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Determinants of individual investment decision: A moderated mediation model

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ABSTRACT

This study aims to examine the effect of financial self-efficacy, risk tolerance, risk perception, and gender on individual investment decisions using a moderation and mediation approach. In addition, this study also examines the role of risk tolerance in mediating the effect of financial self-efficacy on investment decisions as well as the role of gender in moderating the effect of financial self-efficacy on risk tolerance and investment decisions. The sample used in this study is individuals living in Madura Island who invest in financial and real assets. A total of 416 respondents filled out the questionnaire distributed online. This study uses Partial Least Square-Structural Equation Modeling (PLS-SEM) to test the hypotheses. The results of this study prove that financial self-efficacy, risk tolerance, and gender have a positive effect on individual investment decisions. Meanwhile, risk perception has a negative effect on individual investment decisions. Risk tolerance partially mediates the effect of financial self-efficacy on investment decisions. Furthermore, gender strengthens the effect of financial self-efficacy on risk tolerance and investment decisions. This study provides an understanding of the role of risk in investment decisions. Investors are expected to increase their financial knowledge and control their behavioral biases so as not to get trapped in high-risk investments.

ABSTRAK

Penelitian ini bertujuan untuk menguji pengaruh efikasi diri keuangan, toleransi risiko, persepsi risiko, dan gender terhadap keputusan investasi individu dengan menggunakan pendekatan moderasi dan mediasi. Selain itu, penelitian ini juga menguji peran toleransi risiko dalam memediasi pengaruh efikasi diri keuangan pada keputusan investasi dan peran gender dalam memoderasi pengaruh efikasi diri keuangan terhadap toleransi risiko dan keputusan investasi. Sampel yang digunakan dalam penelitian ini adalah individu yang tinggal di Madura yang berinvestasi pada aset finansial dan riil. Sebanyak 416 responden telah mengisi kuesioner yang dibagikan secara daring. Penelitian ini menggunakan Partial Least Square-Structural Equation Modeling (PLS-SEM) untuk menguji hipotesis. Hasil penelitian ini membuktikan bahwa efikasi diri keuangan, toleransi risiko, dan gender berpengaruh positif terhadap keputusan investasi individu. Sedangkan persepsi risiko berpengaruh negatif terhadap keputusan investasi individu. Toleransi risiko secara parsial memediasi pengaruh efikasi diri keuangan terhadap keputusan investasi. Selanjutnya, Gender memperkuat pengaruh efikasi diri keuangan terhadap toleransi risiko dan keputusan investasi. Studi ini memberikan pemahaman tentang peran risiko dalam keputusan investasi. Para investor diharapkan untuk meningkatkan pengetahuan keuangan mereka dan mengendalikan bias perilaku mereka agar tidak terjebak dalam investasi berisiko tinggi.

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1. INTRODUCTION

Investment decision is one of the important decisions a person makes because it will affect the welfare in the future (Liu & Menegatti, 2019). A financially prosperous retirement is everyone's hope. The results of a survey conducted by PT Bank HSBC Indonesia entitled "The Future of Retirement: Bridging the Gap" showed that of 1,050 respondents, 68 percent of respondents wanted a comfortable retirement, but only 30 percent of respondents were aware and started investing for their retirement (HSBC, 2018). Another survey conducted by Populix in early 2021 revealed that out of 3,070 respondents from various regions in Indonesia, only 44 percent had made an investment (Populix, 2021). This shows that there are still many people who have not invested in their future needs. Investments should be made early to prepare for retirement and meet unexpected needs. The ultimate goal is to live prosperously and not depend on other parties.

Investment is the present commitment of financial resources with the hope of obtaining future returns. The type and composition of the investment portfolio will affect the level of expected returns and wealth in the future (Chu et al., 2017). Every investment decision always involves a trade-off between the risks faced and the expected returns. An investor will consider risk in every investment decision (Wardani & Lutfi, 2017). Standard investment science assumes that investors are fully informed, make rational decisions, and prefer lower risks for a certain level of return (Markowitz, 1952). Furthermore, from the point of view of the efficient market hypothesis, the price of a security reflects the fair value, even though some investors make mistakes (Fama, 1970). This means that, in general, investors are rational, unbiased, and make optimal investment decisions based on risk and return trade-off.

However, various studies have proven that investors are biased in investment decisions (Acciarini, 2021; Ahmad & Shah, 2020; Zahera & Bansal, 2018). The two main causes of bias in investment decisions are psychological (behavioral) and demographic factors (Mittal, 2022). Psychological factors that influence decisions can be cognitive or emotional aspects, while demographic factors include gender and marital status (Montford & Goldsmith, 2016). Understanding the role of psychological and demographic factors in making investment decisions can improve the ability to make better investment decisions (Yaowen et al., 2015).

