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Financial literacy as moderation between overconfidence, loss aversion, fear of missing out, and investment decision

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ABSTRACT

In recent years, a surge of young investor in Indoensia has been observed, many of whom rely on peer influence, and limited financial knowledge to make investment decisions. However, this enthusiasm is often not accompanied by adequate financial literacy, making young investors more susceptible to pshychological biases such as overconfidence, loss aversion and fear of missing out. This study examines how overconfidence, loss aversion, and fear of missing out on the investment decisions of generation Z in Malang City, Indonesia with financial literacy assessed as a moderating variable. In light of the increasing involvement of young investors in Indonesia, this study emphasizes the psychological factors influencing investment behavior. Data were collected through a survey of 96 stock investors, using quantitative methods with purposive sampling, with SPSS version 26 as the statistical tool for data analysis, and with moderated regression analysis used for analysis. The results indicate that although fear of missing out does not have a positive impact on investment decisions, excessive confidence and loss aversion do have a positive impact on investment decisions. The results also show that financial literacy cannot moderate overconfidence, loss aversion, and fear of missing out. This study is interesting because it examines how behavioral biases, financial literacy, and investing behavior interact with Indonesia's generation Z using the theory of planned behavior paradigm. By integrating behavioral finance concepts with emotional considerations, the study offers novel insights into young investors' decision processes. Nevertheless, the findings are constrained to generation Z investors in Malang City, Indonesia, limiting the generalizability to broader populations.

1. Introduction

Investors do not always act rationally during the decision-making process. Decisions driven by irrational behaviour can negatively impact investments, resulting in reduced investment performance returns (Adil et al., 2022). This behaviour contrasts with the

assumptions of the conventional finance theory, which posits that investors behave rationally by systematically evaluating the information available to them before making decisions (Cui, 2024). Such discrepancies highlight critical concerns in the study of investment decision-making processes.

In Indonesia, the number of investors continues to increase to over six million, indicating a significant shift in the investment behaviour of society. Referring to the research of Armansyah et al. (2023) revealed that 55.07% of total investors are Generation Z or Individuals under the age of 30 represent a significant portion of the growing investor population, indicating a paradigm shift among younger generations, with Generation Z contributing to approximately half of this growth. Heightened awareness and growing interest in investment activities are the primary factors driving the increasing number of Gen Z investors in Indonesia. Nevertheless, when making investment decisions, individuals frequently depend on intuition and emotions, resulting in decisions that are not fully rational and subject to bias in cognition throughout the process of determining decisions (Combrink & Lew, 2020).

Generation Z, who typically starts investing around the age of 19, possesses greater opportunities than previous generations to achieve success in their investment decisions (Maheshwari & Samantaray, 2025). However, cognitive and emotional factors continue to influence their investment decisions (Maheswari et al., 2023), and they demonstrate an awareness of the broader social implications associated with their investment choices (Djafarova & Foots, 2022). This research targets generation Z investors in Malang City due to its status as one of Indonesia's prominent centres of education, which draws a significant number of digitally savvy and financially engaged young individuals. The concentration of Generation Z in this area, along with the ease of data collection, positions Malang as a suitable and representative location (Sitompul et al., 2025). Moreover, insights derived from this group can potentially inform future research on comparable demographics in other metropolitan regions.

The investment decision process can be explained through the deep approach theory of planned behaviour (TPB) method. This theory highlights how attitudes, subjective norms, and perceived behavioural control can serve as the foundation for comprehending investment decisions (Ajzen, 1991). When it comes to decisions, attitudes are characterised as a person's appraisal of a particular object, circumstance, or associated behaviour. Attitudes serve as the basis for judgment in determining the decision to be made: whether the decision is assessed to provide benefits or is considered risky or detrimental. Attitudes towards risk and uncertainty are important factors in the investment decision process, and can significantly influence investors' interest in investing in the future (Mahardhika & Zakiyah, 2020).

