OVERCONFIDENCE AND HERDING: HOW THESE BIASES AFFECT GENERATION Z INVESTMENTS DECISION MAKING

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ABSTRACT

The investment behavior of Generation Z in the continuously evolving economic dynamics has become a major focus of the global investment community today. Generation Z, raised in the era of rapid digital technological advancements, has instant access to financial information and investment platforms. They are often characterized by two strong perspectives: FOMO (Fear of Missing Out) and YOLO (You Only Live Once). FOMO drives them to follow popular investment trends, often leading to herding bias, while YOLO encourages them to take greater risks for short-term gains, resulting in overconfidence bias. The purpose of this study is to understand and analyze the impact of overconfidence bias and herding bias on the investment decisions of Generation Z. This research employs a survey method with a confirmatory approach. Data was collected from a sample of 104 respondents through questionnaires distributed via Google Form. Hypothesis testing was conducted using SEM Analysis with the assistance of SmartPLS 4.0 software. The results of the study indicate that overconfidence bias has a positive and significant influence on the investment decisions of Generation Z, while herding bias does not have a significant influence. Furthermore, this research reveals that the variables of overconfidence bias and herding bias can explain 45.4% of the variation in the investment decisions of Generation Z. However, it is important to acknowledge the limitations of this study, such as the relatively small number of respondents (only 104 respondents) and the absence of comparative analysis with demographic factors of other generational groups (e.g., older generations). This study is expected to provide deeper insights into the investment behavior of Generation Z and serve as a foundation for the development of wiser risk and financial management approaches for this demographic group.

Key words: Behavioral Finance; Overconfidence Bias; Herding Bias; Investment Decisions; Generation Z

INTRODUCTION

Investment behavior has become a crucial aspect of individuals' financial lives, especially in the midst of the continually evolving economic dynamics. Over the past few decades, investment has undergone significant transformation with the emergence of a new generation of investors often referred to as Generation Z. Comprising individuals born between 1995 and 2010 (Codrington, 2012), Generation Z is a group that increasingly dominates the current investment landscape. They grew up in a rapidly advancing digital technology era, which granted them instant access to financial information and investment platforms with ease and speed.

As of May 2023, the number of registered investors in the Single Investor Identification (SID) held by the Indonesia Central Securities Depository (Kustodian Sentral Efek Indonesia) reached 11 million, precisely 11,062,050. This figure represents a significant increase of 7.28% compared to the end of 2022 when there were 10.3 million investors. Interestingly, among this composition, the number of investors in the capital market is currently dominated by millennials and Generation Z, contributing a total of 57.81% of the total number of investors with a combined total asset value of IDR 49.22 trillion. Meanwhile, investors aged over 60, who make up about 2.82% of the total number of investors, still possess the highest total asset value, amounting to IDR 759 trillion (Bareksa, 2023).

The substantial growth in the number of Generation Z investors underscores their relevance in the current investment landscape. Their ability to harness technology and easy access to information has transformed the way they manage finances and make investment decisions. Furthermore, the dominant presence of millennials and Generation Z in the capital market reflects a shift in investment dynamics, where younger generations are increasingly taking center stage in shaping financial market trends and directions. In this context, it is crucial to gain a deeper understanding of Generation Z's investment behavior, often characterized by two strong perspectives collectively referred to as the "Gen Z Syndrome," namely FOMO (Fear of Missing Out) and YOLO (You Only Live Once) (Anderson, et al., 2021).

FOMO is a condition where an individual experiences fear and anxiety about being perceived as outdated, not following trends, and not being up-to-date with the latest news (Alutaybi, et al., 2020). Generation Z grew up in a tightly connected era of social media, where they are constantly exposed to the lives and achievements of others. FOMO can drive them to be overly active on social media, feeling the need to participate in everything, and feeling insecure if they don't engage in popular trends or events. In the context of investments, FOMO can lead Generation Z to follow popular investment trends or sudden increases in asset value. This can result in herding bias, where individuals follow the "herd" without conducting thorough analysis, simply out of fear of missing out (Argan, et al., 2023; Kärkkäinen, 2023).