Based on the explanation above, there are many factors that influence investment decisions including psychological and demographic factors. Therefore, it is important to examine how these factors influence investment decisions. This study examines the effect of financial self-efficacy and risk perception on investment decisions, mediated by risk tolerance and moderated by gender. Analysis using mediation and moderation models is considered important for understanding the complex relationship between psychological factors and investment decisions. The level of risk tolerance and risk perception of an investment instrument will determine investment decisions related to portfolio composition. Risk tolerance relates to the extent to which an individual believes in overcoming the risks that will be faced, while risk perception relates to how a person interprets risks that may differ between what is expected and reality (Ainia & Lutfi, 2019). In addition, risk tolerance and risk perception simultaneously influence individual investment decisions (Nguyen et al., 2019). Furthermore, financial self-efficacy reflects an individual's belief in his ability to meet his financial goals (Mindra & Moya, 2017). High confidence in financial knowledge and skills will increase risk tolerance, which in turn encourages investment in higher risk assets (Nguyen et al., 2019). In other words, risk tolerance mediates the effect of financial self-efficacy on investment decisions. The results of previous research also show that gender influences the level of risk taking (Kannadhasan, 2015; Salem, 2019; Salman et al., 2020). This study further examines the role of gender in moderating the relationship between self-efficacy and risk tolerance as well as the relationship between risk tolerance and investment decisions, which has not been tested in previous research (Montford & Goldsmith, 2016).

This study also seeks to examine how a combination of psychological aspects (risk perception, risk tolerance, and financial self-efficacy) and the demographic factor (gender) influence individual investment decisions of individual investors living in Madura. The selection of respondents on Madura Island is interesting to study because all regencies on this island have the lowest City Minimum

Wage in East Java, which is below IDR 2.1 million, while the average City Minimum Wage of this province is IDR. 2.7 million (BPS, 2023). The characteristic of this low-income level is one of the novelties of this study. People with low income tend to have different financial behavior (French et al., 2021; Grohmann, 2018). Another novelty of this research is to use a moderated mediation model (Holland et al., 2017). Risk tolerance is a mediator of the effect of financial self-efficacy and investment decisions (Nguyen et al., 2019); while gender is a moderator of the effect of financial self-efficacy on risk tolerance and investment decision (Montford & Goldsmith, 2016). Therefore, this article provides a theoretical contribution by providing further evidence regarding the role of risk tolerance in mediating the effect of financial self-efficacy on investment decisions, where this mediating role has been neglected in most previous research (Mittal, 2022). This research also has important practical implications for financial advisors in addressing the psychological and demographic aspects of clients when providing investment advice.

2. THEORITICAL FRAMEWORK AND HYPOTHESIS

Investment Decision

Investment is a commitment of funds or other resources with the hope of obtaining future benefits. Investments can be made in financial assets, such as deposits, stocks, bonds, and mutual funds, or in real assets, such as real estate and gold (Bodie et al., 2021). An investor will always consider risk in every investment decision because every investment not only offers benefits but also risks that follow the investment (Wardani & Lutfi, 2017). Each asset has different risk characteristics. In general, assets can be grouped based on risk and return: low risk and return, moderate risk and return, and high risk and return. Investments in stocks, stock mutual funds, and gold are included in the high-risk category and offer high expectations of returns as well (Jensen & Jones, 2019). On the other hand, placing funds in fixed income mutual funds, government bonds and money market instruments such as deposits and short-term securities issued by the central bank or central government is included in the low risk category with low returns.

In an efficient financial market where all investors are rational, investment decisions are based entirely on the trade-off between risk and return. In fact, investors are not entirely rational. Investor decisions are often biased, one of which is due to psychological factors (Nofsinger, 2022; Thaler, 2016). According to Mittal (2022), various factors that influence individual investor decisions include psychological aspects (desires, goals, biases and emotions, heuristics), demographic factors (age, gender, marital status, education, income, work), personal values (religion, attitude, lifestyle, self-ability, level of confidence), financial needs (minimizing risk and maximizing returns), ability to bear risks (risk averse, risk taker, risk neutral), fundamental factors (past returns, profits, prices), expert advice (brokers, family, friends), and other factors such as press releases, social media, and government policies.

Risk Perception and Investment Decision

Perception is a person's view or opinion when faced with an event. Risk perception leads to subjective decisions made by investors about the characteristics and magnitude of the risks faced (Alquraan et al., 2016). Risk perception is related to the process by which a person interprets information about the risk obtained which may differ between estimates or thoughts and reality (Ainia & Lutfi, 2019; Wulandari & Iramani, 2014).

Risk perception plays an important role in human behavior, especially in relation to decision making under uncertain circumstances (Aren & Zengin, 2016). Risk perception is influenced by both psychological and demographic factors. Psychological determinants of risk perception include cognitive biases (Lanciano et al., 2020) and emotional bias (Samadipour et al., 2023). Demographic factors that influence risk perception are primarily gender and marital status. Men are generally more willing to take risks than women are (Jing et al., 2022; Rana et al., 2021). Meanwhile, unmarried men have a greater risk tolerance than those who are married (Barber & Odean, 2001).

Risk perception is related to risk-taking behavior (Danso et al., 2022; Nguyen et al., 2019). The bias factor in the risk perception caused by both psychological and demographic aspects can lead to sub-optimal decision-making (Ahmad & Shah, 2020). The higher a person's perception of risk, the more that person will avoid allocating funds in high-risk assets and prefer investing in low-risk assets (Ainia & Lutfi, 2019; Aren & Zengin, 2016;

Nguyen et al., 2019).

H1: The higher the risk perception, the lower the proportion of funds invested in high-risk assets.