Investors' propensity to decide on investments is affected by various influencing factors, not solely by fundamental and technical analyses, but also by emotional and psychological factors. Prior studies, including those by Qamar and Lodhi (2023), Shunmugasundaram and Sinha (2024), Kumar and Chaurasia (2024), and Sharma et al. (2024), explain behavioural biases, such as loss aversion and overconfidence, that affect investment decisions.

Prior studies, including Adil et al. (2022), Firmansyah (2023), and Arora and Chakraborty (2023), identify various factors that influence investment decisions, such as group behaviour, risk perception, individual attitudes, overconfidence, and financial literacy (Lim & Agustin, 2024). Furthermore, more recent research like Prasaja et al. (2023), Martaningrat and Kurniawan (2024), and Jowey et al. (2024) highlights the notable fear of missing out (FOMO) impact on investor choices.

High self-confidence is likely to drive individuals to take on greater investment risks and allocate more of their assets, as overconfidence increases their propensity for risk taking

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(Maheshwari et al., 2025). According to the TPB paradigm, a person's behavioural beliefs throughout the decision processes can be influenced by their attitudes, perceptions, and social norms. In particular, overconfidence can lead investors to act impulsively, disregarding proper risk assessments. Kumar et al. (2024) and Shunmugasundaram and Sinha (2024) find a positive relationship between overconfidence and investment decisions. However, in Ahmad and Shah (2022), Abideen et al. (2023), and Dinarjito (2023), verconfidence has no discernible impact on investment decisions.

Overconfidence is widely acknowledged as a common cognitive bias that results in excessive trading activity, elevated transaction costs, and less-than-optimal investment performance (Inghelbrecht & Tedde, 2024). This psychological tendency leads investors to disregard contradictory information and take on greater risks than are warranted. Under conditions of uncertainty, investors frequently demonstrate herding behaviour, mimicking the investment actions of others and aligning with prevailing market trends because of diminished trust in their own judgment and expertise (Raj, 2024). This pattern of behaviour reflects herding bias, which can fuel the formation of speculative bubbles and trigger market corrections when investment decisions are collectively based on incomplete or erroneous information (Saltik et al., 2024).

Investment decisions are significantly impacted by loss aversion, wherein investors exhibit heightened sensitivity to potential losses compared to gains of similar value (Kumar & Chaurasia, 2024). It is proposed that personal views greatly influence and direct the decision process, which is consistent with the TPB. When individuals perceive losses as more impactful than gains, this can introduce bias, leading to irrational decision making. Several studies, including Gupta and Shrivast (2022), Hussain et al. (2023), Sharma et al. (2024), and Jayawardena and Nanayakkara (2025), have identified a positive relationship between investment decisions and loss aversion. However, research by Dinarjito (2023) and Qamar and Lodhi (2023) implies that investment decisions are negatively impacted by loss aversion.

Investor decisions may be influenced by FOMO based on the perceived need to capitalise on opportunities or gains that others may be seizing. The TPB states that subjective norms are key drivers of individual decision-making processes. In this context, FOMO serves as a motivational factor, encouraging individuals to make investment choices to keep up with peers and avoid being left behind. Research by Gupta and Shrivastav (2022), Bich et al. (2023), Prasaja et al. (2023), Jowey et al. (2024), and Martaningrat and Kurniawan (2024), supports the notion that investment decision and FOMO are positively correlated.

Understanding financial behaviour is concerned with determining how people, particularly investors, make decisions related to financial investments. Investors responsible for their financial behaviour tend to cautiously manage and place their assets. To justify their investment decisions, investors need to improve their understanding and competence regarding financial literacy (Dinarjito, 2023).

By combining the significant influences of various human psychological biases, behavioural finance transforms the conventional approach to financial planning. Financial bias refers to the tendency to accept or act upon propositions that diverge from sound decisions grounded in data and factual analyses (Kumar et al., 2024). The idea behind financial behaviour is that investors have psychological biases, meaning that emotional traits and prejudices influence their financial decisions. Although the influence of biases may vary in different decision-making contexts, it is not feasible to completely eliminate behavioural factors in investor decisions (Kuzniak et al., 2015). As a result, this study focuses on comprehending how behavioural biases affect the decision-making process when investing.