YOLO is a perspective that encourages an individual to believe that life is given only once, therefore, it should be fully enjoyed. It also implies that one should be willing to take risks in various aspects of life and not miss out on existing opportunities because there is only one chance in this world. This perspective can stimulate spontaneous actions taken without much consideration, as it is believed that we only live once. In the context of investments, YOLO can drive Generation Z to take greater risks in an effort to achieve higher short-term returns. They tend to try riskier investments in the hope of quick and high returns without conducting thorough analysis or planning for the long term (Lyócsa, et al., 2022; Just & Petersen, 2023). This can result in overconfidence behavior, where individuals may believe they have greater knowledge and skills in dealing with risk than they actually do (Heimer, et al., 2015; Chohan & Van Kerckhoven, 2023). This behavior can lead to investment mistakes.

In the field of behavioral finance, there are several anomalies that occur in decision-making processes due to psychological factors commonly referred to as biases. In the framework of behavioral finance, these biases can be grouped into two main types: cognitive biases and emotional biases.

Cognitive biases involve errors in thinking or judgment that often occur in financial decision-making. Cognitive biases can lead individuals to make decisions that are not always rational, such as overconfidence bias where someone has excessive confidence in their ability or knowledge in dealing with risk. This can lead them to take greater risks than they should (Pompian, 2012).

Overconfidence bias is a form of irrational belief influenced by emotional impulses, overestimation of self-worth, and disproportionate and excessive self-assessment of cognitive abilities. Excessive confidence makes someone feel smarter and more knowledgeable than they actually are, so when they make predictions they believe to be certain, the results often fall short (Ainia & Lutfi, 2019). Overconfidence bias can make investors overly confident in their own knowledge and abilities while underestimating existing predictions and information because they magnify their own personal abilities. Overconfidence bias can also cause individuals to disregard relevant information, which can increase the risks they face.

Pompian (2012) explains that overconfidence bias is a bias in which individuals show unfounded confidence that stems from intuitive judgment, self-assessment, and/or their own cognitive abilities. This bias is difficult to change because it is challenging to alter someone's perception of their knowledge and abilities. Investors with high levels of overconfidence bias tend to make significant investment mistakes, such as excessive trading (Gitman, et al., 2015). This indicates that overly confident investors tend to make significant errors in their investment decisions.

Shefrin (2007) divides overconfidence bias into two groups: overconfidence bias about ability, where individuals feel they have better abilities than they actually do, and overconfidence bias about knowledge, where individuals feel they have more knowledge than they actually do. This arises because individuals feel smarter and better than they actually are.

There is a wealth of empirical and experimental evidence that overconfidence is a factor influencing investment decisions. Barber & Odean (2001); Dittrich, et al. (2005); Glaser & Weber (2007); Gervais, et al. (2011); Adel & Mariem (2013); Michailova, et al. (2017); Ainia & Lutfi (2019); Ahmad & Shah (2020); Combrink & Lew (2020); Seraj, et al. (2022) found that the higher an individual's level of self-confidence, the higher the likelihood of allocating funds to high-risk assets, and vice versa.

Emotional biases involve emotional reactions that influence financial decisions. One example of an emotional bias is herding bias, where individuals tend to follow the actions of the majority or the prevailing consensus without conducting independent analysis. Herding bias can occur due to a fear of missing out or emotional factors such as fear (Kumar & Goyal, 2015).

Herding bias is a behavioral tendency where an investor follows the actions of other investors (Putri & Isbanah, 2020). Herding behavior is irrational as investment decisions are not based on available company information or fundamental values but rather on following the actions of other investors or being influenced by market noise (Afriani & Halmawati, 2019). Herding behavior can lead to abnormal stock market movements and indicate anomalies in the capital market. This occurs because there is an indication that investors collectively follow the actions of other investors or follow the market noise.

Herding bias tends to be influenced by peers or the surrounding environment. Additionally, specific situations can trigger herding behavior, such as information ambiguity or uncertainty about accurate information. This condition makes investors follow the behavior of other investors or follow pre-existing consensuses. When herding behavior occurs, investors make investments without considering the risks or potential gains that may be obtained. They engage in herding to avoid the risk of making difficult stock decisions. The negative impact of herding behavior includes the possibility that investors invest in stocks they do not fully understand and take unnecessary risks.

