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The Impact of Financial Literacy as a Moderating Factor on Financial Behavior and Investment Performance of Gen Z

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ABSTRACT

The increasing number of investors, especially young investors, is a positive signal that investment interest is growing in Indonesia. The development of technology and the openness of information are expected to be among the areas of interest. This study aims to analyze the extent to which investor financial behavior is described by heuristics and herding in determining investment portfolio decisions. Financial literacy as a moderating variable to strengthen or weaken the influence of heuristics and herding. The design of this study is a descriptive causal model that can answer how the relationship between the dependent variable and the independent variable is by analyzing the influence of the independent variable on the dependent variable and the presence of a moderating variable. The population in this study was generation Z investors domiciled in Medan City, North Sumatra, especially stock investors who have invested for at least the last 3 (three) years. The sampling method using stratified random sampling and the Slovin formula obtained a sample size of 100 generation Z stock investors. The data analysis method used was Moderated Regression Analysis (MRA) to test the hypothesis and was processed using SPSS software version 20. The results of the study found that heuristics and herding each had an effect on investment performance, while the moderating variable, namely financial literacy, was able to weaken the influence of heuristics on investment performance but was not able to moderate the influence of herding on investment performance in Generation Z. The results of this study indicate that it is important for investors to

increase self-awareness, especially their tendency towards heuristic and herding to be able to avoid impulsive decisions based on trends among generation Z.

1. INTRODUCTION

The stock market is a reflection of a country's finansial status. This implies that if the stock market conditions are stable, it will indicate that the country's economic situation is good, and vice versa. If the economy experiences growth, finansial product growth also increases, and has an impact on most companies experiencing growth. However, if the economy is in a recession, the stock market, as an finansial of economic health, will fall. Decisions in the capital market receive routine supervision because of their significant influence on economic conditions and investment. Irrational investor behavior implies that investors sometimes ignore information in decision-making that changes part of the investment value. A series of studies has shown that behavioral elements play an important role in determining market prices. This view is contrary to traditional finansial theory (Demirer & Kutan, 2006; Scharfstein Dan Stein, 1990).

Based on data from the Indonesian Stock Exchange on January 31, 2024, there was an increase in the number of investors by 1.30% compared to the end of 2023. This increase in the number of investors also noted that of the 11,986,634 Single Investor Identification (SID) numbers, 99.66% were local individual investors (www.idx.co.id). This trend of increasing the number of investors is dominated by investors under the age of 40, namely Gen Z and millennials, at 79.95%, with an asset value reaching IDR 122.16 trillion. As many as 60.45% of investors work as private employees, civil servants, teachers, and students with an asset value reaching IDR 495.61 trillion.

The large number of young Indonesians creates opportunities for young investors to dominate the capital market. However, attracting young investors is not easy because investment involves risks and returns that are interrelated. Young investors who tend to assume that investing in the capital market will be profitable without thinking about the risks often make them experience losses or failures. This failure can be influenced by internal investor factors,

better known as behavioral bias. Behavioral biases in investors consist of cognitive biases and emotional biases. Cognitive bias is a person's tendency to make decisions based on their perceptions, while emotional bias is a person's tendency to make decisions based on their feelings or emotions. Behavioral biases that investors have because of their relatively young age result in them tending to have high and uncontrolled emotional levels in making investment decisions quickly. Potential investors who are educated about the importance of decision-making to make investments are young people who often focus on how to get big and fast returns, assuming that investors in the capital market will make a profit without considering the risk of loss received in the future.

Research on herding behavior in investment decision making shows that voluntary actions to follow other investors have significant implications for the capital market; investors who tend to herd will avoid the information they get themselves and cause stock prices to be in a position far from their intrinsic value. This will certainly cause the market to become unstable (Balcilar et al., 2013). Several cases of accompaniment by social influencers such as Fahrenheit, Viralblast, Binomo, Olymtrade, and Quotex with recorded losses of 1.963 trillion rupiah were dominated by generations Y and Z (LPSK, 2022). This concludes that many young investors have herding behavior in investing. Based on the results of the OJK survey, the average national financial literacy rate only reached 38 percent. This figure is much lower than the national inclusion rate, which reached 76 percent. The literacy rate in the 26-35 year age range is above the national average of 48 percent. However, this figure is still far below the inclusion rate in that age range, which is 82 percent.