Risk Tolerance and Investment Decision

Risk tolerance is the limit in a person's ability to accept or tolerate the level of risk in an investment. An investor will always consider risk in every investment decision because every investment not only provides returns but also risks that always follow it (Wardani & Lutfi, 2019). Investor categories in facing risk are divided into 3: risk seekers, risk neutral, and risk averters (Bodie et al., 2021). In investment, risk and return have a positive relationship. The greater the expected return, the greater the risk an investor will face.

Risk tolerance is an important factor influencing investment portfolio decision making (Yao & Rabbani, 2021). Investors tend to choose investments that generate high returns with reasonable or tolerable risk. Individuals who have a low risk tolerance tend to be careful in choosing the type of investment and prefer low-risk investments. On the other hand, individuals who have a high risk tolerance will choose investments with a high level of risk but also offer high returns (Bannier & Neubert, 2016). Thus, investors with high risk tolerance tend to allocate more funds to high-risk assets than to low-risk assets (Dickason & Ferreira, 2018; Mishra, 2018). In the context of stock investment, which is a high-risk investment, the higher the risk tolerance, the greater the proportion of investment in shares (Ainia & Lutfi, 2019; Baghani & Sedaghat, 2016).

H2: The higher the risk perception, the greater the proportion of funds invested in high-risk assets.

Financial Self-Efficacy, Risk Tolerance, and Investment Decision

Bandura (1977) defines self-efficacy as personal confidence in his ability to achieve and succeed in a particular task. This relates to self-confidence, motivation, optimism, and the ability to overcome various challenges in life. Financial self-efficacy reflects an individual's belief in his ability to meet his financial goals (Mindra & Moya, 2017). Thus financial self-efficacy can be interpreted as an individual's perceived self-ability in managing finances (Nguyen, 2019).

Self-efficacy in financial ability is an important determinant of financial behavior (Farrell et al., 2016). Financial self-efficacy promotes better saving behavior (Asebedo & Seay, 2018; Rothwell et al., 2016), prepares for a better retirement (Peter & Ambilikumar, 2021), increases financial inclusion (Mindra et al., 2017b), encourages investment intentions (Akhtar & Das, 2019), and increases participation in the capital market (Nadeem et al., 2020). High financial self-efficacy will encourage the selection of riskier portfolios, such as investing in the stock market (Akhtar & Das, 2019; Asebedo & Seay, 2018).

The effect of financial self-efficacy on investment decisions can also be indirectly through risk tolerance (Ahmad & Shah, 2020). High financial self-efficacy encourages entrepreneurial intentions, which generally have a high risk of failure but provide the potential for large profits when successful (Puni et al., 2018; Rosique-Blasco et al., 2018). Self-efficacy also encourages speculative behavior, such as gambling (Quinn et al., 2019; Parrado-González et al., 2022) and extreme sports (Baretta et al., 2017). This indicates that confidence in one's own skills causes overconfidence and has an impact on the willingness to take greater risks (Montford & Goldsmith, 2016). Furthermore, accoprding to Heo et al. (2016), risk tolerance mediates investment behavior. Financial self-efficacy encourages high risk tolerance, which ultimately also encourages high-risk financial behavior, such as risky credit behavior (Liu & Zhang, 2021) and investment in stock markets (Nadeem et al., 2020). Thus, financial self-efficacy will increase risk tolerance, which in turn can encourage investment in higher risk assets (Nguyen et al., 2019).

H3: The higher the financial self-efficacy, the greater the proportion of funds invested in high-risk assets.

H4: The higher the financial self-efficacy, the higher the risk tolerance, and this will further increase the proportion of funds invested in high-risk assets.

Gender, Financial Self-Efficacy, Risk Tolerance, and Investment Decision

The gender factor can also influence a person in making investment decisions (Salman et al., 2020). Men generally have a higher risk tolerance than women (Fisher & Yao, 2017; Kannadhasan, 2015; Noviarini et al., 2021; Rabbani et al., 2021). As a result, male investors invest more in high-risk assets (Montford & Goldsmith, 2016; Salem, 2019). Differences in

risk tolerance by gender could be due to marital status. Men have a higher risk tolerance than women only found in unmarried individuals, while for married individuals there is no difference in risk tolerance between men and women (Rai & Kimmel, 2015).

Gender also moderates the relationship between financial self-efficacy and risk tolerance. Differences in risk tolerance between men and women can be caused by differences in their financial knowledge (Lusardi & Mitchell, 2008). According to Roth & Voskort (2014), female financial advisors recommend less risky assets than male advisors do. Research conducted by Bollen & Posavac (2018) proves that male students choose riskier investments than female students do, but the research finds no significant differences in risk preferences between male professional asset managers and their female colleagues. It implies that gender moderates the relationship between financial self-efficacy and risk tolerance and the relationship between financial self-efficacy on investment decisions (Yu & Chen, 2016). Furthermore, research conducted by Farrell et al. (2016) proves that women with higher financial self-efficacy place more funds in savings and less in risky financial products. It means that male investors with a higher financial self-efficacy tend to have a greater risk tolerance and investment more on risky asset than their female counterparts do (Marinelli et al., 2017; Montford & Goldsmith, 2016).

