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UNDERSTANDING GEN Z INVESTMENT DECISIONS: CAPITAL MARKET LITERACY AND EMOTIONAL BIASES

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Abstract

This study aimed to advance behavioral economics, specifically behavioral finance bias and literacy, in Generation Z investment decisions. The research data used 389 Generation Z capital market investors who were members of the investor community group. The data analysis technique used the PLS-SEM approach. The study's results revealed that capital market literacy, overconfidence bias, confirmation bias, and fear of better options wielded substantial influence over the investment decisions made by Generation Z individuals within the Indonesian capital market. Interestingly, it was observed that mental accounting exhibited an insignificant effect on these investment choices. These empirical insights not only enhanced comprehension of investors' financial behaviors within the capital market but also offered valuable insights to stakeholders in the capital market ecosystem, aiding them in comprehending and addressing the behavioral biases inherent in the decisions of capital market investors.

Keywords: Capital market literacy, overconfidence, mental accounting, confirmation bias, fear of better options.

Introduction

Investment is an action taken by humans willing to sacrifice assets currently owned to get more significant profits. Not only that, but investors also consider the risks that may occur from actions taken now. The motivation for this is striving for a better quality of life in the future, lowering inflationary pressures, and even the desire to reduce taxes.

The development of investment in Indonesia is slowly but surely increasing. The Ministry of Investment noted that investment realization reached IDR 349.89 trillion in the second quarter of 2023. This realization grew 15.7% annually (year-on-year/yoy), while quarterly it rose 6.3% (quarter-on-quarter/qoq). Realization of foreign investment (PMA) in the second quarter of 2023 reached IDR 186.3 trillion or 53.3% of the total investment, most of which were spread in West Java, DKI Jakarta, East Java, Central Sulawesi, and Riau. While domestic investment (PMDN) is IDR 163.5 trillion or 46.7% of all incoming investment for the second quarter of 2023, it grew 17.6% (yoy) and 7.6% (qoq).

This investment growth is inseparable from the participation of Indonesia's young generation. Based on data from KSEI (Kustodian Sentral Efek Indonesia) as of August 2023, most of the individual investors in the capital market are under 30 years of age (57.04 percent) with assets of up to 34.09 trillion, 62.45 percent of which were male with a level education last high school (64.51 percent). Looking at this demographic, most capital market investors currently belong to Generation Z. According to the Central Bureau of Statistics (BPS), generation Z is the generation that emerged after millennials, with birth years ranging from 1995 to 2010. In 2023, the age range for Generation Z will be between the ages of 12 to 27 years. This generation is unique because they were born with internet technology, so they are very close to and easily accept internet-based technology.

The growth of capital market investors, as seen in Figure 1, shows that investors in Indonesia have increased compared to the previous year by 37.68 percent to 10,311,152 SID (Single Investor Identification) from the previous year, which amounted to 7,489,337 SID and an increase 12.32 percent to 11,581,533 SID in August 2023. It shows that investor activity in the Indonesian capital market has experienced an increase in the number of new investors, with the most extensive distribution remaining on the island of Java, 68.69 percent of all capital market investors (KSEI, 2023).

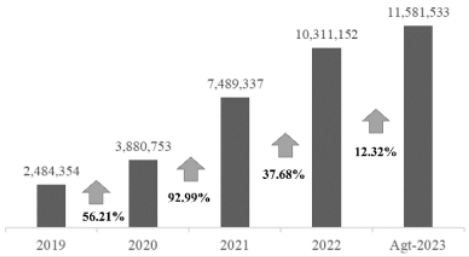

Figure 1. Indonesian capital market investors based on SID

Ease of access to investment media and digitalization support through various digital platforms provide satisfaction in investment activities, creating interest in investing in young investors (Armansyah, 2020). Digital convenience provides easy access to information. Currently, information is accessible and fast to disseminate. Various social media platforms are channels for disseminating related information quickly. Information spread from various media must be correctly interpreted so that it brings benefits in making investment decisions. Good capital market literacy is needed to interpret information about the capital market correctly.

Capital market literacy is a development of existing financial literacy by focusing on the capital market as a place of investment (Tanjung, Komariah, & Yusuf, 2020). All aspects related to planning and managing money, such as income, savings, investments, bonuses, financial management, and making financial decisions, are influenced by literacy (Armansyah, 2022). Someone with high financial literacy will be wiser and more selective in using their money. Likewise, someone with high capital market literacy will be more selective and wiser in making decisions. The market has valuable information for making investment decisions, and processing information requires capital market literacy. Generation Z, an Indonesian capital market player with a percentage of more than 50 percent, has unique characteristics such as being an internetholic, concerned with global issues, tech-savvy, and more emotional than functional. It will undoubtedly bring differences to trading styles on the stock exchange. Hence, this uniqueness is interesting for further research and a novelty for this research in capital market financial behavior. Tanjung *et al*. (2020) and Ramadani, Tubastuvi, Fitriati, and Widhiandono (2022) earlier described the effect of capital market literacy on investment decisions, while research from Arianti (2018) found that financial literacy does not affect investment decisions.

Investment decision-making involves many things, including cognitive and emotional factors. Emotions when making investment decisions in the capital market can harm the results obtained and impact the market, resulting in abnormal market movements. At the same time, cognitive factors are related to the knowledge in assessing, connecting, or considering a condition experienced. Cognitive and emotional factors that affect investors make them unable to interpret information appropriately, making them irrational. The behavioral bias of the investor reveals their irrationality.

