

THE HERD EFFECT: HOW FINANCIAL LITERACY SHAPES INVESTMENT DECISIONS?

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Abstract. The era of globalization has impacted the financial and economic sectors, challenging investors to make the right investment decisions amid complex socio-economic phenomena. Financial literacy is considered a crucial component in making rational investment decisions. One of the bias factors affecting investment decisions is herding behavior, where individuals tend to trust the information and decisions of others more than their own judgment. This study attempts to examine the factors influencing investment decisions, i.e. financial literacy and herding behavior. A total of 287 respondents who are stock investors in East Java were gathered. The analysis in this study employs path analysis. Based on the analysis, it was found that financial literacy has a positive and significant effect on herding behavior. Furthermore, financial literacy and herding behavior have a positive and significant influence on investment decisions. This research also tests the role of herding behavior as a mediator, and the results show that herding behavior mediates the effect of financial literacy on investment decisions.

Keywords: Financial Literacy, Herding Behavior dan Investment Decision.

INTRODUCTION

The ongoing recovery of Indonesia's macroeconomic performance has made the Indonesian economy conducive for investment and trade, attracting global investors. This recovery was reflected in the series of Indonesian Investment Forum in Dubai (IIFD) 2023 organized by Bank Indonesia (BI) together with the Consulate General of the Republic of Indonesia in Dubai, the Embassy of Indonesia in Abu Dhabi, the Indonesia Investment Promotion Center (IIPC) - Ministry of Investment of the Republic of Indonesia, and the Indonesian Trade Promotion Center (ITPC) - Ministry of Trade of the Republic of Indonesia, in Dubai, United Arab Emirates (UAE) (Bank Indonesia, 2023). The IIFD offered various activities showcasing Indonesia's potential, including presentations on several investment project opportunities (IPRO), Indonesian Night in Dubai featuring IN2MOTION FEST (modest fashion show), evening events, and exhibitions of Indonesian SMEs, including those supported by BI (Majardi, 2023).

Over the past few years, the emergence of innovative financial products and instruments has encouraged individual investors to actively participate in the financial market (Calvet et al., 2004). Moreover, in the era of globalization, which impacts the financial and economic sectors, investors are challenged to make the right investment decisions amid complex socio-economic phenomena (Weixiang et al., 2022). The significant growth in the number of investors in Indonesia currently indicates an increasing awareness among the Indonesian populace of the importance of investing. According to Ahmad & Wu (2022), countries with developing economies experience high growth, and investors frequently engage in stock market investments. The Indonesia Central Securities Depository (2023) noted that the number of stock investors in the Indonesian capital market has reached 4 million. Furthermore, based on data from the Indonesia Central Securities Depository (2023), as of the end of July 2023, the number of Single Investor Identification (SID) has reached 4,888,910, with 99.59% being individual investors. Further referencing this data, it explains that the increasing trend has been observed since 2021 to 2023, with the number of investors reaching 4,888,910 individuals, predominantly consisting of investors under the age of 40, i.e. Gen Z and Millennials, accounting for 80.42%. Demographic data shows that stock investors are still concentrated in Java Island, accounting for 68.84%, including 12.93% of investors residing in DKI

Jakarta with total assets reaching Rp 3,536.74 trillion. However, these financial products are highly complex instruments, requiring investors to be financially literate in order to make optimal investment choices and navigate emerging investment avenues (Rasool & Ullah, 2020).

Financial literacy is considered a crucial component of economic and financial stability in various literature worldwide (Adil et al., 2022). Investors with good financial literacy have greater future opportunities for regular investment (Chawla et al., 2022) and making rational investment decisions (Arora & Chakraborty, 2023). Low levels of financial literacy adversely affect investment choices (Weixiang et al., 2022a) and investment decision-making (Hassan Al-Tamimi & Anood Bin Kalli, 2009). The importance of improving financial literacy is increasing due to various factors, including the development of new financial products, the complexity of financial markets, and changes in political, demographic, and economic factors (Hassan Al-Tamimi & Anood Bin Kalli, 2009).