H5: Gender moderates the effect of financial self-efficacy on risk tolerance.

H6: Gender moderates the effect of financial self-efficacy on investment decisions.

Figure 1 presents the conceptual framework of this research, which is a moderated mediation investment decision model. Investment decisions are influenced by risk perception and financial self-efficacy as mediated by risk tolerance. Furthermore, the role of risk tolerance in mediating financial self-efficacy is moderated by gender.

3. RESEARCH METHOD

Research Variables

There are four types of variables used in this study: endogenous variable, exogenous variable, moderating variable, and mediating variable. The endogenous variable in this study is investment decision, while the exogenous variables are financial self-efficacy, risk perception, and risk tolerance. Gender serves as a moderating variable and risk tolerance serves as mediating variable in this study.

Investment decisions are decisions made by investors in determining the composition of their funds whether in high-risk assets, such as stocks, stock mutual funds, gold, and property, or in relatively low-risk assets, such as savings, deposits, bonds, money market mutual funds, and fixed income mutual funds (Ainia & Lutfi, 2019). Financial efficacy refers to an individual's belief in his ability to fulfill his financial goals or desires. Referring to research conducted by Farrell et al. (2016), financial self-efficacy is measured by six indicators: being able to stick to a budget plan in case of unexpected expenses, being able to make progress on achieving financial goals, not always using credit when unexpected expenses occur, being able to find solutions when facing financial

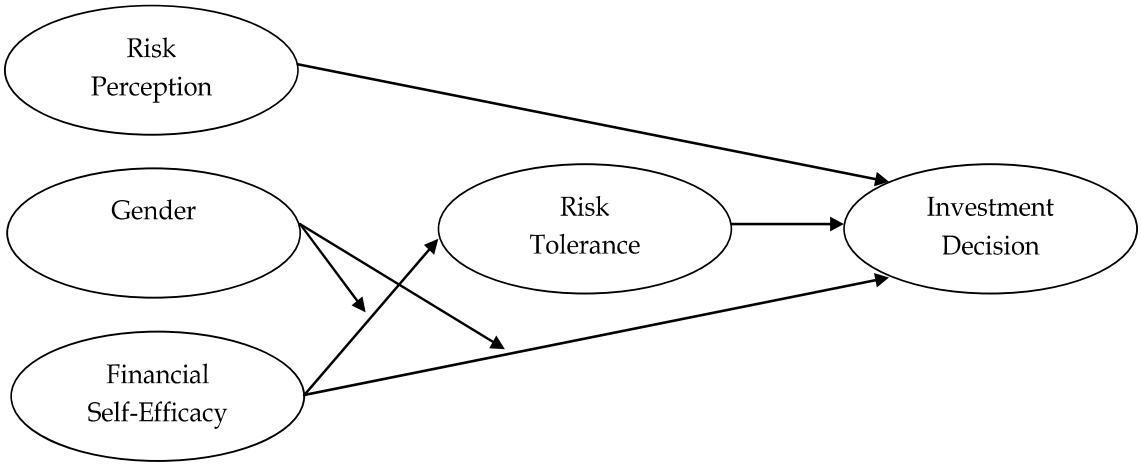

Figure 1
Research Framework

problems, having confidence in the ability to manage personal finances, and not being worry of money on retirement. Risk perception leads to subjective decisions made by investors about the characteristics and magnitude of the risks to be faced. The indicators of risk perception in this study are adopted from the research conducted by Nguyen et al. (2019), such as the accuracy of the selected investment and will perform well, the investment increase in value in the future, and the investment has very good returns. Risk tolerance shows the individual's ability to overcome and tolerate risks that will be faced when investing. The indicators of risk tolerance are modified from research conducted by Rahman et al. (2020) which include five items: using debt when believing that the investment is profitable, prioritizing profit over risk, taking greater risks to improve investment performance, carefully evaluating investment risks (score reversed), and the desire to invest safely (score reversed). Financial self-efficacy, risk perception, and risk tolerance are measured using a Likert scale of 1 to 5, where 1 is for strongly disagree and 5 is for strongly agree. The research instrument is presented in Appendix 1.

Population, Sample, and Data

The population in this study is individual investors who live in the area of Madura Island, The sampling technique used is purposive sampling method where the samples taken are based on the research objectives and criteria. The sample criteria in this study are individuals living on Madura Island who have worked with a fixed income per month of at least IDR 2,000,000, aged at least 21 years, and allocate funds to high-risk assets (such as stocks, stock mutual funds, gold, and property) and low-risk assets (such as savings, deposits, bonds, money market mutual funds, and fixed income mutual funds). This study also uses cluster sampling and quota sampling methods. The minimum respondent target is 400 individual investors divided into four regions. Questionnaires are distributed online using the Google Form, through social media networks such as Whatsapp, Instagram and Facebook. Questionnaires are distributed by eight students, consisting of two students in each district.

