The Effects of Financial Literacy, Overconfidence, Representativeness Bias on Financial Behavior and Decisions to Continue Investing as Intervening Variables

Heni Safitri[1], Dedi Hariyanto[1]

[1]Faculty of Economics and Business, Muhammadiyah University of Pontianak, Indonesia

Abstract

The specific aim of this research is to provide an empirical explanation of the influence of financial literacy, overconfidence, representativeness bias on financial behavior and the decision to continue investing as intervening variables. In analyzing the model studied, this research uses an approach via Partial Least Square with Structural Equation Modeling (PLS-SEM) using Smart PLS. Financial literacy and representativeness bias have a positive and significant effect on the decision to continue investing and financial behavior. This shows that an investor's decision to continue investing is influenced by how much financial literacy he has and his past experience in investing. The higher the financial literacy one has, the higher the influence on the decision to continue investing, as well as representativeness bias. The more past experience an investor has in investing, the greater the influence on the investor's decision to continue investing.

Keywords: Financial Literacy, Representative Bias, Decision, Investment

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Introduction

According to the Indonesian Stock Exchange, the number of Indonesian capital market investors has reached more than 6.29 million Single Investor Identification (SID), including 2.9 million SID shares. The number of investors shot up 61.86% nationally, specifically in West Kalimantan Province, reaching 3,431 SID. The number of stock investors in the West Kalimantan Province region increased by 60.3% from 2019 to 2021. The increase in investors during that year coincided with a situation that most people expected, namely the spread of the disease caused by the Covid-19 virus. There are many opinions stating that this increase is due to the large number of people working at home, so there are those who are looking for income by investing in the capital market, which in fact is already online trading. When the Covid-19 pandemic limited the movement of people from one place to another, people became accustomed to going online and even people's financial literacy also increased, as stated by Putri et al (2023), financial literacy increased interest in using online platforms.

A number of factors are driving the growing interest in investing in a number of global exchanges, including Indonesia, due to the real sector being less profitable due to social restrictions during the pandemic. So economic agents have turned to seeking their fortunes in the capital market sector. The next factor is increasing awareness of the potential of the stock market when conditions are falling for most existing sectors. This is supported by the influence of social media, investment forums, and the easy dissemination of information flow. The ease of creating an account and making transactions (Online Trading) is also a driving factor. However, the current rapid growth in the number of investors is more due to the flow of information which is more massive and very affordable, with the mushrooming use of social media and online forums. The specific aim of this research is to provide an empirical

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explanation of the influence of financial literacy, overconfidence, representativeness bias on financial behavior and the decision to continue investing as intervening variables. Research supports the research rodmap as stated in the following image:

Figure 1. Roadmap

From this goal, the main output will be produced in the form of articles published in Sinta 2 or international journals which are included in the Copernicus Index. Apart from the main external aspects, it will certainly be used as enriching teaching material for the Investment and Portfolio Management courses.

Methods

The type of research used is associative or relationship. The location of this research is in Indonesia with primary data collected by distributing questionnaires online (Google Forms). The population used in this research are economic agents who invest in the Indonesian capital market online and make transactions independently without using broker services at stock exchange member companies, the exact number is not known. The sample used was 200 people, obtained using the snowball sampling technique.

Based on the problem formulation and research hypothesis, in this study there are 3 variables, namely financial literacy, overconfidence, representativeness bias as the independent variable, the decision to continue investing as the intervening variable and financial behavior as the dependent variable. Researchers use the Likert scale as a guide for asking questions or statements with alternative answers, namely "Strongly Agree (5)", "Agree (4)", "Undecided (3)", "Disagree (2)", "Strongly Disagree Agree (1)" and "Always (5)", "Often (4)", "Sometimes (3)", "Rarely (2)", "Never (1)". The indicators in this research are as follows:

Table 1. Research Instrument Grid

Variable X	Indicators
Financial literacy	1. A person's knowledge of the value of an item and the scale of priorities in his life. 2. There is a record of budgets, savings and ways to manage finances. 3. Credit management. 4. Know the importance of insurance and protect yourself against risk. 5. Know the basics of investing. 6. Have a retirement fund planning. 7. There is knowledge about the use of shopping by comparing products to seek advice, information and guidance, and additional support. 8. Able to recognize potential conflicts in managing personal financial affairs.
Overconfidence	1. Above-average ability 2. Ignoring possible risks 3. Tends to overestimate the knowledge possessed. 4. Tends to overestimate the abilities and information's possessed. 5. Have a high level of confidence. 6. Know everything in the state of national and international capital markets.