Financial literacy is often associated with various financial behaviors, such as investment decisions (Arora & Chakraborty, 2023). Low levels of financial literacy negatively affect investment decisions, leading to irrational decision-making (Adil et al., 2022). Financial literacy is positively related to investment decisions and helps investors make better investments with maximum returns (Hassan Al-Tamimi & Anood Bin Kalli, 2009; Jain et al., 2022). Investors make investment decisions over different time frames and reduce bias impacts (Qasim et al., 2019). For example, cognitive and psychological biases can lead to poor investment decisions; understanding all biases would greatly assist investors in making better financial decisions (Jain et al., 2022). One bias factor that can influence individual investment decisions is herding behavior.

Herding behavior causes investors to act irrationally, as they trust the information and decisions of others more than their own judgment (Goyal, 2023). Herding behavior is related to conformity bias, where people feel more comfortable following the decisions of others around them (Metawa et al., 2019a). Several previous studies have stated that herding behavior is positively related to investment decisions (Agrawal et al., 2016; Ahmad & Wu, 2022b; Madaan & Singh, 2019). Ahmad & Wu (2022) assert that investors tend to follow the decisions of other investors in the stock market. Adil et al. (2022) also found that herding behavior positively influences investment decisions for both male and female investors in New Delhi, India. This research aims to examine the factors influencing investment decisions, namely financial literacy and herding behavior. Additionally, this research aims to test the role of herding behavior as a mediator of the influence of financial literacy on investment decisions. The findings contribute to the financial literature, particularly regarding financial literacy, herding behavior, and investment decisions. Furthermore, the research can help understand common behavioral patterns among investors, especially Millennials and Gen Z generations, in the Indonesian market.

RESEARCH METHOD

The research design applied in this study is explanatory research, aimed at objectively testing theories by examining the relationships between variables using instrumental tests. This research utilizes a quantitative method through the distribution of questionnaires to respondents to gather research data. With this approach, the study aims to provide a deeper understanding of the relationships between the variables under investigation and to explain the observed phenomena through quantitative data analysis.

The population in this study consists of individuals who invest in stock assets in East Java. The method of data collection in this research utilizes a questionnaire measured through a Likert scale. The Likert scale measures respondents' answers from point 1 (strongly disagree) to 5 (strongly agree), thereby generating research data that will be further analyzed. The sampling technique employed is purposive sampling with the aim of obtaining respondents' characteristics that are suitable for this study. Some of the sample criteria used in this study include individuals residing in the East Java region; individuals with a Single Investor Identification (SID) as an investor identity marker; individuals born between 1998 and 1968; individuals who have invested in stock assets.

The questionnaire was created using Google Forms, then distributed via direct mail and personal chat to potential respondents. The result of the questionnaire distribution yielded 287 valid respondents that can be used as research data to test the hypotheses of this study.

Financial literacy is measured through 12 items adapted from (Suri & Purohit, 2017; The MoneySENSE Financial Education Steering Committee, 2005). Financial literacy comprises 3 indicators: basic money management, financial planning, and investment knowledge & behavior. Herding behavior is measured through 10 items adapted from Ahmad & Wu (2022) and Prosad et al. (2015). Herding Behavior consists of 4 indicators: underconfidence, decision-making tendency, loss readiness, and following the crowd. Investment Decision is measured through 17 items adapted from (Gambetti & Giusberti, 2019; Gupta & Shrivastava, 2022; Metawa et al., 2019). Investment decision comprises 3 indicators: real-life investment decisions, fundamental analysis, and trend analysis.

RESULT AND ANALYSIS

1.1 Respondent Description

The distributed questionnaire has obtained 287 valid respondents that can be used as research data. The questionnaire distributed to respondents contains information about respondent characteristics such as gender, age, education, monthly income, and stock investment experience. Based on the questionnaire distribution results, the majority of respondents in this study are female, accounting for 68 percent, while males constitute 32 percent. Furthermore, 58 percent of the respondents are aged between 17 to 26 years old, 20 percent are aged between 26 to 31 years old, and 11 percent are aged between 31 to 36 years old. In terms of education level, the majority are dominated by high school graduates, accounting for 46 percent, followed by diploma or bachelor's degree holders at 42 percent. Regarding respondents' income level in this study, the majority, 44 percent, earn less than 2,500,000 IDR per month, while 31 percent earn between 2,500,000 to 5,000,000 IDR per month. Lastly, based on their investment experience, 48 percent of respondents have been investing for less than 12 months, and 26 percent have been investing for 12 to 24 months.