Data Analysis Technique

The data analysis technique used in this study is descriptive analysis and inferential analysis using the Partial Least Square-Structural Equation Modeling (PLS-SEM) method with SmartPLS software. Model evaluation is carried out on measurement models and structural models. Evaluation of the measurement model is based on indicator reliability, internal consistency reliability, convergent validity, and discriminant validity (Hair Jr et al., 2021). An indicator is categorized as reliable if it has a factor loading of more than 0.70. A construct is declared to meet the internal consistency reliability criteria if it has a composite reliability value and Cronbach's alpha of at least 0.60. A construct is declared to meet convergent validity if it has an Average Variance Extracted (AVE) value of at least 0.50. In addition, a construct is declared to meet the discriminant value if the Fornell-Larcker value has the square root of the AVE of each construct exceeding the highest correlation with other constructs and the Heterotrait-Monotrait (HTMT) ratio < 0.85.

Evaluation of the structural model uses the coefficients of determination (R^2) and the effect of size (f^2). $R^2 \geq 0.75$ indicates that the model is substantial, $0.50 \leq R^2 < 0.75$ indicates that the model is moderate, and $0.25 \leq R^2 < 0.50$ indicates that the model is weak. Effect of size (f^2) assesses the contribution of exogenous constructs to endogenous latent constructs. $0.02 \leq f^2 < 0.15$ indicates that the contribution is small, $0.15 \leq f^2 < 0.35$ indicates that the contribution is medium, and $f^2 \geq 0.35$ indicates that the contribution is large.

4. DATA ANALYSIS AND DISCUSSION

Characteristics of Respondents

The respondents of this study are individual investors who live in the area of Madura Island, which includes Bangkalan Regency, Sampang Regency, Pamekasan Regency, and Sumenep Regency. Of the 468 respondents who filled out the questionnaire, only 416 respondents met the specified criteria, while the other 52 respondents did not meet the criteria. Table 1 presents the demographic characteristics of the respondents.

Table 1 shows that the distribution of respondents, based on area of residence and age, is relatively even. The majority of respondents have a Bachelor's degree, in line with their work as civil servants and private company employees. Most respondents have low incomes, from IDR 2 million to IDR 4 million. Thus, the characteristics of the respondents reflect the novelty of this research

which aims to examine investment decision behavior in low-income communities.

Evaluation of Measurement Modal

Table 2 shows the test results for indicator reliability, internal consistency reliability, and convergent validity of the research instruments. The complete structural model output is presented in Appendix 2. This table shows that all indicators are valid because they have a factor loading (FL) value of > 0.70. All constructs are valid and reliable because they have composite reliability (CR) and cronbach alpha (CA) exceeding 0.60. Research indicators also have a good correlation with indicators that measure the same construct as reflected in the Average Variance Extracted (AVE) values of all constructs exceeding 0.50. The results of the discriminant validity test using Fornell-Larcker criteria (FLC) show that the square root of the AVE of each construct (bold) exceeds the highest correlation with other constructs, meaning that each construct measures different variable. Similar results are also obtained using the Heterotrait-Monotrait ratio (HTMT) indicting a value which is lower than 0.85, so that all constructs have good discriminant validity.

Description of Research Variables

Table 3 shows that respondents invest slightly more in low-risk assets, although the variation is quite large. At first glance, this relatively high investment in high-risk assets is surprising considering the low level of income of the respondents. However, taking into account the low need for funds to invest in shares, mutual funds or gold, this fact makes sense. An investor only needs IDR 100,000 to buy one lot of mutual funds or open a new account at a stock brokerage company. In fact, several mutual fund sales agents allow investors to buy retail mutual funds for only IDR 10,000. Gold investors can also easily buy gold in installments, with an initial deposit of 10 percent of the gold price for the smallest unit of 0.5 grams, or an initial deposit equivalent to IDR 50,000. Thus, the need for funds to invest in risky assets is commensurate with placement in savings. This may explain the relatively high allocation of respondents' funds to high-risk assets.

Furthermore, respondents have high self-confidence in their financial knowledge and abilities. The level of risk perception and tolerance of respondents is quite low. This

Table 1
Characteristics of Respondents

Characteristics	Amount	Percentage	Characteristics	Amount	Percentage
Domicile			Gender		
Bangkalan Regency	116	28%	Male	204	49%
Sampang Regency	104	25%	Female	212	51%
Pamekasan Regency	88	21%	Last Education		
Sumenep Regency	108	26%	Elementary School	8	2%
Age			Junior High School	16	4%
21 - 30 year	104	25%	Senior High School	88	21%
31 - 40 year	84	20%	Diploma	12	3%
41 – 50 year	80	19%	Undergraduate	268	64%
> 50 year	148	36%	Postgraduate	24	6%
Occupation			Monthly Income (IDR)		
Civil Servants	50	14%	2,000,000 – 4,000,000	232	56%
State-Owned Enterprises Employee	40	10%	4,000,000 – 6,000,000	160	38%
Private Employee	68	16%	6,000,001 –8,000,000	12	3%
Lecturer/Teacher	108	26%	8,000,001 –10,000,000	8	2%
Entrepreneur	60	15%	> 10,000.000	4	1%
Farmer	72	17%			
Other	8	2%			

Sources: Processed Data

Table 2
Results of Measurement Model Evaluation

Construct	Item Code	FL	CR	CA	AVE	FLC			HTMT	
						FE	RP	RT	FE	RP
Financial Self-Efficacy (FE)	FE1	0.839	0.938	0.920	0.715	0.845				
	FE2	0.881								
	FE3	0.827								
	FE4	0.831								
	FE5	0.855								
	FE6	0.836								
Risk Perception (RP)	RP1	0.859	0.933	0.910	0.736	-0.564	0.858		0.616	
	RP2	0.881								
	RP3	0.855								
	RP4	0.817								
	RP5	0.876								
Risk Tolerance (RT)	RT1	0.734	0.884	0.843	0.604	0.397	-0.174	0.777	0.400	0.197
	RT2	0.816								
	RT3	0.868								
	RT4	0.734								
	RT5	0.725								

Sources: Processed Data

is very likely related to the characteristics of respondents, the majority of whom work as civil servants, lecturers or teachers, and farmers (57%).