Pompian (2012) described two types of bias: cognitive and emotional. Cognitive bias is how investors perceive, consider, and decide on information or facts. In contrast, emotional bias deviates from the feelings and spontaneity of the facts encountered. Additionally, numerous research studies have shown that investor mindset can influence investment decision-making to the point where it can influence market conditions that can cause an economic crisis (Armansyah, 2018) or make the capital market decline due to the psychology of investors during the pandemic (Allam, Abdelrhim, & Mohamed, 2020).

Behavioral biases are related to investment decisions, such as overconfidence. Overconfidence is excessive confidence that investors have about something. Due to one's great competence, overconfidence frequently causes one to underestimate one's projecttions and exaggerate one's knowledge (Nofsinger, 2017). Thus, this has an impact on choosing investments. Overconfident investors frequently favor high risks with a specific rate of return, and this sort of investment in tangible assets involves high risks and maximized returns.

Overconfidence is a bias that makes a person very confident in their abilities and prediction skills that are always successful. This condition is normal and can be used to reflect the degree of assurance a person has in obtaining something. It cannot be denied that humans have high self-confidence, including in investing. Overconfidence can be advantageous because it enables investors to decide independently based on market information. However, it is harmful if the decision is made without considering market circumstances thoroughly. Research on overconfidence includes research by Armansyah (2022) and Jain, Walia, Kaur, and Singh (2022) found that overconfidence influenced investment decisions. It can be seen from the personal self-awareness of investors with excessive self-confidence regardless of risk. Meanwhile, Hii, Li, and Zhu's (2023) results demonstrated that overconfidence did not substantially impact investor decision-making. Less self-confidence will also pose a high risk, so they will not be good at making decisions.

Confirmation bias is another investor trait that might affect the choice of an investment. Confirmation bias is a concept used to explain a person's resistance to altering their basic ideas (Cheng, 2019). This bias has influenced investors' choices. Investors will consider several factors when choosing stocks on the stock exchange because there are two different time horizons for investments, short-period and long-period, that will be employed to meet their future requirements. Because confirmation bias might happen, it is essential to identify a model that is consistent with oneself before making an investment decision.

The research found that confirmation bias can affect decision-making for all types of investments, namely gold, stocks, bonds, mutual funds, deposits, foreign exchange, and property. This influence is also in line with Bashir, Javed, Ali, Meer, and Naseem (2013), Fatima (2019), Trehan and Sinha (2021), and Armansyah (2022). Nurvitasari and Rita (2020) showed different results where there was no confirmation bias effect on investment decisions because most respondents were the millennial generation with birth years 1980–2000. This age is already productive in an era of rapid technological progress, so it can access information quickly and get many references. With this information, investors may choose whether assets are appropriate for their future needs. Research by Quang, Linh, Nguyen, and Khoa (2023) found a positive relationship in stock transactions since there was a positive and significant correlation coefficient when making investment decisions during buy and sell transactions.

Another behavioral bias that can also influence investment decisions is mental accounting. A behaviorral bias known as mental accounting causes people to consistently consider the costs and rewards of all their choices when making investments (Bashir *et al*., 2013). Investment decisions involve considering the costs and benefits of an investment opportunity. Critical thinking is needed in selecting investments and managing funds owned so that mental accounting influences investment decisions. It is supported by Armansyah (2021), Jain, Walia, and Gupta (2019), and Santi, Sahara, and Kamaludin (2019), who found a significant effect of mental accounting on investment decisions. Different results were shown by Bashir *et al*. (2013), Sukamulja, Meilita, and Senoputri (2019), who found no effect of mental accounting on investment decisions in the capital market.

Another behavior that can also affect investors in making investment decisions is fear of better options (FOBO). Fear of a better option occurs because there is concern about the available choices, so there is a fear of losing the best option. When someone experiences FOBO, the individual will be obsessive about the choices encountered in making investment decisions, so they often do excessive research, which delays activities until they have other options. FOBO appears because of regrets or regrets over investments that have been made that did not get optimal results. FOBO is a regret aversion behavior that is too obsessive. This condition has both positive and negative sides. The positive side is that these individuals carry out in-depth research before making investment decisions so that they use all the information obtained and involve themselves in making investment decisions. The negative thing is that excessive research will delay activities and miss opportunities, hence missing necessary investment momentum.

Investors who fear better options will make poor planning decisions during the investment decision-making process, resulting in decisions they will regret later. Nalurita, Leon, and Hady (2020) showed that regret aversion significantly affected investment decisions in the capital market. Meanwhile, Ady and Hidayat (2019) and Sukamulja *et al*. (2019) did not find the effect of regret aversion on investment decisions in the capital market.

Based on the existing descriptions, this study intends to advance behavioral finance, particularly the behavioral biases of Generation Z investors about information gained from the media and while engaging with other investors in the capital market. This research theoretically contributes to scientific development, especially behavioral biases in the perspective of Generation Z's investment decisions, while the practical benefit of this research is to provide input for managers of securities companies as well as capital market participants regarding the understanding and knowledge of investor behavior, especially generation Z, which currently has a large percentage of capital market investors. The following sections of this paper examine appropriate theories and results from earlier investigations on behavioral biases. The next step in this study's investigation is describing the data collection procedure and the research techniques used. The following section presents the findings of the various analyses and includes a discussion. Conclusions and research recommendations are offered at the end.