1.2 Normality test of the variables

In conducting the validity and reliability tests of the constructs, the researcher utilized the SPSS 25 application. The split-half Spearman method was employed to test the reability variables in this study (Appendix 1). Based on the analysis results, it is indicated that all items in this research are valid. Subsequently, reliability testing was carried out to determine whether respondents' answers to the questionnaire's questions could provide consistent answers. Variables in this study are considered reliable if they have a Cronbach's alpha value greater than 0.7 (Ghozali, 2021). Based on the reliability test results, all variables in this study are declared reliable, as shown in Table 1 below.

Table 1 Reliability Test

Variable	Cronbach Alpha	Information
Financial Literacy	0.919	Valid
Herding Behavior	0.887	Valid
Investment Decision	0.953	Valid

Source: Research Data, 2014

The validity testing conducted in this study used the Pearson correlation method. The results of the validity testing in this study are shown in Appendix 1. Based on the results of the validity testing, it is known that all statement items from the financial literacy, herding behavior, and investment decision variables are below 0.05, indicating that all statement items are valid and the research model can be tested.

1.3 Classical Assumption Test

The classical assumption test in this study consists of three stages: normality test, multicollinearity test, and heteroskedasticity test. The researcher used SPSS 25 application to conduct regression and classical assumption tests in this study. The normality test aims to determine whether the data distribution of variables is normal or not. A good regression model assumes that the data is normally

distributed, where the data spreads around the diagonal line. The normality test in this study uses Kolmogorov-Smirnov with monte carlo method. In this study, it can be observed that the data is normally distributed because significantly values is $0.309 > 0.000$, as depicted in the following table.

Table 2. Normality Test Regression Model I

One-Sample Kolmogorov-Smirnov Test			
			Unstandardized Residual
N			287
Normal Parameters ^{a,b}	Mean		0.0000000
	Std. Deviation		8.48906904
Most Extreme Differences	Absolute		0.056
	Positive		0.056
	Negative		-0.050
Test Statistic			0.056
Asymp. Sig. (2-tailed)			.030 ^c
Monte Carlo Sig. (2-tailed)	Sig.		.309 ^d
	95% Confidence Interval	Lower Bound	0.299
		Upper Bound	0.318
a. Test distribution is Normal.			
b. Calculated from data.			
c. Lilliefors Significance Correction.			
d. Based on 10000 sampled tables with starting seed 2000000.			

Table 3. Normality Test Regression Model II

One-Sample Kolmogorov-Smirnov Test			
			Unstandardized Residual
N			287
Normal Parameters ^{a,b}	Mean		0.0000000
	Std. Deviation		6.16764801
Most Extreme Differences	Absolute		0.077
	Positive		0.077
	Negative		-0.056
Test Statistic			0.077
Asymp. Sig. (2-tailed)			.000 ^c
Monte Carlo Sig. (2-tailed)	Sig.		.063 ^d
	95% Confidence Interval	Lower Bound	0.058
		Upper Bound	0.068
a. Test distribution is Normal.			
b. Calculated from data.			
c. Lilliefors Significance Correction.			
d. Based on 10000 sampled tables with starting seed 299883525.			

Source: Research Data, 2024

The next test is the multicollinearity test to determine whether the variables in this study have a high level of correlation or not. This study uses tolerance values and VIF as comparisons with the multicollinearity threshold. The multicollinearity threshold in this study is set at 0.10 for tolerance values and 10 for VIF values (Ghozali, 2021). Based on the analysis results, it can be concluded that there is no multicollinearity present in the regression model in this study.

Table 2 Multicollinearity Test

Model I	Collinearity Statistics	
	Tolerance	VIF
Financial Literacy	0.580	1.724
Herding Behavior	0.580	1.724
Model II		
Financial Literacy	1.000	1.000

Source: Research data, 2024

The last classical assumption test is the heteroskedasticity test, which aims to determine whether there is variance inequality in the regression model that can lead to misinterpretation. This study uses graphical media to display the results of the regression test. Based on the analysis results, it is found that neither of the two models in this study experiences heteroskedasticity, as can be seen in Figure 3 below.