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Representativeness bias	1. Decisions are based more on superficial characteristics. 2. Decisions based on tau stereotype analogies. 3. Assessment strategies based on stimuli
Financial Behavior	1. Cognitive biases 2. Emotional bias
Decision to stay Invested	1. Determination of investment objectives 2. Determination of investment policy 3. Investment strategy selection 4. Asset selection 5. Portfolio measurement and evaluation

Instrument Trials

Before the instrument is used in research, the instrument must be tested first so that the level of validity and reliability of the instrument used in the research is known. Data from the trial results are used to find out whether the instrument can be said to be feasible or not.

Instrument Validity Test and Instrument Reliability Test

In this research, the validity test was carried out using the product moment correlation technique proposed by Karl Pearson. A variable is declared reliable if Cronbach Alpha (α) > 0.60 (Arifin, 2018: 99). According to Suharsimi Arikunto (2013: 319) also explains whether data can be said to have significant reliability or not, so rcount is categorized in table 3.9.

Table 2. Instrument Reliability Coefficient

Coefficient Interval	**Relationship Level**
0,800-1,000	Very High
0,600-0,799	Tall
0,400-0,599	Keep
0,200-0,399	Low
0,000-0,199	Very Low

Similar to the Validity Test, Reliability Test can also be carried out with the help of Microsoft Office Excel and SEM software

Data Processing and Analysis Techniques

This research is quantitative research conducted using survey techniques. The data in this research is collected through a questionnaire which will be filled out by respondents. The respondents in this research are stock investors in Indonesia. The number of samples in this study was determined using the Slovin formula with a precision level of 10%. Based on this sample calculation, the minimum sample size in this study was 99,887. Therefore, this study determined the sample size above the minimum sample size of 150 respondents. The sampling technique used in this research is random sampling. The questionnaire uses a 7 point Likert scale. The 7 point Likert scale can minimize errors in measurement and make measurement results more precise. The Likert scale used in this research is (1) strongly disagree, (2) disagree, (3) quite disagree, (4) neutral, (5) quite agree, (6) agree, (7) strongly agree.

Variable Measurement

In analyzing the model studied, this research uses an approach via Partial Least Square with Structural Equation Modeling (PLS-SEM) using Smart PLS. The Partial Least Square approach with Structural Equation Modeling (PLS-SEM) is a variance value-based approach

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used to test the relationship between variables simultaneously. Before testing the data with a total of 150 samples, the researcher carried out a pre-test to see whether the statement items in the questionnaire were valid and reliable. After that, the first test was carried out to evaluate the reflective measurement model for sample reliability and validity.

Data analysis was carried out using path analysis. Sani and Maharani (2013: 74) "Path analysis is used to analyze relationship patterns between variables". This analysis was assisted with the help of SEM software with the provisions of the F test at Alpha = 0.05 or with a significant level of F (sig. T) where it is used to see the significant indirect influence of the independent variable on the dependent variable.

Design a model based on concepts and theories on a path diagram that uses two types of arrows, namely: One-way arrow showing the direct influence of the independent variable (financial literacy, overconfidence, representativeness bias) on the dependent variable (financial behavior). The arrow shows the indirect influence between the independent variables (financial literacy, overconfidence, representativeness bias) on the dependent variable (financial behavior) through the intervening variable (decision to continue investing).

Examination of the fundamental assumptions underlying the Path Assumption is as follows: The relationship between variables is linear and adaptive (easy to adjust). Only recursive models can be considered i.e. only causal flow systems. Meanwhile, in models containing reciprocal causality, path analysis cannot be carried out. Endogenous variables are at least interval sized. Observed variables are measured without error (valid and reliable measurement instruments). The analyzed model is specified correctly based on relevant theories and concepts.

Results and Discussion

Construct Reliability and Validity

Before testing the model that has been formed, the first step is to prove its validity and estimate its reliability. An indicator is considered valid when the indicator has an AVE (average variance extra) value above 0.5. The AVE value is the average percentage of variance scores extracted from a set of latent variables estimated through standardized loading of the indicators in the algorithm iteration process in PLS (Abdillah & Jogiyanto, 2009). The test results are as follows:

Table 3. Construct Reliability and Validity

	Cronbach's Alpha	Rho_A	Composite Realibility	Average Variance Extracted (AVE)
The decision remains to invest	0.917	0.917	0.938	0.751
Financial Literacy	0.887	0.900	0.908	0.525
Overconfidence	0.940	0.951	0.949	0.652
Behavioral Finance	0.894	0.896	0.917	0.613
Representativeness Bias	0.895	0.905	0.913	0.540

From the results of proving validity and reliability, it can be seen that all constructs for the independent and dependent variables have good reliability because the Cronbach's Alpha value is more than 0.6 and the composite reliability is more than 0.7. The validity testing value has good results because the AVE value for all variables is more than 0.5. Therefore, all variables can be said to be valid for discriminant validity values.