Heuristic Theory

The heuristic theory is a simple rule that makes an investment decision more practical in imperfect and complex terms. In heuristic theory, decision-making can be faster and more thorough when decision-making places more emphasis on essential issues and ignores less valuable news (Ratnadi, Widanaputra, & Putra, 2020). However, when the heuristic is not applied correctly, ideally, it will result in bias in decision-making. Kengatharan and Kengatharan (2014) suggested the variables in the heuristic theory: representativeness, overconfidence, anchoring, gambler's fallacy, and availability.

Investment Decision

Expectations of returns from investments are fundamental in making investment decisions. Return

and risk on investment have a unidirectional and linear relationship, so the greater the level of risk faced, the greater the return obtained on the investment and vice versa (Armansyah, 2021). Investment is a commitment to place funds or other resources for a certain period with the hope of obtaining benefits in the future. Investment is related to investing funds in various tangible and financial alternative assets (Bodie, Kane, & Marcus, 2018). Investment decisions involve individual policies in placing their capital in one or several assets to obtain future profits or allocating funds in the form of investment assets to generate profits. The investment decision involves the use of long-term funds. Every time someone decides to manage their current income, they face an investment decision.

Making investment decisions is an investor's primary concern because it requires specific analyses. The process determines how the investment is made. The three actions that an investor will take, namely hold, buy, or sell stocks, for example, have gone through a series of analyses to produce a decision. Investors who are more tolerant of risk prefer capital market instruments. In making investment decisions, there are two attitudes of investors, namely rational and irrational. A rational attitude is the attitude of someone who thinks based on common sense, while an irrational attitude is the attitude of someone who thinks not based on common sense. The indicators that show investment decision-making are the allocation of funds made for investment. According to Khan, Azeem, and Sarwar (2017), the indicators for making investment decisions are investment choices, capital management, and future investment expectations.

Capital Market Literacy

Capital market literacy is part of financial literacy. Financial literacy is crucial in various factors, including developing new financial products, the complexity of financial markets, and political, demographic, and economic changes. One of the factors that can cause individuals to have investment behavior bias is a lack of financial literacy, which will lead them to make wrong investment decisions (Baker & Nofsinger, 2011). Lusardi and Mitchell (2011) argued that financial literacy was knowledge of financial concepts and their risks and skills in applying knowledge and understanding to make effective decisions in a financial context.

Financial education and financial knowledge gained from trading experience or other learning techniques can improve behavior and reduce the bias in making investment decisions that show that knowledge is beneficial. Over the past few years, financial literacy has become the focus of attention of various groups, such as governments, bankers, entrepreneurs, concerned community groups, financial markets, and other organizations, especially in developed countries (Al-Tamimi & Kalli, 2009). According to Chen and Volpe (1998) and Tanjung *et al.* (2020), the indicators of capital market literacy were capital market knowledge, investment instrument knowledge, investment knowledge, and investment risk and return knowledge.

Capital Market Literacy on Investment Decisions

Capital market literacy refers to knowledge of financial concepts in the capital market and its risks and skills in applying knowledge and understanding to make effective decisions in a financial context (Lusardi & Mitchell, 2011). An investor with low capital market literacy will tend to have problems making investment decisions or usually hesitate in making investment decisions, so they tend to behave like other investors and are less likely to plan in the future. The higher the capital market literacy, the better a person makes investment decisions.

Previous research from Tanjung *et al.* (2020) found that Capital market literacy exerted a substantial and beneficial influence on the choices made in investment decisions. Based on these arguments, the hypothesis is proposed.

H_1: Capital market literacy has a significant positive effect on investment decisions.

Overconfidence

Overconfidence is an emotional bias in which individuals tend to feel more self-conscious about knowledge, ability, and accuracy in obtaining information, so they are overly optimistic about their ability (Ackert & Deaves, 2010). Ricciardi and Simon (2000) earlier described overconfidence as the finding that people usually have too much confidence in the accuracy of their judgments; people's judgments are usually not as authentic as they think. High overconfidence can be harmful in investment decisions because of the tendency to ignore risk when choosing the type of investment. Overconfidence sometimes causes investors to overestimate their knowledge, underestimate the risks, and overestimate their ability to control what happens (Nofsinger, 2017).

Overconfidence is a bias that causes people to exaggerate knowledge, abilities, and judgment when making decisions (Barber & Odean, 2001; Ritter,

2003). Overconfidence is a condition in which an attitude that is too confident has a feeling about how well the individual understands the limits of knowledge and ability (Armansyah, 2022). Overconfidence can be summarized as an unwarranted belief in one's intuitive reasoning, judgment, and cognitive abilities. Overconfidence stems from an extensive collection of cognitive experiments and psychological surveys in which subjects overestimate their predictive abilities and the accuracy of the information they have been given. People think they are more intelligent and better informed than they are. Make investment decisions based on the knowledge gain they feel (Pompian, 2012). The bias in overconfident behavior can influence investment decisions. The indicators of overconfidence bias are belief in abilities, knowledge, and experience (Khan *et al*., 2017).

Overconfidence in Investment Decisions

Prospect theory describes that a person will make decisions based on the level of risk faced, so the decisions taken will also refer to it. Hribar and Yang (2016) found that a person with overconfidence tends to ignore risk when choosing an investment. Overconfidence causes investors to feel they have more knowledge, so they tend to underestimate predictions made because they have more ability. Overconfidence tends to produce favorable investment decisions due to neglect of investment risks and vice versa.