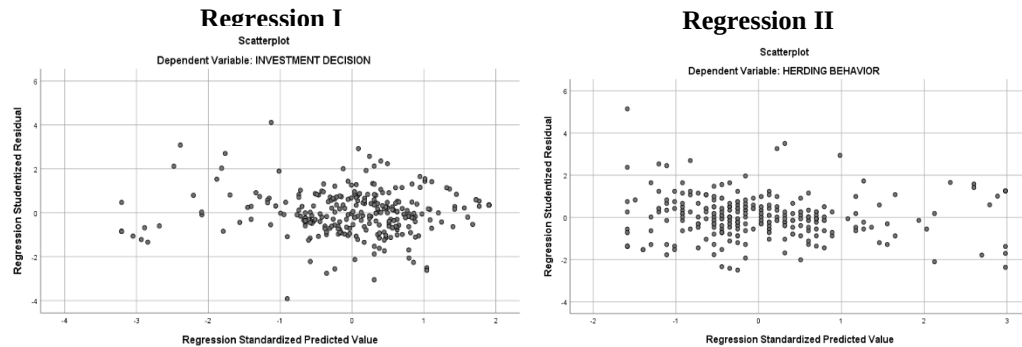


Figure 3 Heteroskedasticity Test

Source: Research Data, 2024

Table 3 Coefficient Determination Model I

Model	R Square	Adjusted R Square
Regresi I	0.641	0.638

Source: Research Data, 2024

Table 4 Hypothesis Testing Model I

Model	Unstandardized Coefficient		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	40.506	4.492		9.018	.000
Financial_Literacy	0.778	0.063	0.577	12.365	.000
Herding Behavior	-0.515	0.082	-0.295	-6.310	.000

Source: Research Data, 2024

Table 4 presents the equation for Model 1 as follows:

Model 1:

$$\text{Investment_decisions} = \alpha + \beta(\text{financial_Lit}) + \beta(\text{financial_Lit}) + e$$

$$\text{Investment_decisions} = 40.506 + 0.778(\text{financial_Literacy}) + (-0.515)(\text{Herding Behavior})$$

The regression analysis results for Model 1 examine the influence of the independent variable, financial literacy (X), on the mediating variable, herding behavior (Z). Based on the coefficient of determination results, Model 1 shows that the combined influence of financial literacy and herding behavior on investment decision is 64%, with the remaining variance influenced by variables outside the scope of this study. The regression analysis findings indicate that financial literacy has a positive and significant effect on investment decision ($p\text{-value} = 0.000 < 0.05$; $\beta = 0.603$), thus supporting Hypothesis 1. Furthermore, this also showed that herding behavior has a negative and significant effect on investment decision ($p\text{-value} = 0.000 < 0.05$; $\beta = -0.515$), thus Hypothesis 2 accepted.

Table 5 Regression Model II

Model	R Square	Adjusted R Square
Regression II	0.420	0.418

Source: Research Data, 2024

Table 6 Hypohotesis Testing Model II

Model	Unstandarized Coefficient		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
Constant	48.372	1.550		4.173	.000
Financial_Lit	-0.499	0.035	-0.648	-14.362	.000

Source: Research Data, 2024

Table 6 presents the equation for Model II as follows:

Model II:

$$\text{Herding Behavior} = \alpha + \beta(\text{financial_Lit}) + e$$

$$\text{Herding Behavior} = 48.372 + (-0.499)(\text{financial_Lit}) + e$$

The regression analysis results for Model II examine the influence of the independent variables, financial literacy (X), and the mediator variable, herding behavior (Z), on the dependent variable, investment decision (Y). Table 5 shows that 41.8% of the variance in herding behavior is influenced by financial literacy, while the remaining variance is influenced by other variables not included in the study. Furthermore, Table 6 demonstrates that financial literacy has a negative and significant effect on herding behavior ($p\text{-value} = 0.000 < 0.05$; $\beta = -0.499$), thus supporting Hypothesis 3.

1.4 Indirect Effect

The Sobel test was conducted in this study to determine the role of herding behavior as a mediator in the relationship between financial literacy and investment decision. The Sobel test was performed using the Sobel test application online developed by Dr. Daniel Soper. The results of the Sobel test calculation can be seen in Figure 4 below.

Input:		Test statistic:	Std. Error:	p-value:
a	-0.499	Sobel test: 5.74753284	0.04471223	1e-8
b	-0.515	Aroian test: 5.73572901	0.04480424	1e-8
s _a	0.035	Goodman test: 5.75940986	0.04462002	1e-8
s _b	0.082	Reset all	Calculate	

Figure 4 Sobel test

Source: Research Data, 2024

Based on Figure 4, the results of the Sobel test calculation show that the role of the herding behavior variable as a mediator in the relationship between financial literacy and investment decision is 5.7475, with a $p\text{-value} < 0.000$. Therefore, it can be concluded that the herding behavior variable mediates the influence of financial literacy on investment decision, thus confirming Hypothesis 4.

