on investment decisions

Based on table 2, income has a significance value of 0.04 which is smaller than the 0.05 significance level and the coefficient value is 0.122 which indicates a positive direction. Then H5 is accepted where the income variable has a significant positive effect on investment decisions. This result is in the same direction as Fitria, etc. (2019) and Fitrianti (2018), showing that income has a significant effect on investment decisions.

The majority of income in this study amounted to Rp. 1,000,000 to Rp. IDR 3,000,000 as many as 72 respondents. This income is not too far from the Yogyakarta Provincial Minimum Wage considering the Yogyakarta UMP is 1,840,915. With this income, investors in Yogyakarta are required to be able to allocate their income well, such as to meet daily needs, pay installments or bills, pay for insurance, as well as savings and investments. The income earned by the individual will determine the financial condition and how the individual manages his finances. Individuals with higher incomes will be more responsible for showing financial behavior and have a greater opportunity to allocate their income for investment. This is because individuals with higher incomes tend to have more income surpluses. Thus, the greater the income that investors have, the greater their investment decisions.

5. Conclusions and recommendations

Based on the results of the test and discussion, it can be concluded that financial literacy, risk tolerance, overconfidence, and income have a significant positive effect on investors' investment decisions in Yogyakarta. The experienced regret variable has a significant negative effect on investment decisions. This means that the lower the regret in investing, the higher the investment decisions of investors, while the higher the regret, they will think about it with full consideration. The gender variable has no effect on the investment decisions of investors in Yogyakarta. Both men and women have the same opportunity to invest.

For further research, it is possible to conduct research with a different scope of respondents with a larger number of respondents. If possible, data collection can be done directly. Further researchers can add other independent variables in analyzing the factors that influence the increase in investment decisions such as; motivation, herding behavior, self-efficacy and others.

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