Several previous studies examined overconfidence's impact on investment decisions, including Armansyah (2022), Bashir *et al*. (2013), Quang *et al*. (2023), Jain *et al*. (2022), Kartini and Nahda (2021), which showed the advantageous influence on investment decision, while Hii *et al*. (2023) found that overconfidence did not affect investment decisions. Based on these arguments, the following hypothesis is proposed:

H_2: Overconfidence has a significant positive effect on investment decisions.

Confirmation Bias

Confirmation bias is a method of induction thinking or, in general, focusing on information that confirms beliefs and ignores or undervalues information that contradicts those beliefs. Armansyah (2022) stated that confirmation bias is when a person tends to choose and pay more attention to information that supports their opinion. Confirmation bias can also be interpreted as ignoring information that does not support one's views and taking more appropriate information. Shefrin (2001) found that confirmation bias was the attitude of a person who tends to care more about information or views that align with his views than those that are contradictory. The confirmation bias indicators include the individual's position on the information obtained, the individual's thoughts on the market conditions encountered, and the individual's belief in information related to investment (Özen & Ersoy, 2019).

Confirmation Bias Towards Investment Decision

Confirmation bias refers to a person's behavior that overrides opinions that conflict with his thinking. This behavior may influence investors to gather information about the type of investment that suits their views and use this information as a reference for their choices. The greater the confirmation bias, the easier investment decisions can be made. It is confirmed by Cheng (2018), Fatima (2019), Park, Konana, Gu, Kumar, and Raghunathan (2012), Armansyah (2022), Bashir *et al*. (2013), Trehan and Sinha (2021), which show that confirmation bias affects investment decisions. Based on this, the following hypothesis is put forth:

H_3: Confirmation bias has a significant positive effect on investment decisions.

Mental Accounting

Like the accounting model, thaler and Shefrin (1981) defined mental accounting as a person's behavior in managing income and expenses. In the context of tangible assets, Seiler and Seiler (2010) stated that investors' thoughts of regret for investment losses will be minimized by thinking that the rate of return on investment will be greater than the losses, so they do not think about the losses they have just experienced, so investors will feel calmer in making further decisions. Bashir *et al*. (2013) described that individuals who consistently weighed the costs and benefits of their actions to make investment decisions were said to engage in mental accounting. Mental accounting indicators include allocating different accounts for earned income, different management between monthly income and earned bonuses, calculating monthly costs incurred, and calculating costs for obtaining bonuses (Santi *et al*., 2019).

Mental Accounting on Investment Decisions

The process of making investment decisions requires investors to think about the advantages and

disadvantages of investing. So, making investment decisions involves critical thinking from investors (mental accounting) in the selection and amount of funds used in investments, and this shows that mental accounting influences investment decisions. Research showing that there is an effect of mental accounting on investment decisions in the capital market is shown by Armansyah (2021), Jain *et al*. (2019), and Santi *et al*. (2019), while Bashir *et al*. (2013) and Sukamulja *et al*. (2019) that there is no effect of mental accounting on investment decisions. Based on this, the following hypothesis is proposed:

H$_4$: Mental accounting has a significant positive effect on investment decisions.

Fear of Better Option (FOBO)

Fear of better options is a social phenomenon created by Patrick McGinnis a US venture capitalist known for coining FOMO (fear of missing out). FOBO is a social phenomenon in which a person becomes doubtful and worried when making decisions (Cunff, 2022). The person will then obsessively think about all the options for fear of losing the 'best' option and regretting it later.

Someone experiencing FOBO is that person often does excessive research to postpone activities and forget themselves, keep waiting until they have more options, change choices at the last minute because there are better options, are dissatisfied, and have regrets about past decisions. FOBO is the development of regret aversion behavior, where regret aversion is defined as a tendency to avoid making decisions for fear of experiencing the pain of regret. People show regret aversion and avoid taking decisive action because they fear that in their minds, whatever they choose will prove to be less than optimal (Singh & Sikarwar, 2015). In essence, this bias seeks to prevent the pain of regret associated with making bad decisions. Shiller (2015) earlier described that regret theory seemed to help explain that investors delayed the sale of shares whose value had decreased and hastened the sale of shares whose value had increased. Indicators of fear of better options include experience of loss on investment, feelings of regret when investing, and the impact of loss experience on subsequent investments (Ady & Hidayat, 2019).

Fear of Better Options on Investment Decisions

The construct also tested in the model is the fear of a better option. Fear of a better option is a behavior performed by an individual who becomes doubtful and worried when making a decision. The person will then obsessively think about all the options for fear of losing the 'best' option and regretting it later. Lather, Jain, and Anand (2020) showed that there was a significant effect of investment regret on investment decisions, while Ady and Hidayat (2019) and Sukamulja *et al*. (2019) found no effect between the two constructs. Based on this description, the following hypothesis is proposed:

H$_5$: Fear of better options has a significant effect on investment decisions.

Then, to determine the effect of capital market literacy, overconfidence bias, confirmation bias, mental accounting, and fear of better options together on investment decisions, the following hypothesis is proposed:

H$_6$: Capital market literacy, overconfidence, confirmation bias, mental accounting, and fear of better options affect investment decisions.

Research Methods

This study used primary data by distributing questionnaires electronically to respondents who were Generation Z investors in the capital markets through investor information group forums (not trading houses), and investors have SID, with a minimum age range of 18 to 27 years conducting trading activities through a securities firm in Indonesia. The age range of 18 to 27 years was used in the research, taking into account the legally permitted age limit for carrying out trading transactions on the Indonesian stock exchange. After the selection, 421 respondents' data were obtained, resulting in 389 respondents having complete and acceptable data that could be processed.