Research related to psychological aspects of economic behavior and investment decision making has seen increasing interest recently, such as Lucey & Dowling, (2005); Lowenstein (2000), Thaler, (2000), suggesting that the direction of economic research will become increasingly interested in the influence of emotions on economic decision making. Research that discusses expected emotions in investment decision making has been widely conducted to show the impact of psychological bias on stock returns such as overconfidence (Yates, 1990; De Bondt, 1998; Campbell et al., 2004), cognitive dissonance and representative bias by (Shefrin & Statman, 2000; Shefrin, 2002; Lucey & Dowling, 2005;), loss aversion by (Zajonc, 1980; Forgas, 1995; Isen, 2000; Kamstra et al., n.d.; Loewenstein, 2000; Thaler, 2000; Barber & Odean, 2001; Hirshleifer et al., 2003).

Medan City has quite a large potential with the support of good economic growth figures in North Sumatra Province. North Sumatra Province is ranked 6th in terms of the number of investors spread throughout Indonesia. In the local context, Medan City has different social and economic characteristics

from other regions, such as high urbanization, cultural diversity, and rapid increase in digital access. Therefore, examining the investment behavior of Generation Z in Medan City is important to understand the extent to which heuristics, herding, and financial literacy influence their investment decisions. This research is expected to provide theoretical contributions in the field of behavioral finance as well as practical contributions for regulators, educational institutions, and financial service providers in designing more effective education and regulation strategies.

2. LITERATURE REVIEW

The theory of financial behavior was introduced by Kahneman & Tversky (1979). Behavioral finance can be analyzed from various perspectives. Stock market returns are one area of finance where psychological behavior is often considered to influence market outcomes and returns, but there are also many different angles of observation. The purpose of behavioral finance classification is to help understand why people make certain financial choices and how those choices can affect the market. Durand et al. (2008) stated that behaviors related to Australian investors' personality are related to investor trading behavior and investment performance. More extroverted individuals have higher investment innovation, and are less masculine achieve superior investment performance. Individuals who have higher negative emotions, like risk, and are more open to experience choose higher risk investments. Higher negative emotions and higher risk preferences are associated with increased trading behavior. De Bondt (1998); Davidson & Stevens (2013) stated that investors can be categorized based on their psychology because the motivator of human actors is personality. Any form of permanent behavioral change process that occurs as a result of experience is called learning (Robbins & Everitt, 2002).

Financial behavior is always related to how individuals manage their finances. According to Herawati (2015), financial behavior is defined as behavior in managing personal finances, especially in managing the use of personal money wisely. According to Thi et al. (2015), financial behavior can be considered as a concept in disciplining finances, especially in effective financial management. According to Iroham (2013), financial behavior is a person's ability to organize planning, budgeting, checking, managing, controlling, and saving funds. According to Arsanti and Riyadi (2018), financial behavior is how a person treats, manages, and uses existing financial resources. The Theory of Planned Behavior is a theory that predicts planned behavior, so it can help to understand how to change a person's behavior. This

theory is a development of the Reasoned Action Theory by Ajzen & Fishbein (1975) and refined by Ajzen (1991), has been used to examine the desire and behavior of sharing. The theory of reasoned action assumes that behavior is determined by the individual's desire to do or not do a certain behavior and vice versa. Desire is determined by two independent variables, including attitude and subjective norm. The theory of reasoned action (Ajzen & Fishbein, 1975) assumes that behavior is determined by an individual's desire to perform or not perform a certain behavior or vice versa. Desire is determined by two independent variables, including attitude and subjective norm.