Prospect theory, created by Kahneman and Tversky (1979), gives a framework for explaining how individuals make choices when presented with uncertainty challenging the assumptions in expected utility theory. It posits that investors are prone to loss aversion and

are affected by the framing effect, with their choices shaped by psychological factors that often lead to irrational decisions. This idea is consistent with Simon's (1956) bounded rationality theory, which postulates that people's cognitive capacities, availability of information, and time constraints limit their decision processes. Behavioural biases, which are influenced by psychological factors, can negatively impact investment outcomes. In the decision-making process, investors frequently rely on various cognitive biases, with herd behaviour, mental accounting, and overconfidence being among the most prevalent.

Previous studies have demonstrated that psychological characteristics, including overconfidence, loss aversion, and FOMO, significantly impact investment decisions. However, the findings of various studies have been inconsistent. Numerous studies by Kumar and Chaurasia (2024) and Shunmugasundaram and Sinha (2024) discovered a favourable relationship between investor decision behaviour and overconfidence, while other studies by Ahmad and Shah (2022), Abideen et al. (2023), and Dinarjito (2023) found no significant association. A similar pattern is observed with loss aversion, where certain studies by Gupta and Shrivastava (2022), Hussain et al. (2023), Sharma et al. (2024), Jayawardena and Nanayakkara (2025) suggest a positive influence on investment decisions, whereas others studies from Dinarjito (2023) and Qamar and Lodhi (2023) indicate a negative effect. Meanwhile, research by Gupta and Shrivastava (2022), Bich et al. (2023), Prasaja et al. (2023), Jowey et al. (2024), and Martaningrat and Kurniawan (2024) shows that FOMO is often associated with positive effects on investment behavior. There is currently little research on the connection between FOMO and TPB, particularly when financial literacy is taken into account as a moderating factor. This gap is particularly evident among Indonesian investors of generation Z. Compared to earlier studies, this study's primary contribution is its modern focus and the use of a unique theoretical framework. This study, set for 2025, will focus on the substantial rise in Generation Z investors actively engaging in capital markets. Unlike earlier research, this study analyzes investment behaviour using a psychological framework based on the TPB. The goal of this study is to investigate how financial behaviour traits, specifically FOMO, loss aversion, and overconfidence, affect Generation Z's capital market investment decisions, with financial literacy acting as a moderator.

2. Literature Review and Hypothesis Development

2.1. Literatur Review

2.1.1. Theory of Planned Behavior

According to Ajzen (1991), TPB is a psychological paradigm that explains how a person's intentions and sense of control over a behaviour can be an accurate indicator of what they will actually do. It outlines three core factors that shape behavioural intention: the individual's perspective of social pressure, attitude toward the activity, and sense of personal ability to carry out the behaviour. The theory assumes that individuals process information in a deliberate and structured manner, evaluating possible outcomes before deciding how to act (Ajzen, 1991). The primary component of TPB is an individual's decision-making purpose, which is related to emotional factors that reinforce individuals in behaving and making decisions (Chan et al., 2022).

2.1.2. Overconfidence

According to Gervais et al. (2011), overconfidence is an attitude possessed by an individual that is excessive regarding their ability to assess information or analyse the information they have when making decisions. A psychological bias known as overconfidence occurs when people overestimate their own skills, expertise, and veracity of the information they already have, often in pursuit of potential gains while minimising or overlooking future risks. People exhibiting this bias typically perceive

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their judgments and decisions as more accurate or trustworthy than others do (Jain et al., 2020).

2.1.3. Loss Aversion

Kahneman and Tversky (1979) pointed out that avoiding loss tends to matter more to people than achieving equivalent gain. Investors are frequently influenced by this bias because they may make irrational or emotionally motivated judgments due to the fear of possible losses (Jain et al., 2020). This is among the elements that affect investors' desires to observe losses. The propensity of investors to focus more on potential losses than on potential rewards is known as loss aversion. Investors' perceptions of risk may be directly affected by loss aversion (Saivasan & Lokhande, 2022).