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Outer Loading

Outer Loadings are used to see the loading factor of each indicator used. According to Chin, a loading factor value of 0.5-0.6 is considered sufficient for early stage research (Ghozali & Latan, 2015). If the loading factor value is more than 0.7 then the indicator is very valid and suitable for use. The results of outer loading in this research can be seen as follows:

Table 4. Outer Loadings

	Decision to Keep Investing	Financial Literacy	Overconfidence	Financial Behavior	Representativeness Bias
KTI1	0,854				
KT12	0,835				
KT13	0.890				
KT14	0,861				
KTI5	0,891				
LK1		0,747			
LK2		0.725			
LK3		0,662			
LK4		0,672			
LK5		0.785			
LK6		0,626			
LK7		0.730			
LK8		0,767			
LK9		0.785			
Over1			0,814		
Over10			0,569		
Over2			0,836		
Over3			0,838		
Over4			0,836		
Over5			0,859		
Over6			0.763		
Over7			0,846		
Over8			0,847		
Over9			0,825		
PKI				0,763	
PK2				0,796	
PK3				0,755	
PK4				0,805	
PK5				0.835	
PK6				0,755	
PK7				0.765	
REP1					0,721
REP2					0.701
REP3					0.776
REP4					0,747
REP5					0,650
REP6					0.748
REP7					0.766
REP8					0,752
REP9					0,745

The outer loading results show that there is no loading factor value smaller than 0.4. This means that all the indicators contained in this research are suitable for use in research questionnaires.

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Coefficient of Determination (R Square)

The coefficient of determination (R Square) is a method used to assess how much the endogenous construct can be explained by the exogenous construct. If the R Square value is greater than 0.7, it can be said that there is a strong effect between the endogenous construct which is explained by the exogenous construct. The R square results can be seen as follows:

Table 5. R Square

	R Square	R Square Adjusted
Decision to Keep Investing	0,650	0,643
Financial Behavior	0,655	0,653

Based on the results, the R Square for the decision to continue investing is 0.650 and financial behavior is 0.655, where the two endogenous variables can be explained by the variables financial literacy, overconfidence and representativeness bias. Apart from that, the endogenous and exogenous variables in this model have a moderate relationship.

Hypothesis Test Results

Total Effect

The total effect is used to see how endogenous and exogenous variables as predictors are measured. The significance value used is the P-value greater than 0.05. The total effect results can be seen as follows:

Table 6. Total Effect

	T Statistics (|O/STDEV)	P Values
Decision to Keep Investing > Financial Behavior	24,245	0,000
Financial Literacy > Decision to Keep Investing	3,648	0,000
Financial Literacy > Financial Behavior	3,683	0,000
Overconfidence > Decision to Keep Investing	0,711	0,477
Overconfidence > Financial Behavior	0,714	0,476
Representativeness Bias -> Decision to Keep Investing	6,324	0,000
Representativeness Bias -> Financial Behavior	5,774	0,000

From the total effect results, it can be seen that financial literacy and representativeness can have a positive influence on the decision to continue investing. This can be seen from the P Values of 0.000. The research results show that the higher an investor's financial literacy, the greater the influence on the investor's decision to continue investing. Armed with good literacy, investors will be more confident in continuing to invest. The representativeness bias variable also has an influence on the decision to continue investing. The higher the representativeness bias, the higher the decision to continue investing. Apart from that, the overconfidence variable has no influence on the decision to continue investing where the resulting P Values are 0.477 > 0.000.

The test results also show that financial literacy and representativeness can influence financial behavior with a P value of 0.000. Meanwhile, the overconfidence variable has no effect on financial behavior with a P value of 0.476 > 0.000. The higher an investor's financial literacy, the greater the influence on investor behavior. Likewise with representativeness bias, the higher the level of representativeness bias, the greater the influence on investors' financial behavior. Apart from that, the decision to continue investing also has a positive effect on the financial behavior of stock investors.

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Specific Indirect Effects

The specific indirect effect test is used to see the indirect relationship with the mediating variable. The level of significance used to see whether there is an influence or not is a P-value of 0.05. The results of the specific indirect effect can be seen in the following table.

Table 4.5 Specific Indirect Effect

	T Statistics (|O/STDEV[)	P Values
Financial Literacy > Decision to Continue Investing > Financial Behavior	3,683	0.000
Overconfidence > Decision to Continue Investing > Financial Behavior	0.714	0,476
Representativeness Bias > Decision to Keep Investing > Financial Behavior	5,774	0.000

Based on the results of the specific indirect effect, it can be seen that financial literacy indirectly influences financial behavior with the decision to continue investing as an intervening variable with a P value of 0.000. Apart from that, the variable representativeness bias indirectly influences financial behavior with the decision to continue investing as an intervening variable with a P value of 0.000. Meanwhile, the overconfidence variable, either directly or indirectly, has no effect on financial behavior. Therefore, the decision to continue investing can intervene in the influence of financial literacy and representativeness bias on investors' financial behavior.