2. 1 The Influence of Heuristics on Investment Decisions

Research conducted by Abdin et al. (2017) shows that heuristics have a positive influence on investment performance; of the 4 heuristic components, availability and representativeness are the strongest predictors of investment performance. According to Siraji (2019), heuristics have a positive influence on the investment performance of investors in Sri Lanka. Sri Lankan individual investors are biased in investment decisions and experience losses, where they are reluctant to realize their losses due to behaving in a heuristic bias. The tendency of investors who are too overconfident and biased representativeness is seen in the behavior of investors who are less diversified and trade too often. Research conducted by Gavrilakis & Floros (2022) found that heuristic and herding behavior positively affect the construction of private investor portfolios and the level of performance satisfaction. Ahmad's research (2022) provides further insight into the relationship between recognition-based heuristic bias and investment management activities. The results show that bias driven by recognition-based heuristics has a significant positive effect on investment decision making and negatively affects the investment performance of individual investors. The results also show that fundamental and technical anomalies mediate the relationship between recognition-based heuristic bias on the one hand and investment management activities on the other.

H1. Heuristics Influence Generation Z's Investment Decisions.

2. 2 Financial Literacy as a Moderator of Heuristic Influence on Investment Decisions

Financial literacy is the extent to which a person understands the main ideas of finance and can make appropriate short-term decisions and long-term financial planning (Remund, 2010). Individuals are expected to act with overconfidence while considering their capacity, knowledge, and prospects (Parveen et al., 2020). Rasool & Ullah (2020) found a negative relationship

between financial literacy and behavioral bias of individual investors in Pakistan, which implies that with increasing levels of financial literacy, the likelihood of investors facing behavioral bias decreases.

H2. Financial Literacy Can Reduce the Influence of Heuristics on Investment Decisions.

2.3 The Influence of Herding on Investment Decisions

Herd behavior is a behavior in which investors tend to imitate the behavior of others (Kengatharan & Kengatharan, 2014). This behavior represents a situation where people do things together with what many other people do (Arisanti & Asri, 2018). Herding occurs when a person's private information is compromised, the impact of public information on group or individual decisions (Areiqat et al., 2019). Investors believe that other investors are more competent in making investment decisions. These investors will then be able to follow more skilled investors. A study by Ghalandari & Ghahremanpour (2013) found a significant impact of herd behavior on investment decisions in Iran. However, another study by Bakar & Yi (2016) did not find the significance of herd behavior in investment decisions. The results of Chu et al.'s (2017) study showed that in male investors, the influence of risk aversion and herding on investment decisions was negative and statistically significant, while the influence of overconfidence on investment decisions was positive and significant. However, the influence of disposition was found to be statistically insignificant. The results state that among female investors, the influence of risk aversion and herding on investment decisions is negative and statistically significant. However, the influence of overconfidence and disposition is not statistically significant in influencing investment decisions.

H3. Herding Affects Investment Decisions.

2.4 Financial Literacy as a Moderation of Herding's Influence on Investment Decisions

It has been observed that financial literacy significantly influences investment decisions between male and female investors. The results of the interaction between male investors state that the interaction between overconfidence and investment decisions is significantly influenced by financial literacy. However, the interaction of financial literacy with three other biases, namely risk aversion, herding, and disposition, was found to be insignificant. The results of the interaction of the influence of financial literacy with overconfidence, risk aversion, disposition, and herding were found to be statistically significant among female investors. An investor with knowledge

of financial literacy uses more analysis of financial information published by the company than advice from investment managers, friends, or the media (Budiman, 2024).

H4. Financial Literacy Can Reduce the Influence of Herding on Investment Decisions.

3. METHODS

This study uses a comparative causal research design. This study answers how the relationship between the dependent variable and the independent variable is by analyzing the influence of the independent variable on the dependent variable and the presence of moderating variables. Heuristic and herding are independent variables to see their relationship with investment performance (dependent variable). Financial literacy is a moderating variable to see their relationship with investment performance. The population in this study was all generation Z investors who live in the city of Medan and have invested for at least the last 3 years from the year of the study. Based on data from the IDX as of January 2024, the number of investors in North Sumatra was 297,168. SID (Single Investor Identification) are stock investors, and Generation Z investors are around 34.92% of the total investors.