The relationship between endogen variable (investment decisions) and exogenous variables is stronger than between exogenous variables. The correlation between exogenous variables is quite low, with a coefficient value of less than 0.50.

Discussion

Table 4 shows the results of testing the research hypothesis for the moderated mediation model. Risk tolerance and financial self-efficacy have a significant positive effect on investment decisions, while risk perception has a significant negative effect on investment decisions. Furthermore, financial self-efficacy has a significant positive effect on risk tolerance. The coefficient of termination (R^2) value of 0.547 indicates that the investment decision model is moderate. The f^2 value indicates that the contribution of financial efficacy and risk tolerance to investment decisions is medium ($0.15 \leq (0.296; 0.200) < 0.35$), while the contribution of risk perception is low ($0.020 < 0.15$).

Table 4 shows that risk perception has a significant negative effect on investment decisions. This means that investors who view an investment as a high-risk investment will invest more funds in low-risk assets, such as savings, time deposits, or government bonds. Risk in investing is related to the possibility that the returns earned are not as expected (Ainia & Lutfi, 2019; Alquraan et al., 2016; Aren & Zengin, 2016). The uncertainty regarding investment returns encourages investors to avoid risky investments (Danso et al., 2022; Nguyen et al., 2019). The majority of respondents in this study are civil servants, teachers, lecturers and farmers. Civil servants and teachers tend to have higher risk perceptions than other professions do (Getachew et al., 2022; Stanley, 2016; Weinert et al., 2021). Furthermore, farmers have uncertain income patterns because they are very dependent on crop yields. Placing funds in high-risk assets, such as stocks that yield uncertain returns, can put them in jeopardy when they suddenly need those funds due to crop failures. Therefore, such respondents feel safer to place their funds in savings and bank deposits. The research results provide evidence of the important role of risk in decision making involving uncertainty of investment returns (Aren & Zengin, 2016).

Risk tolerance is proven to have a positive and significant effect on investment decisions. Risk tolerance is the limit of a person's ability

Table 3
Description of Research Variables

Variable	Mean	S.D.	Correlation		
			ID	FE	RT
Investment Decision (ID)	0.879	1.258			
Financial Self-Efficacy (FE)	3.370	0.877	0.668		
Risk Perception (RP)	2.402	0.852	-0.438	-0.463	
Risk Tolerance (RT)	1.950	0.704	0.501	0.359	-0.137

Sources: Processed Data

to accept the risks faced in an investment. Risk tolerance is a consideration that investors make when deciding to allocate their funds to certain assets. The level of returns that is expected to be received is in accordance with the level of risk taken by investors, or in other words there is a positive relationship between the level of expected returns and risk (Bodie et al., 2021). Investors with low risk tolerance tend to prefer low-risk investments, while investors with high risk tolerance will choose investments with a high level of risk in the hope of obtaining high returns (Bannier & Neubert, 2016; Dickason & Ferreira, 2018; Mishra, 2018). Descriptive data shows that the level of risk tolerance of respondents is low and they tend to invest more funds in low-risk assets. This is in line with the results of research conducted by Baghani & Sedaghat (2016) that investors with high risk tolerance invest more funds in the capital market. Stock investment is a type of investment that provides large potential returns, but the level of uncertainty is also high. Therefore, a willingness to accept high risks of investing in the capital market, especially stocks, is required.

Financial self-efficacy has a positive and significant effect on risk tolerance and investment decisions. This indicates that higher self-confidence in financial knowledge and capability encourages investors to be more willing to accept risks and invest more funds in high-risk assets, such as stocks, stock mutual funds, gold, and property. Investments in internal capital markets, such as stocks or stock mutual funds, require complex knowledge so that only investors with good financial knowledge tend to invest their funds in these markets (Nadeem et al., 2020). The descriptive data shows that seventy percent of the respondents have undergraduate and postgraduate education. This relatively good level of education increases the financial knowledge and capability of the respondents which affects their courage to take higher risks and invest more funds in high-risk capital market instruments (Montford & Goldsmith, 2016).

Table 4 also shows that the effect of financial self-efficacy on investment decisions through risk tolerance is significant. This means that risk tolerance partially mediates the effect of financial self-efficacy on investment decisions. Confidence in financial knowledge and capability increases the risk tolerance level of investors (Zhang et al., 2022). This, in turn, encourages the investors to invest more in higher risk assets (Nguyen et al., 2019; Yao & Rabbani, 2021). Taking into account the magnitude of the coefficient of the direct effect of financial risk efficacy on investment decisions and the indirect effect of financial self-efficacy on investment decisions through risk tolerance, it can be concluded that the direct effect of financial self-efficacy on investment decisions is stronger that the indirect effect (0.329 vs 0.130). This indicates the importance of the role of financial self-efficacy in investment decisions, which is in line with the largest contribution of this variable compared to other variables ($f^2 = 0.296$). The findings of this study imply the importance for investors to improve their knowledge and skills in finance before investing in high-risk and high-return assets, such as stocks. Increasing financial knowledge and ability also enables investors to be better able to manage investment risks in quite complex assets.