Several recent studies have examined herding bias as one of the factors influencing investment decisions (Kumar & Goyal, 2016; Madaan & Singh, 2019; Novianggie & Asandimitra, 2019; Qasim, et al., 2019; Khan, 2020; Robin & Angelina, 2020; Rahayu, et al., 2021; Adil, et al., 2022). This is because there is a motivation to follow the behavior of other investors who invest in specific types of investment products, are interested in advice and support from other investors, and see the profit motives obtained from other investors.

Thus, in behavioral finance, both of these biases, both cognitive and emotional, can influence individual investment decisions. Overconfidence bias may lead someone to feel more confident in dealing with risk than they

should, while herding bias may make them follow popular investment trends without thorough analysis. Therefore, understanding these biases becomes essential in analyzing and planning better investment decisions for Generation Z. This research will help provide deeper insights into the investment behavior of Generation Z and serve as a foundation for the development of wiser risk and financial management approaches for this group.

METHOD

Research Design

The method employed in this study is a survey method to collect data and information in line with the predetermined research objectives, where information is gathered from a sample of individuals through statements in questionnaires. The purpose of this research is to understand and analyze the influence of overconfidence bias and herding bias on the investment decisions of Generation Z. The independent variables in this study are overconfidence bias and herding bias, while the dependent variable is investment decisions. The approach used in this research is quantitative, with a verificative research type, aimed at testing the relationships and influences between the independent and dependent variables.

Population and Sample

The target population is the Generation Z community, which includes individuals born between 1995 and 2010 (Codrington, 2012). Due to the large and unknown population, as well as limitations in various aspects, the calculation is done using the Lemeshow formula. The Lemeshow formula (Sugiyono, 2019) is as follows:

$$n = \frac{z^2 pq}{e^2}$$

Explanation:
n = Required sample size
z = 95% confidence level = 1.96
p = Probability of being correct 50% = 0.5
q = Probability of being incorrect 50% = 0.5
e = Sampling error rate 10% = 0.1

Using the Lemeshow formula with an estimated 50% and a 10% sampling error rate, the calculation can be done as follows:

$$n = \frac{1{,}96^2 . 0{,}5.0{,}5}{0{,}1^2}$$

$$n = \frac{3{,}8416.0{,}5.0{,}5}{0{,}1^2}$$

$$n = \frac{0{,}9604}{0{,}1^2}$$

$$n = 96{,}04$$

From the calculation, a minimum of 96 respondents is obtained. In this study, a sample of 104 respondents was obtained, with the following characteristics:

Table 1. Demographic information of the sample

No.	Demographic Factors	Majority	Minority
1	Gender	Female (59.6%)	Male (40.4%)
2	Age	18 - 22 years old (97.1%)	23 – 27 years old (2,9%)
3	Education	Bachelor (55%)	High school equivalent (45%)
4	Length of Investment	≤ 1 year (67,3%)	> 1 year (32,7%)

Source: Processed data

Type and Source of Data

The data used in this research is primary data collected using a questionnaire containing closed-ended statements distributed through Google Forms. The questionnaire includes statements that cover data on overconfidence bias and herding bias, as well as data on investment decisions using an ordinal scale. The collected data is then scored from 1 to 5 based on a Likert scale.

The measurement items for collecting data on overconfidence bias, herding bias, and investment decision in this research are as follows:

Table 2. Measurement items for overconfidence bias, herding bias and investment decisions