The sampling technique, along with probability sampling, was used to collect data from active individual investors. Stratified random sampling allows us to group the population based on market share criteria and then choose random cluster sampling to randomly select participants who are geographically dispersed. Stratified random sampling ensures that the sample is distributed in the same way as the population (Bell & Bryman, 2007). The total target population of active individual investors of this study is around 103,771 Gen Z investors. Using the slovin formula, the recommended sample size of the study is 100 individual investors.

The instrument is a tool used for data collection. This study uses a questionnaire instrument, which will later be distributed via Google Form to Gen Z investors in the city of Medan. The distribution of the questionnaire is also through several investor communities on social media (WhatsApp and Telegram). This study aims to test and analyze the causal relationship between variables while examining the validity and reliability of the research instrument as a whole. The data analysis method in this study uses moderated regression analysis (MRA). The software used to analyze the data is SPSS version 20, and to test the moderating variables using the interaction method.

4. RESULTS AND DISCUSSION

Respondents in this study were dominated by men (54%), with a marital status of 55% married (Table 1). The educational background of respondents in this study was mostly Master's (35%), which shows that in terms of literacy, the majority of investors already know and understand finance and have maturity in making decisions. As many as 37% of respondents use income sources from salaries as investment capital, and reflect that respondents have a fixed and stable income compared to entrepreneurs (31%). The motivation of respondents in investing in stocks is mostly aimed at savings (37%) and investment (35%) in the future. This illustrates that generation Z investors in particular already have an awareness of the importance of investment and have a financial strategy for financial freedom that they hope to enjoy in the future.

Table 1. Respondent demographics

Demografi	Frekuensi (n)	Persentase (%)
Gender		
- Woman	46	46%
- Man	54	54%
Marital Status		
- Not Married	45	45%
- Married	55	55%
Educational background		
- Highschool	17	17%
- Diploma	24	24%
- bachelor	24	24%
- Master	35	35%
Main source of income		
- Business	31	31%
- Salary	37	37%
- other	32	32%
Main purpose of investment		
- Savings	37	37%
- Main income	0	0%
- Passive Income	28	28%
- Investment	35	35%

Sources: data is processed, 2025

Before the hypothesis testing was conducted, the research questionnaire had passed the validity and reliability test with the calculated r value > r table and sig value < 0.05 with the results of all question instruments from the heuristic, herding, financial literacy and investment performance variables being valid and can be used in this study (Table 2).

Table 2. validity test

Variabel	Indikator	Total Correlation	Sig (2-tailed)	Keterangan
Heuristic	HE1	0,547	0,002	Valid
	HE2	0,565	0,001	Valid
	HE3	0,418	0,022	Valid
	HE4	0,421	0,021	Valid
	HE5	0,447	0,013	Valid
	HE6	0,431	0,018	Valid
Herding	HR1	0,596	0,001	Valid
	HR2	0,743	0,000	Valid
	HR3	0,772	0,000	Valid
	HR4	0,677	0,000	Valid
	HR5	0,474	0,008	Valid
	HR6	0,748	0,000	Valid
Financial Literacy	LK1	0,688	0,000	Valid
	LK2	0,610	0,000	Valid
	LK3	0,604	0,000	Valid
	LK4	0,371	0,043	Valid
	LK5	0,563	0,001	Valid
	LK6	0,661	0,000	Valid
Investment Performances	KI1	0,416	0,022	Valid
	KI2	0,457	0,011	Valid
	KI3	0,562	0,01	Valid
	KI4	0,417	0,022	Valid

Sources: data is processed, 2025

The results of the reliability test obtained that the Cronbach's alpha value of the heuristic variable (X1) was 0.869, the herding variable (X2) was 0.625, the financial literacy variable (M) was 0.769, and the investment performance variable (Y) was 0.841. With all Cronbach's alpha values of all variables greater than 0.60, it can be concluded that all question instruments are declared reliable (Table 3).

Table 3. Realibility test

Variabel	Cronbach's alpha	N of items	Keterangan
Heuristic	0,869	6	Reliabel
Herding	0,625	6	Reliabel
Finansial Literacy	0,769	6	Reliabel
Investment Performances	0,841	4	Reliabel

Sources: data is processed, 2025

In the classical assumption test, the research data have been tested for normality, multicollinearity, autocorrelation, and heteroscedasticity. The normality test must have a Kolmogorov-Smirnov and sig value > 0.05. In Table 4, it is known that the Kolmogorov-Smirnov value is 0.972 and the asymptotic sig value (2-tailed) > 0.05, so that it can be concluded that the data is normally distributed.