The model used in this research can be described as follows:

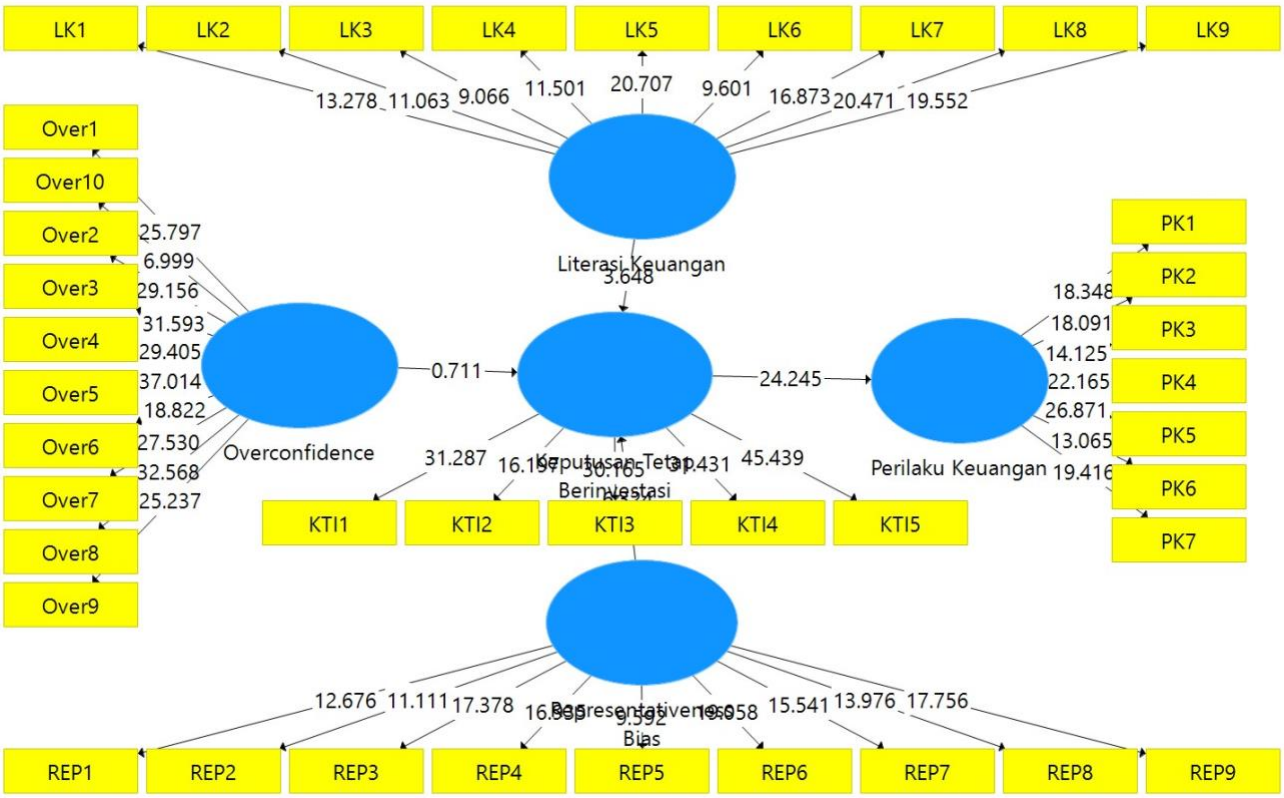

Figure 2. Research Model

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Conclusion

From the research results, it can be concluded that financial literacy and representativeness can have a positive and significant effect on the decision to continue investing and financial behavior. This shows that an investor's decision to continue investing is influenced by how much financial literacy he has and his past experience in investing. The higher the financial literacy one has, the higher the influence on the decision to continue investing, as well as representativeness bias. The more past experience an investor has in investing, the greater the influence on the investor's decision to continue investing. Apart from that, financial literacy and representativeness bias also have a positive influence on financial behavior. The higher the level of financial literacy of an investor, the greater the influence on his financial behavior, as well as representativeness bias. From the research results it can also be concluded that the decision to continue investing can be an intervention in seeing the relationship between financial literacy variables and representativeness bias towards financial behavior. In other words, these two variables, namely financial literacy and representativeness bias, indirectly influence financial behavior.

Suggestions

From the research that has been carried out, suggestions that can be given are to increase the number of research objects so that the research results are better. Apart from that, you can replace intervening variables so that all endogenous variables have an influence on exogenous variables. Apart from that, further research can also add other individual behavioral biases, be it cognitive bias or emotional bias.

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