Constructs	Indicators	Measurement items	Literature
Overconfidence Bias (X1)	Feeling confident in one's abilities.	X1.1 I am confident in the investment decisions I make.	Ullah, et al. (2017)
		X1.2 I have good knowledge of the type of investments I engage in.	
		X1.3 I believe that my skills can help me profit from the investments I make.	
	Feeling experienced enough.	X1.4 I have a proven profitable experience, so I feel more confident in making investment decisions.	
	Feeling able to predict the profits that will be generated from one's experience easily.	X1.5 I can easily predict investment profits through my experience.	
	Feeling to have superior knowledge and skills compared to other investors.	X1.6 I have better knowledge and skills in investments compared to others.	
Herding Bias (X2)	Following and being influenced by the decisions of other investors in making investment decisions.	X2.1 I tend to follow the decisions of other investors in making investments.	Altaf & Jan (2023)
	Preferring to invest in assets that are widely bought by other investors.	X2.2 I prefer to invest in assets that are widely bought by other investors.	
	Responding quickly to any changes in decisions made by other investors.	X2.3 I often buy/sell stocks due to being influenced by the decisions of others.	
	Having a fear of missing out when not following what others are doing.	X2.4 I feel worried and afraid of missing out if I don't follow the decisions made by others.	
	Believing that a group of people will not make the same mistake or decision simultaneously.	X2.5 I believe that a group of people will not make wrong investment decisions simultaneously.	
	Believing that following the majority's decisions in investing is the right and profitable way.	X2.6 I tend to follow the majority's decisions in investing and believe that it always leads to profit.	
	Lacking thorough and careful analysis and consideration in the investment decisions made.	X2.7 I tend not to conduct thorough and careful analysis in making investment decisions.	
Investment Decisions (Y)	Return	Y1.1 I invest with the aim of gaining profit (return).	Tandelilin in Marsis (2013)
		Y1.2 I allocate my money to various types of investments to attain varying returns.	
	Risk	Y1.3 I first study the risks I will be exposed to before making investment decisions.	
		Y1.4 Prior to making investments, I have conducted in-depth market research and analysis to ensure profit potential and minimize loss risks.	
	Time Factor	Y1.5 I take into consideration the time factor of investments before deciding to invest.	
		Y1.6 I have a specific timeframe in mind to achieve my investment goals.	

Hypotheses

Based on the explanation above, the hypotheses developed in this study are as follows:
H1: There is an influence of overconfidence bias on the investment decisions of Generation Z.
H2: There is an influence of herding bias on the investment decisions of Generation Z.

Data Analysis Technique

Data analysis was conducted to present the research findings and test the research hypotheses. The data analysis technique used is inferential analysis, which is carried out to test the research hypotheses and various assumptions that must be met. Statistical analysis is performed using the Structural Equation Model (SEM) with the assistance of SmartPLS 4.0 software. In this analysis method, t-statistic hypothesis testing and Model Evaluation (Inner Model) testing are conducted to determine the R-square value. Validity and reliability tests are conducted first. The research model can be seen in Figure 1 as follows:

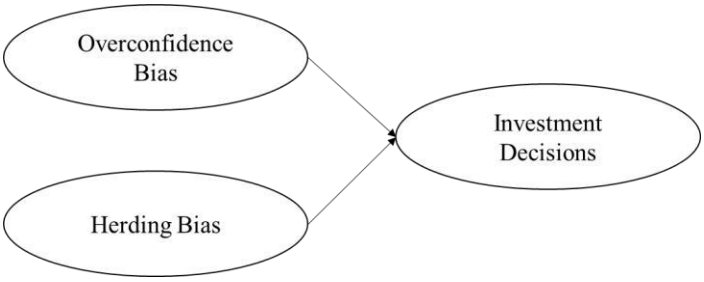
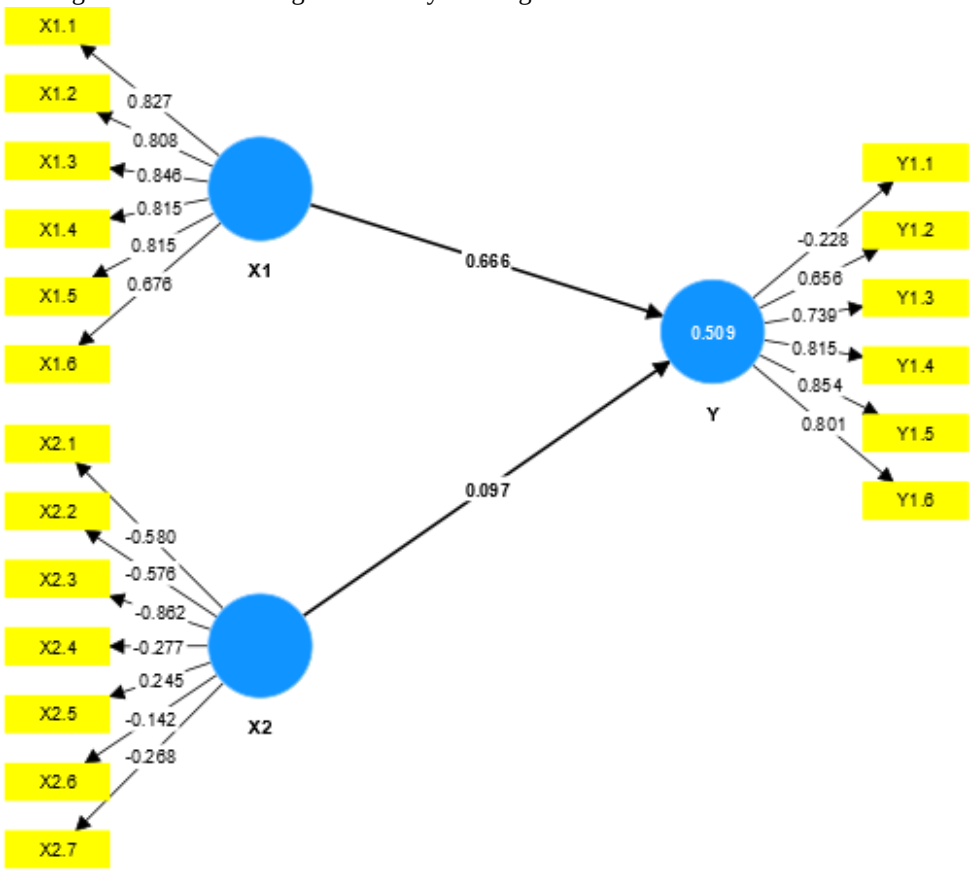