Gender does not significantly affect risk tolerance, but this variable has a significant effect on investment decisions. Gender moderates the effect of financial self-efficacy on risk tolerance and investment decisions. This indicates that male investors place more funds in high-risk investments than female investors do. This condition is likely to occur because the placement of high-risk asset funds provides a high profit potential as well. Men are in charge

Table 4
Results of Mediated Mediation Model

Relationship	Coefficient	P-Value	f^2
Direct Effect			
Risk Perception → Investment Decision	-0.107	0.000	0.018
Risk Tolerance → Investment Decision	0.316	0.000	0.191
Financial Self-Efficacy → Investment Decision	0.428	0.000	0.230
Financial Self-Efficacy → Risk Tolerance	0.385	0.000	0.172
Gender → Risk Tolerance	0.057	0.245	0.004
Gender → Investment Decision	0.133	0.000	0.036
Gender*Financial Self-Efficacy → Risk Tolerance	0.275	0.000	0.088
Gender*Financial Self-Efficacy → Investment Decision	0.063	0.050	0.008
Specific Indirect Effect			
Financial Self-Efficacy → Risk Tolerance → Investment Decision	0.121	0.000	
Gender → Risk Tolerance → Investment Decision	0.018	0.251	
Gender*Financial Self-Efficacy → Risk Tolerance → Investment Decision	0.087	0.000	
Coefficient of Determination (R^2)			
Investment Decision	0.566		
Risk Tolerance	0.229		

Sources: Processed Data

of family finances so they are required to meet the needs of their family, and this can encourage them to speculate more in investments in the hope of getting greater profits (Marinelli et al., 2017). The insignificant effect of gender on risk tolerance could be due to the relatively equal level of education and knowledge between men and women in today's modern era. According to Almenberg & Dreber (2015), the difference in the level of risk tolerance between men and women becomes increasingly invisible when controlled by financial literacy.

Furthermore, Table 4 also shows that the interaction between gender and financial self-efficacy has a significant effect on risk tolerance and investment decisions in high-risk assets. These findings emphasize the important role of financial self-efficacy in influencing risk tolerance and investment decisions. Investing in high risk assets requires more complicated knowledge and skills (Bannier & Neubert, 2016). Higher confidence in financial knowledge and skills among male investors makes them more willing to take risks and place more funds in high-risk assets (Barber & Odean, 2001). Conversely, despite having good knowledge and skills, women, by their nature to play it safe, tend to avoid risks and place more of their funds in safer investments (Montford & Goldsmith, 2016).

Another finding from this research is that risk tolerance mediates the effect of the interaction between gender and financial self-efficacy on investment decisions. The magnitude of this mediation coefficient is greater than the direct effect of the interaction between gender and financial self-efficacy on investment decisions (0.087 vs 0.063). This indicates the central role of risk tolerance in determining the investment composition between high risk and low risk assets. Bias in risk tolerance can cause a well-informed financial investor to invest too much in high-risk assets. Investors must be able to control bias caused by excessive self-confidence over financial knowledge and skills so that they are not trapped in too risky investments (Adil et al., 2022).

5. CONCLUSION, IMPLICATION, SUGGESTION AND LIMITATION

The results of this study show that risk perception has a negative effect on investment decisions, while financial self-efficacy, risk tolerance, and gender have a positive effect on investment decisions. These indicate that

the higher the financial self-efficacy and level of risk tolerance of an investor, the greater the proportion of funds invested in high-risk assets, such as stocks, equity mutual funds, or property. Furthermore, risk tolerance partially mediates the effect of financial self-efficacy on investment decisions. This indicates that investment decisions on high-risk assets are more directly influenced by the level of an investor's financial knowledge and skills. This financial self-efficacy is the main factor in determining investment decisions. In terms of moderation, gender is proven to strengthen the effect of financial self-efficacy on risk tolerance and investment decisions. This indicates that men are more willing to take risks and place more funds in high-risk investments.

The weakness of this research is that the questionnaire was distributed online, so there is a possibility that the selected respondents do not reflect the characteristics of the target population. Therefore, it is recommended that further research distribute the questionnaire directly to respondents and examine several aspects of the questionnaire to deepen the discussion.

There are several practical implications of the findings of this study. First, investors need to improve financial knowledge and skills to invest in high-risk assets, which are generally more complex. This increase in knowledge can be obtained through formal education, seminars, brochures, tutorials, and websites. The government and policy makers related to finance, such as the financial services authority and Bank Indonesia, and investment advisors need to increase socialization of financial education to the public. Second, investors need to control their risk tolerance so that they do not get caught up in investments that are too risky. Their perception and tolerance regarding the risks of an investment need to be based more on logical knowledge, not emotion. Third, investment advisors need to pay attention to the level of risk tolerance of their clients in offering investment alternatives. The composition of the investment portfolio also needs to take into account the customer's level of financial knowledge.