2.1.4. Fear of Missing Out

According to Elhai et al. (2016), FOMO is a bad emotion brought on by a person's reluctance to miss information, especially social information (Przybylski et al., 2013). FOMO is an anxious feeling that occurs when others have enjoyable and beneficial experiences and we are not there (Lervik-Olsen et al., 2024). FOMO is a psychological condition characterised by anxiety about being excluded from significant experiences or events. This can prompt investors to act hastily, resulting in impulsive and irrational investment decisions. FOMO also fosters constant worry about not participating in opportunities, activities, or potential gains that others may enjoy (Bich et al., 2023).

2.1.5. Financial Literacy

Financial literacy, as defined by Remund (2010), Lusardi and Mitchell (2011), and Santini et al. (2019) is the ability to use financial information as a guide while making both short-term and long-term decisions. The capacity to effectively manage one's finances to ensure financial stability is known as financial literacy, which is crucial when making decisions pertaining to investments. Lack of financial literacy can adversely affect investment choices (Adil et al., 2022). Studies by Arora and Chakraborty (2023), Dinarjito (2023), and Ashfaq et al. (2024), financial literacy influences investing decisions. This idea is contested by Maheshwari et al. (2025), who found no discernible impact of financial literacy on investment choices. These contradictory findings between recent and earlier studies underscore the need for a more comprehensive investigation of this issue.

2.1.6. Investment Decision

Investment decisions are made on how to divide money into different investment opportunities (Bodie et al., 2014). These decisions involve assessing financial information and selecting suitable references to optimise potential returns. To minimise the risk of poor investment outcomes, it is essential to possess adequate financial knowledge and apply logical and rational judgments throughout the decision-making process (Nadhila et al., 2024).

2.2. Hypothesis Development

2.2.1. Positive Effect of Overconfidence on Investment Decision

Overconfidence in the realm of behavioural finance refers to the tendency of an individual's self-assurance to surpass their true capabilities or the extent of their knowledge and information. Investors who experience overconfidence tend to make high-risk investment decisions because they are too confident about the accuracy of

their information, thus disregarding the principle of caution in investment decisions (Humairo & Panuntun, 2022). According to Barber and Odean (2001), overconfidence is when an individual's or investor's belief in the information they possess regarding their understanding of market conditions and investors is exaggerated beyond their actual abilities. Research on this topic has revealed unexpected discrepancies in the results. Several studies indicate that overconfidence has a positive impact on investment decision processes (Kumar & Chaurasia, 2024; Shunmugasundaram & Sinha, 2024), while others show a negative or insignificant influence (Ahmad & Shah, 2022; Abideen et al., 2023; Dinarjito, 2023). For example, the research by Shunmugasundaram and Sinha (2024) discusses overconfidence bias among life insurance investors in India, finding a positive influence, while Ahmad and Shah (2022) also study overconfidence bias among PSX investors in Pakistan, resulting in a negative or non-significant relationship.

Glaser and Weber (2007) argue that excessive confidence can lead to excessive participation in investment. Overconfidence leads investors to depend more on intuition during the decision-making process, assuming that their available information is adequate while neglecting the necessary caution in risk analysis and evaluation. This is in line with TPB which explains that a person's perception can influence a decision. Therefore, an investor who perceives that they have greater ability without considering several factors when making decisions is driven by overconfidence (Humairo & Panuntun, 2022). A meta-analysis is necessary to gain a greater understanding of how overconfidence affects judgment and to reduce the distortions caused by this cognitive bias. **H_1: Overconfidence Has a Positive Effect on Investment Decision.**

2.2.2. Positive Effect of Loss Aversion on Investment Decision

Kumar and Chaurasia (2024) explain that loss aversion represents a cognitive bias within financial behaviour that significantly impacts investment decisions, where individuals exhibit greater sensitivity to losses than to gains. This tendency suggests that investors are more strongly affected by the fear or discomfort associated with losses than by satisfaction derived from profits. This is in line with the TPB which explains that self-factors and self-control play a significant role in decision making. In this case, loss aversion arises from within, so a person exerts control over their behaviour to avoid risks rather than the benefits that will be gained. Several studies discussing and examining this topic have found inconsistent results. Among Generation Z investors, this behaviour tends to be more evident, as their limited experience with long-term investments makes them more inclined to prioritise safeguarding their initial funds (Sharma et al., 2024).