Figure 1. Research Model

RESULTS AND DISCUSSION

Measurement Model Assessment

The following are the results of algorithm analysis using SmartPLS 4.0. for measurement model assessment:



Fugure 2. Measurement Model Assessment 1

Based on the assessment of the measurement model, it was found that there are 5 items from X1 (X1.1, X1.2, X1.3, X1.4, X1.5) and 4 items from Y (Y1.3, Y1.4, Y1.5, Y1.6) that have factor loadings with valid values (> 0.7), while other items showed values below 0.7, indicating invalid results. All X2 items also showed invalid values. Therefore, the invalid items were gradually removed from the model, starting with the lowest-value items, and then the data were re-run. If after running the data, there were still invalid item values, the lowest-value items were removed again. This process was repeated until there were no more items with invalid values, and the AVE results showed valid values. The results obtained after this process are as follows:

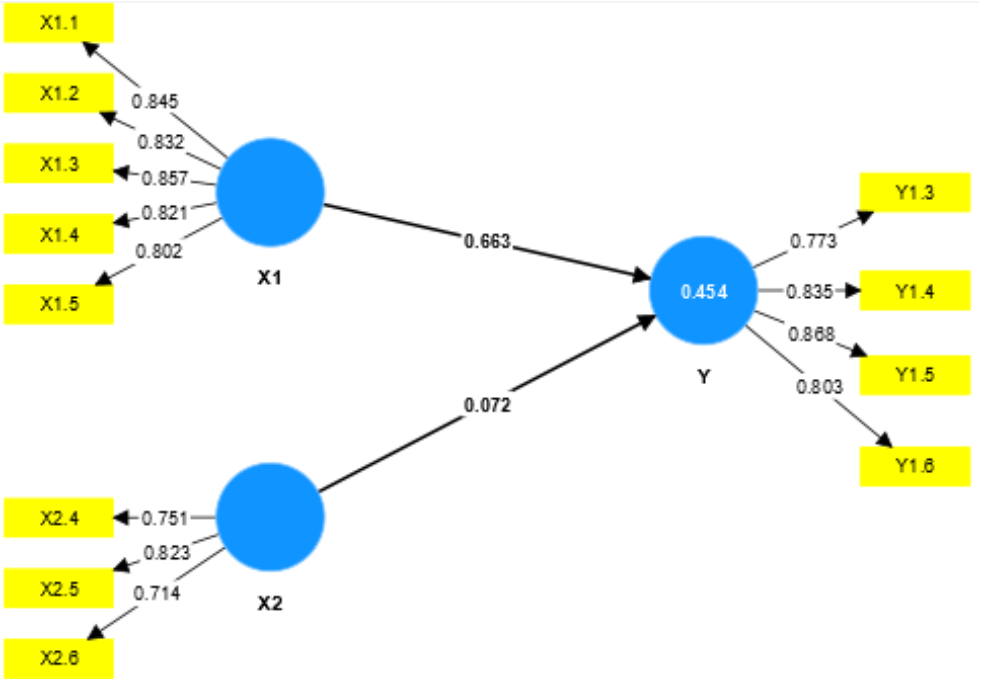


Figure 3. Measurement Model Assessment 2

Figure 3 shows the results of the measurement model after the process of removing invalid items. The factor loadings of all items displayed in Figure 3 indicate that each item from all indicators has values exceeding 0.7, which is an acceptable value to achieve convergent validity (Hair et al., 2011).