			Unstandardized Residual
N			100
Normal Parameters[a,b]		Mean	0E-7
		Std. Deviation	9,75534828
Most Differences	Extreme	Absolute	,097
		Positive	,097
		Negative	-,046
Kolmogorov-Smirnov Z			,972
Asymp. Sig. (2-tailed)			,301

a. Test distribution is Normal.
b. Calculated from data.

Figure 1. One-Sample Kolmogorov-Smirnov Test

The multicollinearity test can be seen from the Tolerance and VIF values of the two independent variables which are 0.968, which is greater than 0.10 and the VIF value is 1.033 which is less than 10 so it can be concluded that the heuristic and herding variables do not have a correlation between the independent variables (Table 4).

Table 4. Multicollinearity test

Variabel	Tolerance	VIF
Heuristic	0,968	1,033
Herding	0,968	1,033

Sources: data is processed, 2025

Based on Table 5 of the heteroscedasticity test results, it can be seen that the heuristic variable has a significance value of 0.878, which is greater than 0.05. And the herding variable has a significance value of 0.421, which is greater than 0.05 or 5%. Therefore, it can be concluded that the regression model does not show symptoms of heteroscedasticity.

Table 5. Heteroscedasticity test

Variabel	Thitung	Sig
Heuristic	0,154	0,878
Herding	0,808	0,421

Sources: data is processed, 2025

To test hypotheses 1 and 3, based on table 6, the T-value for heuristic is 3.757 and the t-table value is 1.983 and the sig value (0.000 <0.05) means that H1 is accepted, namely heuristic has a significant effect on investment performance in generation Z. As with the herding T-value of 4.317, which when compared with the t-table value (4.317 <1.983) and the sig value (0.00 <0.05),

it can be concluded that H3 is accepted, namely herding has a significant effect on investment performance in generation Z. For the financial literacy variable moderating the effect of heuristic on investment performance, the t-value is 3.101> 1.983 and the sig value is 0.003 <0.05, which can be concluded that H3 is accepted, namely financial literacy can moderate the effect of heuristic on investment performance. For the financial literacy variable, moderating the effect of herding on investment performance, the t-test value < t-table (1.004 < 1.983) and sig value (0.318 > 0.05) were obtained, so H4 was rejected, namely that financial literacy was not able to moderate the effect of herding on investment performance.

Table 6. Hypotheses test

Hipotesis	Nilai t	Sig	Kesimpulan
H1: Heuristic → Investment Performances	3,757	0,000	Approved
H2: Herding → Investment Performances	4,317	0,000	Approved
H3: Heuristic → Finansial Literacy → Investment P	3,101	0,003	Approved
H4: Herding → Finansial Literacy → Investment P	1,004	0,318	Not Approved

Sources: data is processed, 2025

5. Discussion

The influence of heuristics on investment performance

The results of the study show that H1 is accepted and H0 is rejected, namely, Heuristics affect investment performance in generation Z investors in Medan. Heuristics, as a form of quick decision-making based on experience or rules of thumb (Tversky & Kahneman, 1974), can have positive or negative impacts depending on the context of their use. In the context of generation Z, who tend to be more technologically literate and accustomed to fast information access, heuristics can increase the efficiency of investment decision-making.

This study is in line with the results of this study, including research conducted by Anggia et al. (2022), Luong & Ha (2011), Aziz & Khan (2016), Babajide & Adetiloye (2012), Javed et, al (2017) which concluded that anchoring, availability, representativeness and overconfidence affect investment performance. However, the results of this study are not in line with research conducted by Ahmad & Shah (2022), which found that heuristic bias cannot be predicted as good or bad, rational or irrational, if their environment supports and has a level of understanding in terms of investing.