Research by Gupta and Shrivastava (2022), Hussain et al. (2023), Sharma et al. (2024), and Jayawardena and Nanayakkara (2025), loss aversion has a major or favorable impact on investing decisions. However, research has shown that the magnitude of this effect varies. According to other studies, loss aversion has no appreciable impact on investment decisions (Dinarjito, 2023; Qamar & Lodhi, 2023). Loss aversion tends to encourage investors to be reluctant to bear losses, because they prioritise the security of their wealth or assets. To reduce the influence of this behavioural finance bias, it is crucial to comprehensively investigate how loss aversion affects the investment selection process. **H_2: Loss Aversion Has a Positive Effect on Investment Decision.**

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2.2.3. Positive Effect of Fear of Missing Out on Investment Decision

According to Elhai et al. (2016), FOMO is a negative feeling that arises from a person's unwillingness to miss information, including social information. FOMO is a bias in financial behaviour in investment decisions. Investors experiencing FOMO on opportunities and falling behind others may exhibit impulsive decisions, leading to irrational choices. This is in line with TPB, which describes how social variables affect an individual's decision to invest. The anxiety of being left behind by others is a social factor that affects someone in making investment decisions.Research conducted by Gupta dan Shrivastava (2022), Bich et al. (2023), Prasaja et al. (2023) Martaningrat dan Kurniawan (2024), and Jowey et al. (2024) has shown that the FOMO has a major impact on investing decisions. FOMO causes investors to worry about lagging behind their rivals, emphasising the need for more research to reduce its influence on investment decisions. **H_3: Fear of Missing Out Has a Positive Effect on Investment Decision.**

2.2.4. Financial Literacy as a Moderator between Overconfidence and Investment Decision

Dinarjito (2023) and Firmansyah (2023) highlight the significance of financial literacy in mitigating the association between investment decisions and overconfidence. Conversely, Adil et al. (2022) identify notable gender differences among investors, revealing that men with elevated levels of financial literacy are less affected by overconfidence bias than their female counterparts. Financial literacy is necessary to avoid the detrimental effects of overconfidence on investment decision-making. Nevertheless, the findings also indicate that women with high financial literacy may demonstrate greater overconfidence in their investment choice. Building on these insights, this study seeks to further investigate and analyse the moderating function of financial literacy in relation to overconfidence and how it affects investment choices. Perceived behaviour control is a crucial component of Ajzen ’s(1991) TPB paradigm, which explains the connection between overconfidence and investment choices. as it illustrates how financial literacy can reassess and moderate perceived control, helping transform overconfident tendencies into more rational investment behaviour. **H_4: Financial Literacy Acts as a Moderator between Overconfidence and Investment Decision.**

2.2.5. Financial Literacy as a Moderator between Loss Aversion and Investment Decision

Butt et al. (2023) suggest that financial literacy moderates the association between investment decisions and loss aversion. Similarly, Firmansyah (2023) emphasised that financial literacy can lessen the influence of loss aversion bias on investing behaviour. Increased financial literacy helps lessen the anxiety and uncertainty associated with possible losses in investments. These findings highlight the importance of encouraging financial literacy as a means of reducing emotional repercussions of loss aversion when individuals face financial challenges. This aligns with the TPB by Ajzen (1991), which emphasises perceived behavioural control as a crucial factor influencing an individual’s confidence in their ability to perform certain actions, including making investment decisions. Those with strong loss aversion often face diminished self-regulation because of the emotional strain of potential losses. However, higher levels of financial literacy enhance their capacity to handle investment-related risks and uncertainties, thereby strengthening their sense of control

over financial decision making. **H_5: Financial Literacy Acts as a Moderator between Loss Aversion and Investment Decision.**