Table 3. Convergent validity and reliability analysis

Constructs	Measurement items	Loadings	Cronbach's alpha	Composite Reliability	AVE
Overconfidence Bias (X1)	X1.1	0.845	0.889	0.918	0.692
	X1.2	0.832			
	X1.3	0.857			
	X1.4	0.821			
	X1.5	0.802			
Herding Bias (X2)	X2.4	0.751	0.756	0.807	0.584
	X2.5	0.823			
	X2.6	0.714			
Investment Decisions (Y)	Y1.3	0.773	0.837	0.891	0.673
	Y1.4	0.835			
	Y1.5	0.868			
	Y1.6	0.803			

Source: Processed data

The values of Cronbach's alpha, composite reliability, and AVE displayed in Table 3 indicate that these values exceed the threshold values. AVE values are considered valid if they are > 0.5 (Hair et al., 2014). Based on Table 3, the results show that the AVE values for all the constructs under investigation are > 0.5, indicating that all these constructs are valid.

Reliability tests were conducted by examining the values of Cronbach's alpha and composite reliability for the blocks of indicators measuring the constructs. The recommended Cronbach's alpha value is above 0.7 (Hair et al., 2014), and in this study, the Cronbach's alpha values for all constructs are above 0.7. Reliability tests can also be reinforced by analyzing the values of composite reliability. Composite reliability results are considered satisfactory if they are above 0.7 (Hair et al., 2014). Table 3 shows that the composite reliability values for all constructs are above 0.7, indicating that all constructs in the estimated model meet the criteria for discriminant validity, and it can be stated that the data under investigation have high reliability.

Structural Model Assessment

After testing the measurement model, the structural model is assessed using the statistical tool SmartPLS 4.0. In this model, the influence of overconfidence bias and herding bias on the investment decisions of Generation Z is investigated. The results of hypothesis testing are shown in Table 4 as follows:

Table 4. Structural Model Assessment

Hypotheses	Relationship	Original Sample	STDEV	T Statistics	P Values
H1	Overconfidence Bias → Investment Decisions	0.663	0.060	11.072	0.000
H2	Herding Bias → Investment Decisions	0.072	0.089	0.813	0.416

Source: Processed data

Table 4 above shows that the relationship between X1 (Overconfidence Bias) and the variable Y (Investment Decision) is **significant**, with a T-statistic of 11.0726 (> 1.96) and a P-value of 0.000 (< 0.05). The original sample estimate value is positive at 0.663, indicating a positive direction in the relationship between the Overconfidence bias variable and Investment decision. Therefore, **hypothesis H1** in this study, which states that there is an influence of Overconfidence Bias (X1) on Investment Decision (Y) of Generation Z, is **accepted.**

On the other hand, the relationship between the variable X2 (Herding Bias) and the variable Y (Investment Decision) is **not significant**, with a T-statistic value of 0.813 (<1.96) and a P-value of 0.416 (>0.05). The original sample estimate value is positive at 0.072, indicating a positive direction in the relationship between Herding bias and Investment decision. Therefore, **hypothesis H2** in this study, which states that there is an influence of Herding Bias (X2) on Investment Decision (Y) of Generation Z, is **rejected.**

After the estimated model meets the Outer Model criteria, the next step is to test the Inner model. The coefficient of determination (R-Squared) is a way to assess how much the endogenous constructs can be explained by the exogenous constructs. The value of the coefficient of determination (R-Squared) is expected to be between 0 and 1. Here are the R-Squared values for the constructs:

Table 5. R-Squared

	R-Squared	R-squared adjusted
Investment Decisions (Y)	0.454	0.443

Source: Processed data

Table 5 shows an R-square value of 0.454 for the construct Y (Investment Decision), which means that the variables Overconfidence Bias (X1) and Herding Bias (X2) can explain 45.4% of the variance in Y (Investment Decision), with the remaining variance being explained by unexamined variables in this study. This value indicates a moderate result (Hair et al., 2011).