Data from 389 respondents were then analyzed using descriptive and statistical analysis using the PLS-SEM (partial least squares structural equation modeling) approach, considering the focus on predicting the relationship between the variables used. Additionally, PLS-SEM is more robust for real-world applications (Khan *et al*., 2023), especially in exploratory data analysis. This study uses a non-probability technique, namely purposive sampling in the process of taking samples based on predetermined criteria and convenience sampling because samples from the population are easy to reach. PLS-SEM analysis consists of two stages, namely, the outer model and the inner model. The outer model is used to determine the indicators' validity and measure the indicators' reliability on the latent variables.

In contrast, the effect test between latent variables can be seen through the inner model. It is considered valid in the outer model analysis if the loading factor indicator value, which gauges the latent variable, is

greater than 0.4 and the average variance extract (AVE) value is greater than 0.5. If an indicator's composite reliability (CR) and Cronbach alpha (CA) values are more than 0.7, it is said to be reliable (Hair, Matthews, Matthews, & Sarstedt, 2017).

The inner model shows the link between latent variables using two testing stages: testing the hypothesis and the coefficient of determination. In testing the hypothesis, the relationship between latent variables is significant if the *p-value* $< \alpha = 0.05$ or the *t-count* > 1.96. While the coefficient of determination shows the influence between latent variables, which are divided into four categories, it is stated to be vital if the value of R^2 is greater than 0.67, moderate if the value is between 0.33 and 0.67, weak if the value is in between 0.19 and 0.33; and extremely weak if the value is below 0.19 (Latan & Ghozali, 2014). Measurement of endogenous investment decisions and exogenous variables for overconfidence, mental accounting, confirmation bias, and fear of better options in the model uses a 5-point Likert scale. In contrast, the capital market literacy variable is measured using a ratio scale with multiple-choice questions in the questionnaire concerning variable indicators. Answers from respondents will be measured based on comparing correct answers with wrong answers in answering questions.

Table 1
Indicator and Construct

Construct	Items	Code	References
Investment Decision	Investment options.	ID 1	Khan *et al*. (2017)
		ID 2	
		ID 3	
	Capital management.	ID 4	
		ID 5	
	Future investment prospects.	ID 6	
		ID 7	
Capital Market Literacy	Capital market knowledge.	LP 1–4	Chen and Volpe (1998),
	Knowledge of investment instruments.	LP 5–6	Tanjung *et al*. (2020)
	Investment knowledge.	LP 7–10	
	Knowledge of investment risk and return.	LP 11–12	
Overconfidence Bias	Believe in your abilities.	OB 1	Khan *et al*. (2017)
		OB 2	
	Believe in the knowledge you possess.	OB 3	
		OB 4	
		OB 5	
	Trust in the experience you have.	OB 6	
		OB 7	
Confirmation Bias	Individual standing of the information obtained.	CB 1	Özen and Ersoy (2019)
		CB 2	
		CB 3	
	Individual thoughts on the market conditions encountered.	CB 4	
	Individual confidence in investment-related information.	CB 5	
Mental Accounting	Allocation to different accounts for the income earned.	MA 1	Santi *et al*. (2019)
		MA 2	
	Management of monthly income and bonuses earned.	MA 3	
		MA 4	
	Take into account monthly expenses.	MA 5	
	Calculating the cost of obtaining bonuses.	MA 6	
Fear of Better Option	Experience of loss in investment.	FBO 1	Ady and Hidayat (2019)
		FBO 2	
	Feelings of regret when using funds to invest	FBO 3	
		FBO 4	
	The impact of loss experience on the next investment	FBO 5	
		FBO 6	
		FBO 7	
		FBO 8	

Source: Chen and Volpe, 1998; Khan *et al*., 2017; Ady and Hidayat, 2019; Özen and Ersoy, *2019; Santi et al*., 2019; Tanjung *et al*., 2020

Results and Discussion

This study uses a quantitative approach in processing and testing the data obtained so that issues regarding the effect of capital market literacy, emotional bias (overconfidence bias and confirmation bias), mental accounting, and fear of better options on investment decisions can be drawn to a conclusion and discussed. Data analysis was carried out using descriptive analysis and statistical analysis to answer the research hypothesis.

Descriptive Analysis

Data obtained through online questionnaires according to predetermined criteria amounted to 389 respondents. The following are the descriptive results of the respondents.

According to Table 2, the majority of respondents (55.27%) were male, with an age range of 24–27 years (35.22%), who live or live in Surabaya (127 people) (32.65%). As many as 173 respondents, or approximately 44.47 percent of all respondents, worked as entrepreneurs (self-employed), with monthly incomes ranging from IDR 5,000,000 to IDR 6,999,999 (43.19%).

Table 3 shows the results of the responses from 389 respondents to the investment decision variable with an average value of 3.65, which means that the respondents have reasonable consideration for their investment. The investment decision indicator with the highest score is ID5, with a mean score of 4.01. It shows that respondents know how to invest their