1.5 Discussion

The study examined 4 hypotheses related to financial literacy, herding behavior, and investment decision. Firstly, it investigated the influence of financial literacy and herding behavior on stock investment decisions among millennials and Gen Z. The results showed that financial literacy has a positive and significant effect on investment decisions. The higher the level of financial literacy among investors, the better their investment decisions. Investors are required to develop their financial knowledge due to the challenges posed by advancing times with innovative financial products and instruments, encouraging them to actively participate in the market (Rasool & Ullah, 2020). Investors with low financial literacy are less likely to participate in the stock market (Baker et al., 2019). This finding is consistent with previous studies (Weixiang et al., 2022a) stating that financial literacy positively influences investment decisions. However, this result contradicts previous research findings (Hala et al., 2020) & Kasoga (2021) stating that financial literacy has no effect on investment decisions.

The subsequent findings regarding the influence of herding behavior on investment decisions showed that there is a negative and significant effect of herding behavior on investment decisions. Suresh G (2024) stated that the driving factor for investors to herd and often disregard their analysis is due to repeated failures and bad experiences while investing. Additionally, emotional factors and investors' intuition play a significant role in their investment decision-making (P.H & Uchil, 2020). In this era, information is easily accessible through various social media platforms, which contributes to the increasing trend of herding behavior among investors. Moreover, millennials, who favor practicality, encourage the use of herding strategies, which are considered simpler and more straightforward than complex analysis. However, herding behavior also has negative consequences for investors, as they often engage in excessive trading, resulting in lower returns due to their herding behavior (Ahmad & Wu, 2022; Sharma & Firoz, 2022). This finding is in line with Adil et al. (2022) which states that herding behavior positively influences investment decisions.

The influence of financial literacy on herding behavior was also investigated in this study, with the results showing that financial literacy has a negative and significant effect on herding behavior. Financial literacy issues are a serious problem in various countries, both developed and developing. Ineffective financial planning and investors' inability to identify uncertainty and losses in the stock market lead investors to view heuristic bias as an alternative to address these issues (Rasool & Ullah, 2020). In other words, rational and irrational decisions can be determined by the level of financial literacy possessed by investors, thus impacting the decisions they make. This finding is consistent with Rahyuda & Candradewi (2023) and contradicts Trisno (2023).

The role of herding behavior as a mediating variable was also investigated in this study. Based on the analysis results, herding behavior partially mediates the influence of financial literacy on investment decisions. The process of making the right decisions requires adequate knowledge, information, and understanding of finance (Hala et al., 2020). Moreover, during transactions, investors tend to experience uncertainty related to the quality of circulating information, leading them to engage in herding behavior (Metawa et al., 2019; Sharma & Firoz, 2022). Most studies suggest using herding strategies, especially in complex and uncertain market environments. The reason is that herding behavior can guide investors in seeking information by effectively and efficiently utilizing information structures (Ahmad & Wu, 2022). Herding behavior can encourage investors to take high risks that can create excessive market volatility, thus governments are expected to increase the availability of quality information to reduce herding behavior (P.H & Uchil, 2020).

CONCLUSION

This study seeks to investigate the role of financial literacy in influencing investment decisions among Generation Z in Indonesia. Additionally, the study examines the mediating role of herding behavior in the relationship between financial literacy and investment decisions. The research findings indicate that financial literacy plays a significant role in the investment decision-making process. Herding behavior also contributes to investment decisions and serves as a bridge between the influence of financial literacy and investment decisions. Suggestions for future research include expanding the sample size, selecting intriguing research subjects, and adding additional variables. Furthermore, this study is expected to benefit future researchers in gaining a more comprehensive understanding of this research topic. Like most research studies, this study also has limitations. First, this study used an online survey with close-ended questions to collect respondents' answers, which may not fully reflect their opinions. Second, the sample size in this study is relatively small to produce generalizable research results. Finally, the description of respondents in this study is not detailed enough, so the study lacks detailed characteristics of the respondents.

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