Discussion

This study aims to assess the impact of overconfidence bias and herding bias on the investment decisions of Generation Z. Hypothesis 1 states that overconfidence bias has a positive and significant influence on the investment decisions of Generation Z. The research results indicate that a majority of Generation Z investors feel confident in their investment decisions. Pompian (2012) explains that overconfidence bias is difficult to change because it is related to one's perception of their abilities and knowledge. Overconfidence bias makes investors overestimate their abilities and knowledge while underestimating predictions and information available. To address this, investors need to be aware and evaluate their investment experiences.

The findings of this research are consistent with other studies that show overconfidence bias has a positive and significant influence on investment decisions. There is ample empirical and experimental evidence that overconfidence is a driving factor in investment decisions. Studies by Barber & Odean (2001), Dittrich et al. (2005), Glaser & Weber (2007), Gervais et al. (2011), Adel & Mariem (2013), Michailova et al. (2017), Ainia & Lutfi (2019), Ahmad & Shah (2020), Combrink & Lew (2020), and Seraj et al. (2022) have found that the higher an individual's confidence level, the higher the likelihood of allocating funds to high-risk assets. This occurs because Generation Z tends to be more risk-tolerant in making investment decisions, as they perceive risks as low and have excessive confidence in their choices without deeper consideration.

On the other hand, Hypothesis 2 states that herding bias does not have a significant influence on the investment decisions of Generation Z. The research results indicate that although there is a tendency for Generation Z investors to follow the decisions of other investors, this influence is not strong enough to have a significant impact. Other factors may be more dominant in influencing the investment decisions of Generation Z.

These findings are supported by research results that show Generation Z investors tend to conduct thorough analysis and consideration of their investment decisions. They are not overly afraid of missing out if they do not follow the investment decisions of others, and they conduct in-depth research and market analysis before investing (Hayat & Anwar, 2016; Kumar & Goyal, 2016; Madaan & Singh, 2019; Qasim et al., 2019; Adil et al., 2022). This suggests that Generation Z has confidence and self-assurance that guide their actions when responding to market conditions. Investors with high confidence levels tend not to react strongly to changes around them but prefer to evaluate events related to critical considerations and their own experiences. This finding is also supported by respondents' answers, which show that most Generation Z investors do not feel afraid of missing out when not following the investment decisions of others. Furthermore, respondents' answers indicate that before investing, they conduct in-depth research and market analysis to ensure potential profits and minimize the risk of losses.

This study has limitations, including a relatively small sample size (only 104 respondents) and the absence of a comparative analysis with demographic factors of other generational groups (e.g., older generations). Therefore, future research can expand the sample size by increasing the number of respondents with a more diverse range of age demographics, allowing for an analysis of differences in outcomes between Generation Z and other generations. Additionally, age demographics can be included as a moderating variable between overconfidence bias, herding bias, and investment decisions.

CONCLUSION

The conclusions drawn from this research include:

1. Overconfidence bias has a positive and significant influence on the investment decisions of Generation Z. The research results indicate that a majority of Generation Z investors feel confident in their investment decisions. Overconfidence bias makes them underestimate predictions and available information because they perceive their abilities and knowledge as too high. This is consistent with findings from previous studies, which suggest that high levels of self-confidence tend to lead to the allocation of funds into high-risk assets. However, it should be noted that overconfidence bias is difficult to change because it is related to individuals' perceptions of themselves.
2. Herding bias does not have a significant influence on the investment decisions of Generation Z. Although there is a tendency for Generation Z investors to follow the decisions of other investors, this influence is not strong enough to have a significant impact. This may be due to the presence of other factors that are more dominant in influencing the investment decisions of Generation Z. Generation Z investors tend to conduct thorough analysis and consideration before making investment decisions, and they do not fear missing out if they do not follow the investment decisions of others. They also conduct in-depth research and market analysis before investing. These findings are consistent with some previous studies that indicate that Herding Bias does not have a significant impact on the investment decisions of Generation Z.

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