Table 2
The Description of Respondent

Demographics	Category	Frequency	Percentage
Gender	Male	215	55.27%
	Female	174	44.73%
Age	18 to 20 years	118	30.33%
	21 to 23 years	134	34.45%
	24 to 27 years	137	35.22%
Occupation	Student	56	14.40%
	Self-employed	173	44.47%
	Private employees	86	22.11%
	Government employees	53	13.62%
	Other	21	5.40%
Length of Investment	1 to 2 years	101	25.96%
	2 to 3 years	152	39.07%
	More than three years	136	34.96%
Monthly Income	IDR 1,000,000 to IDR 2,999,999	47	12.08%
	IDR 3,000,000 to IDR 4,999,999	124	31.88%
	IDR 5,000,000 to IDR 6,999,999	168	43.19%
	More than IDR 7,000,000	50	12.85%
Domicile	Surabaya	127	32.65%
	Sidoarjo	74	19.02%
	Samarinda	21	5.40%
	Lamongan	19	4.88%
	Mojokerto	18	4.63%
	Tuban	15	3.86%
	Bojonegoro	14	3.60%
	Ende	13	3.34%
	West Nusa Tenggara	13	3.34%
	Balikpapan	12	3.08%
	Jakarta	11	2.83%
	Malang	10	2.57%
	Sumenep	10	2.57%
	Bangkalan	9	2.31%
	Depok	6	1.54%
	Kediri	5	1.29%
	Lampung	5	1.29%
	Semarang	5	1.29%
	Makassar	2	0.51%

money. There, 92.29 percent budget their money very well (ID7). Furthermore, the ID3 statement, with a mean score of 3.53, indicates that respondents chose to save to anticipate uncertain stock market conditions. The indicator with the lowest score is ID1, with a mean score of 2.87. It means that 60.09 percent of respondents consider the stock market unpredictable, while 31.75 percent think otherwise. Even though the score is the lowest, market conditions are currently in a condition that is difficult to predict due to entering the post-pandemic period of COVID-19, where almost all industries were affected.

Table 3
Descriptive of the Construct

Construct	Average Score	Interpretation
Investment Decision	3.65	Investor investment decisions are good.
Capital Market Literacy	83.37%	Capital market literacy is very high.
Overconfidence Bias	3.84	Investor confidence is high.
Confirmation Bias	3.83	High confirmation bias.
Mental Accounting	3.93	The mental accounting of investors is high.
Fear of Better Option	3.83	Fear of better option investors is high.

The results of respondents' responses to the capital market literacy variable, with an average value of 83.37 percent, meaning that respondents have very high capital market literacy. The highest average in capital market literacy is in the indicator of knowledge of investment instruments, at 90.10 percent. It explains that respondents have a very high understanding of investment instruments in the capital market, especially in the LP5 item, where 97.69 percent of respondents answered correctly that proof of company ownership is stock. Respondent's answers to the knowledge indicator about investment in the LP8 item also have a high percentage of correct answers, namely 98.71 percent. It shows that respondents understand that investments with high risks will also provide high returns.

The responses to the overconfidence variable showed an average value of 3.84, which means that respondents have confidence in investing. The overconfidence indicator with the highest score is OB1, with a mean score of 4.12. It shows that respondents who have confidence have high confidence in the plans made, and 96.25 percent have confidence in this matter. Furthermore, the OB3 statement, with a mean score of 3.93, shows that respondents believe they can predict which stocks will do well.

According to respondents' answers to the confirmation bias variable, which had an average value of 3.83, respondents tended to care more in their investment activities about facts or opinions that agreed with their own than those that did not.

The results of respondents' responses to the mental accounting variable with an average value of 3.93, which means that generation Z respondents use calculating behavior in making investment decisions by weighing the costs and benefits of all actions taken, including the management of income earned both from monthly income or bonuses outside of the regular income earned.

The response to the fear of better option variable with an average value of 3.83 means that Generation Z respondents have a relatively high fear of better options, which means there is doubt, so they are obsessive about the choices they encounter.

Statistical Analysis

The first statistical analysis performed was an outer model to assess the reliability and validity of the variable indicators. Then, carry out the inner model for hypothesis testing and the interaction of latent variables. The following is the result of statistical analysis:

Outer Model

The following are the results of the PLS-SEM regression.

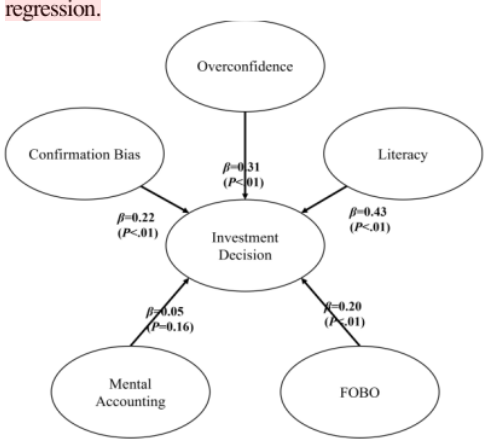

Figure 2. PLS-SEM model

Repeated testing was carried out to obtain the optimal output of the PLS-SEM model so that the final PLS-SEM model can be seen in Figure 2. As seen in Table 4, most loading factor indicator values are greater than 0.6; however, specific indicators are kept below 0.6 because the output already has the best AVE value out of all the tests run. The best AVE value was increased through testing after several indicators were deleted; these indicators included ID2, FBO1, FBO2,

and FBO6. According to Chinn (1998), an indicator that has a loading factor value between 0.5 and 0.6 is still possible to retain for developing models as long as it has a good AVE value (more than 0.6) and is said to have good reliability if the loading factor value is greater than 0.7. Based on Table 4, these results indicate that the validity criteria have been met. Table 5 also shows the composite reliability value, and Cronbach alpha is above 0.7, indicating that the reliability criteria have been met. Therefore, all indicators can measure investment decision variables, including overconfidence, confirmation bias, mental accounting, and fear of better options.