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APPENDIX 1: Research Instrument

Investment decision variables are measured using a ratio scale, while risk perception, financial self-efficacy, and risk tolerance are measured using a Likert scale of 1 (strongly disagree) to 5 (strongly agree).

Investment Decision

1. What is percentage of your funds invested in stocks, stock mutual funds, gold, and property? (0 – 100%)

2. What is percentage of your funds invested in savings, depositors, bonds, and money market mutual funds, fixed income mutual funds? …….. (0 – 100%)

Risk Perception

1. The investment I choose is correct and will perform well
2. The investments I choose will have convincing performance and results
3. The investment I choose will have a significant increase in value in the future
4. The investment I choose will perform well according to my investment goals
5. The investments I choose will provide excellent returns in the medium to long term

Risk Tolerance

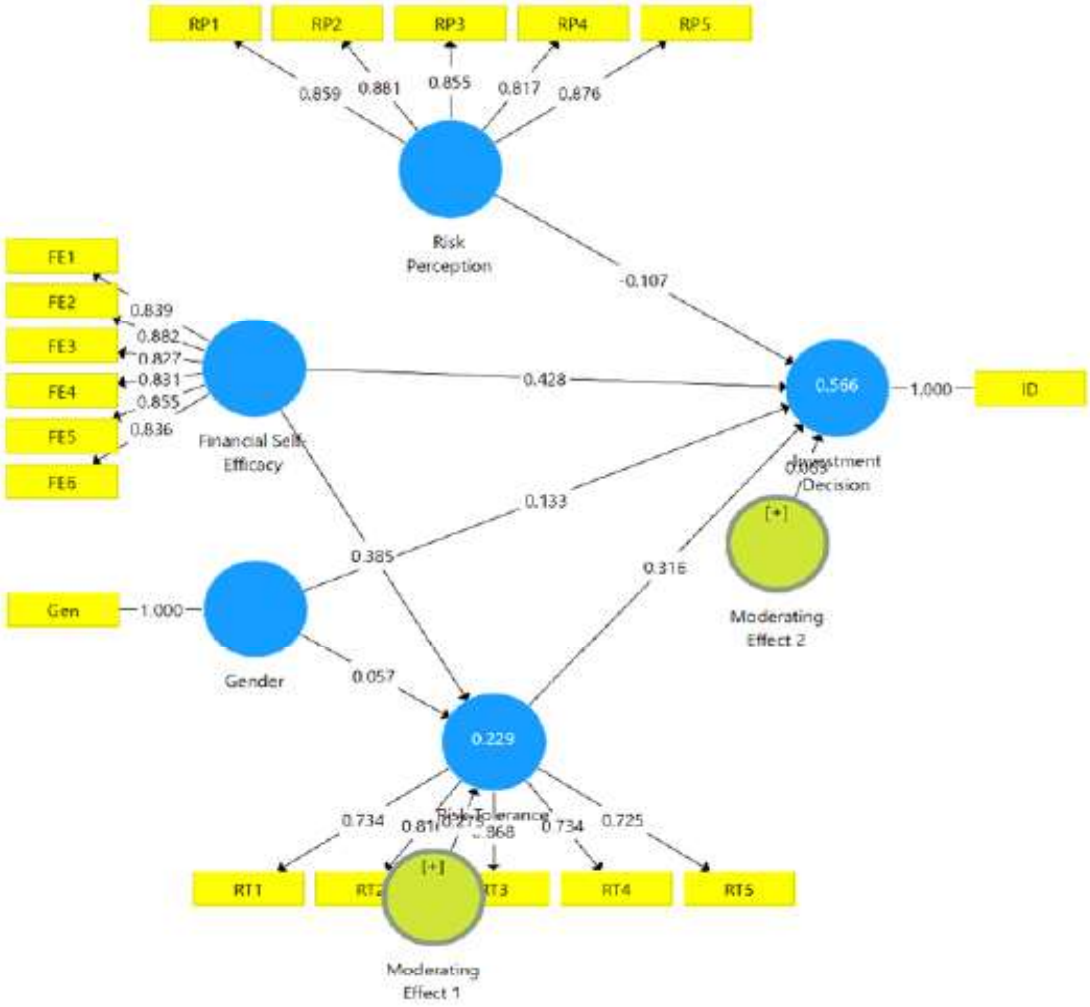
1. I will go into debt when I believe the investment I make will be profitable
2. I prioritize profit over risk when investing
3. I am willing to take higher risks to improve my investment performance
4. I repeatedly evaluate risks before deciding to invest (reversed score)
5. I want to invest in a safe investment (reversed score)

Financial Self-Efficacy

1. I am able to stick to a budget plan when unexpected expenses arise
2. I am able to make progress toward achieving my financial goals
3. I don't always use loans when unexpected expenses occur
4. I am able to find solutions when facing financial difficulties
5. I am confident in my ability to manage my personal finances
6. I don't worry about being short of money when I retire

APPENDIX 2: Output SmartPLS

Model with estimated coefficient



APPENDIX 2: Output SmartPLS

Model with coefficient significance level