Financial literacy as a moderating variable of the influence of heuristics on investment performance

Financial literacy plays an important role in directing the use of heuristics to be wiser. Investors with high financial literacy are better able to identify bias in heuristics and control decision-making. Therefore, financial literacy significantly moderates this relationship. Based on these results, financial literacy can help weaken the effects of heuristics (anchoring, availability, representativeness, and overconfidence) in investment decision making and improve investor performance. The results of this study also explain that investors understand that financial literacy can be a variable that can weaken the adverse effects of investor bias behavior in making investment decisions.

This is consistent with previous research (Lusardi & Mitchell, 2014), which shows that individuals with high financial literacy are more efficient in managing risk and choosing the right investment instruments. Research conducted by Hayat & Anwar (2018) also states that financial literacy can weaken the adverse effects of heuristics on investment decisions. The results of this study are not in line with the research conducted by Novianggie & Asandimitra (2019), which found that high financial literacy tends not to affect investor bias behavior. However, because heuristics can contain biases such as overconfidence or representativeness, the impact can vary depending on the level of financial literacy.

The effect of herding on investment performance

Herding is the behavior of following the majority's investment decisions without conducting independent analysis. Its effect on investment performance can be significant because this behavior often leads to speculative or trend-based decisions, rather than fundamental values. In Generation Z, which is heavily influenced by social media and online communities, herding can be even stronger. Therefore, although herding affects investment performance, this is because respondents in this study tend to rely on information they get through internet technology as a basis for making investment decisions. These results indicate that investors tend to receive information and conduct good analysis when carrying out gold investment activities. Investors tend to be rational because they are not influenced by other investors. The behavior of gold investors tends not to follow other investors in making their investment decisions. This shows that gold investors make their investment decisions based on the information they get and based on their considerations. This investor behavior can also occur because of the availability of information that is considered sufficient as a basis for making investment decisions, so that investor behavior is not just

following suit. The majority of investors in this study are young or Generation Z, who do have the advantage of absorbing more information quickly through the technology they master and the expertise in digging up a lot of valid information. This is reflected in the average respondent who knows about gold investment through the internet or social media. Coupled with the availability of sufficient information, it can be used as a basis for decision-making.

Research conducted by Erlianda & Maulidasari (2023) and Iman (2021) supports the results of this study, but research conducted by Yuwono & Altiyane (2023), Dangol & Manandhar (2020), Setiawan et al (2018), and Gozalie and Anastasia (2015) does not support the results of this study.

Financial literacy as a moderating variable of the herding influence on investment performance

Financial literacy does not moderate this influence because social influence and group pressure are often more dominant than individual knowledge. This shows that even though someone has high financial literacy, they are still susceptible to social pressure or fear of missing out (FOMO), especially among the younger generation who are active on social platforms such as TikTok or Twitter/X. This supports the idea that psychological and social aspects can overcome rational knowledge in certain situations (Banerjee, 1992). The influence of influencers and famous figures in the stock market still has a strong influence on influencing investment decisions taken by Generation Z investors, even though the knowledge and analytical abilities of investors in finance are quite high.

The results of this study are not in line with the research conducted by Hayat & Anwar (2018), which found that financial literacy can negatively moderate the influence of herding on investment performance.

5. CONCLUSION

This study concludes that both heuristic and herding variables can influence the investment performance of generation Z. Financial literacy can strengthen the influence of heuristic on investment performance, but has not been able to strengthen the influence of herding on the investment performance of generation Z. The results of this study indicate that it is important for investors to increase self-awareness, especially their tendency towards heuristic and herding to be able to avoid impulsive decisions based on trends among generation Z. Likewise, regulators, especially the Financial Services Authority (OJK) and the Indonesia Stock Exchange (IDX), can develop literacy programs that not only focus on basic financial knowledge, but also

integrate aspects of financial behavior and social simulation so that young investors can understand and manage herding risks. Suggestions for further researchers can add social variables (social influence, peer pressure) and emotional (emotional intelligence) to see other factors that can affect investment performance because financial literacy has not been able to moderate herding. For securities companies as mediators of investment activities, they can use the results of this study as a reference so that they can analyze and predict future stock trends by providing open information to all investors and providing investment strategies for investors so that they can become wise investors such as providing simulations before investors buy shares.

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