Table 4
Loading Factor

	ID	OB	CB	MA	FOBO
ID1	0.681	-0.872	0.308	0.144	-0.217
ID3	0.876	0.355	-0.449	0.087	0.014
ID6	0.885	0.320	0.207	-0.197	0.154
OB2	0.304	0.957	0.058	0.056	-0.086
OB3	-1.282	0.503	0.363	-0.201	0.162
OB4	-0.419	0.794	0.128	-0.235	0.083
OB5	-0.231	0.799	-0.151	0.228	0.211
OB6	0.593	0.862	-0.236	0.116	-0.142
OB7	0.384	0.937	-0.017	-0.051	-0.119
CB1	0.057	0.183	0.815	-0.152	-0.042
CB3	-0.183	-0.269	0.841	-0.046	-0.025
CB4	0.123	0.088	0.876	0.186	0.063
MA1	0.344	-0.534	0.180	0.663	-0.368
MA2	-0.096	0.195	-0.051	0.710	-0.329
MA4	0.232	0.189	-0.339	0.789	0.192
MA5	-0.386	-0.038	0.308	0.844	-0.083
MA6	-0.025	0.149	-0.113	0.663	0.596
FBO3	0.549	-0.334	0.200	-0.034	0.631
FBO4	0.115	0.054	-0.384	-0.018	0.829
FBO7	-0.348	0.173	0.082	-0.113	0.747
FBO8	-0.233	0.047	0.169	0.154	0.780

Inner Model

The structural model's evaluation stage (the inner model) is the following step in the PLS-SEM analysis. At this point, it can be seen that the full collinearity VIF, *p-value, R-squared*, and path coefficient results demonstrate each variable's direct or indirect influence.

According to Table 5, the *adjusted R-squared* value for investment decisions is 0.751, with an *R-squared* value of 0.755 and a *p-value* of 0.001. It can also be noted that all VIF values are less than 5, indicating that the model eliminates multicollinearity. The *R-squared* value of 0.755 is more than 0.67, so the effect of the variable is strong.

The first hypothesis is accepted, meaning capital market literacy positively and significantly influences Generation Z investment decisions in Indonesia. The effect of capital market literacy was significant, with a *p-value* of 0.001, an effect size of 0.174, and a coefficient of 0.330 (see Table 6). These findings suggest that investors with higher capital market literacy will perform better when making capital market investment decisions. Understanding the capital market is necessary when an individual is going to or investing in the capital market, and understanding the rules and regulations that apply in the capital market. This study's results align with Tanjung *et al*. (2020), which shows that capital market literacy has a significant positive effect on investment decisions.

Overconfidence was shown to have a substantial influence on investment decisions (see Table 6), with a coefficient value of 0.308 and a *p-value* less than 0.001. These findings support hypothesis 2, which states that overconfidence has a considerable impact on investment decisions and that Generation Z investors' overconfidence can affect capital market investment

Table 5
Outer Model Result

Variables	Composite Reliability	Cronbach Alpha	AVE	Full VIFs	*R-squared*	*Adjusted R-squared*
Investment Decision	0.858	0.749	0.672	2.800	0.755	0.751
Overconfidence Bias	0.924	0.896	0.676	2.486		
Confirmation Bias	0.882	0.799	0.713	2.803		
Mental Accounting	0.855	0.786	0.544	1.263		
Fear of Better Option	0.836	0.737	0.563	1.303		

Table 6
Hypothesis Test

Path	Coefficient	*p-value*	Effect Size	Hypothesis
Capital Market Literacy → Investment Decision	0.428	<0.001	0.269	Supported
Overconfidence Bias → Investment Decision	0.308	<0.001	0.221	Supported
Confirmation Bias → Investment Decision	0.221	<0.001	0.159	Supported
Mental Accounting → Investment Decision	0.049	0.164	0.021	Not Supported
Fear of Better Option → Investment Decision	0.202	<0.001	0.084	Supported

decisions. It shows that the overconfidence-biased behavior of Generation Z investors in the capital market influences their investment decisions. Being overconfident can be beneficial when considering the risks and always conducting a thorough analysis when making investment decisions. Overconfidence was demonstrated to be a predictor of investment decisions in this study.

The findings of this investigation corroborate those of Armansyah (2021) that overconfidence affects the investment decisions of Generation Z investors in the capital market and also Qasim, Hussain, Mehboob, and Arshad (2019), Quang *et al.* (2023), Khan *et al.* (2017) and Kartini and Nahda (2021). This result is possible because of making investment decisions in the capital market. One needs to have confidence since every choice must contain risks. Analyzing risks will produce good investment decisions as well. This result differs from Fachrudin, Lumbanraja, Sadalia, and Lubis (2017), which show that overconfidence has an insignificant effect on investment decisions. This difference occurs because of the unique characteristics that Generation Z has, namely being intermetallic and caring about global issues, so that they feel they have enough information to support investment decision-making. Social media and communication groups between investors also support processing certain information. Short interviews conducted with several random respondents revealed that they had sufficient information and good social support in determining investment. However, this research has yet to be able to dig deeper into the type, what, and from whom the information was obtained.

The findings in Table 6 demonstrate how confirmation bias affects investment decisions significantly, with a *p-value* <0.001 and a coefficient of 0.221. Based on this, the third hypothesis is accepted, which means confirmation bias has a significant effect on Generation Z's investment decisions in the Indonesian capital market. The behavior of someone who ignores information that contradicts their thoughts can influence investment decision-making in the capital market. Generation Z investors in the capital market only use information from their views regarding capital market instruments and make this information part of the decision process. It is possible with the forum media from securities companies, so information is easier to find and elaborate on through forums between investors, and investors can choose information related to decision-making. These results support Akhtar and Das (2019), Cheng (2018), and Park *et al.* (2012) that confirmation bias, where there is a propensity to control the information received and which is consistent with investors' ideas in making investment decisions, is shown to have an impact on Generation Z capital market investors' investment decisions. These results are possible due to differences in regional demographics and advancements in technology and communication that have altered how information is disseminated.

Mental accounting was found to be insignificant in investment decisions, with a *p-value* of more than 0.001 (0.164) and a coefficient of 0.049. Based on these findings, the fourth hypothesis is rejected, implying that mental accounting does not substantially influence Generation Z investors' investment decisions in the Indonesian capital market. A person's behavior does not influence investing in the stock market in differentiating incoming and outgoing fund accounts based on accounting models. It shows that investors who have or do not have mental accounting have no impact on making investment decisions, including when making decisions in the capital market. Investors assume that mental accounting is not the main factor in investment decisions. Fund management is essential, but other things, such as information, are more needed when making decisions. The existence of financial literacy and valid information regarding choices also provides additional support for Generation Z's investment decisions.

Making investment decisions requires critical thinking from Generation Z investors by considering the advantages and disadvantages of investing. Hence, investment decision-making involves critical thinking from investors in selecting capital market instruments and the number of funds used in investing or financial management. Financial management in today's digital era can be quickly done with digital applications that are widely available online. It is what generation Z has done to manage their funds so that mental accounting has become irrelevant in its investment decisions. Generation Z has unique characteristics, namely tech-savvy, where they are very familiar with and quickly adapt to technology, so developments in technology-based media and information will be accessible for them to understand. With technology, information developments will quickly spread widely, including developing global financial markets where information is easily accessible digitally. Of course, changes in global financial markets impact Generation Z's investment decision-making; further research needs to be done in the future. Mental accounting is not a predictor of investment decisions, although higher or lower individual mental accounting has had no impact on Generation Z investment decision-making.

The results of this study are different from those of Armansyah (2021), Jain *et al.* (2019), and Santi *et*

al. (2019), which showed a positive impact on investment decisions due to the management of funds carried out by investors. This result aligns with the results of Bashir *et al*. (2013) and Sukamulja *et al*. (2019), which showed no significant effect between mental accounting and investors' investment decisions.

The fear of better options has been demonstrated to substantially impact investment decisions with a *p-value* less than 0.001 and a coefficient of 0.202, so the fifth hypothesis is accepted, which means that fear of a better option significantly affects Generation Z's investment decisions. The behavior of individuals who are sufficiently worried or indecisive that they obsessively consider all available options influences investment decision-making. It is possible because the information media that help Generation Z investors are sufficient in the decision-making process. The existence of the information provided by the Stock Exchange and information via Instagram, Telegram, investor groups, and capital market schools is deemed sufficient to facilitate the behavior of fear of better options owned by investors. The results of this study differ from those of Ady and Hidayat (2019) and Sukamulja *et al*. (2019), which showed no effect of fear of better options on investment decisions. However, it is in line with Nalurita *et al*. (2020), which showed a significant influence on investment decisions.

The sixth hypothesis, which states that there is a significant effect of capital market literacy, overconfidence bias, confirmation bias, mental accounting, and fear of better options (FOBO) on Generation Z investment decisions, is accepted because the influence of these factors on investment decisions was found to be significant with a *p-value* of less than 0.001 and an *R-squared* value of 0.755 (Table 5 and Figure 2).

Conclusion and Implication

The findings of this study show that, in the Indonesian capital market, generation Z investment decisions are significantly influenced by capital market literacy, overconfidence bias, confirmation bias, and fear of better options. At the same time, mental accounting has no bearing on investment decisions. The capital market literacy variables, overconfidence bias, confirmation bias, mental accounting, and fear of better options influence investment decisions. The information has the power to influence decisions and is easy to learn about on various social media platforms. The stock exchange also offers facilities that make it simple to access information, and it is this information that causes investors to respond to it differently, especially when making investment decisions. This finding about behavioral bias adds another theoretical contribution to existing research by demonstrating that young investors in Indonesia, known as Generation Z, have a high fear of better options; as a result, the theory of capital market investor behavior is expanded.

The results of this study have practical implications for professionals, particularly securities firms, in terms of informing and assisting investors within the firm. The findings show that cognitive and emotional factors influence the investment decisions of Generation Z investors in the decision-making process, and the very high level of capital market literacy in Generation Z also contributes to investment decisions. Theoretically, this research contributes to scientific developments, especially behavioral bias in the perspective of Generation Z investment decisions in the capital market, while the practical benefit of this research is to provide input for managers of securities companies and capital market players regarding understanding and knowledge of investor behavior, especially generation Z, which currently has a large percentage of capital market investors.

The research has its limitations. Research data is gathered from respondents who answer electronic questionnaires sent via forums, groups, and email to reach respondents who fit particular criteria. Future research can gather information from various sources, such as cross-cultural studies and system user forums. Future research should consider diversifying data collection methods, incorporating face-to-face interviews, or using other platforms to reach a broader audience. Alternate methods are also recommended to advance this research and produce more current research to get around current limitations.

According to the study's findings, future research could create biased models of financial behavior, which are thought to be the primary factors influencing market behavior. For instance, future research could examine the effects of capital market regulations. Various issues, such as stock influencers, economic conditions, governmental policies, or global events, can also be used to develop this research to provide a holistic understanding of scientific development in the future.

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