2.2.6. Financial Literacy as a Moderator between Fear of Missing Out and Investment Decision

Martaningrat and Kurniawan (2024) find that financial literacy moderates the relationship between FOMO and investment decisions. Investors affected by cognitive biases during the decision-making process often face difficulties in maintaining rational judgment, particularly when motivated by the fear of missing opportunities that others are pursuing. Sufficient financial literacy can alleviate FOMO's effects of FOMO on investment behaviour. More financially literate investors typically make thoughtful decisions and are less likely to feel pressured to follow market momentum or trends. The TPB, proposed by Ajzen (1991), may be used to analyse this idea. It posits that three main elements influence an individual's behaviour: attitude toward conduct, perceived social norms, and perceived behavioural control. FOMO is strongly linked to social norms as it often stems from social pressure and the urge to conform to others' actions or prevailing investment trends. Investors affected by FOMO typically replicate their peers' decisions to avoid a sense of being left behind in seizing opportunities. In this regard, financial literacy serves as a protective element that strengthens individuals' control over their investment decisions and enables a more rational assessment of social influences. As stated by Wilamsari et al. (2025), the capital market requires a high level of financial knowledge, particularly in the modern period, when access via the Internet and technology is becoming increasingly common. To reduce the risk of future losses, investors must improve their financial literacy and make thoughtful and well-informed decisions. **H_6: Financial Literacy Acts as a Moderate between Fear of Missing Out and Investment Decision.**

2.3. Research Framework

The study's conceptual framework is arranged in relation to the suggested hypotheses. The study model depicted in Figure 1 examines how FOMO, loss aversion, and overconfidence affect investment decisions. Furthermore, the moderating variable of financial literacy may strengthen or weaken the association between psychological biases and investment decisions.

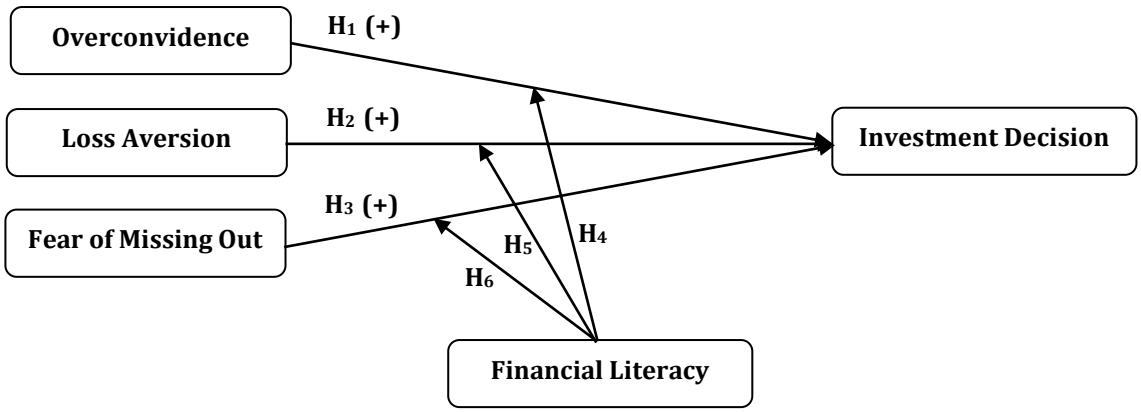

Figure 1. Research Framework

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3. Research Methods

3.1. Population and Sampling Method

Given the absence of exact data on the number of gen z individuals in Malang City, Indonesia, due to the lack of precise data on the influx and outflow of generation Z in and out of the city, the study determines the required sample size using formula with an unknown population, as developed by Lwanga and Lemeshow (1991). The results of the calculations indicate that 96 respondents made up the sample for this study. In this study, we employed a quantitative technique. The purposive sampling approach is utilised by applying specific criteria to select respondents who meet the objectives of the study. The established criteria require respondents to have prior experience with, or are currently engaged in, stock market investments.

3.2. Data Collection Method

This study used a survey method targeting Generation Z individuals in Malang City, Indonesia. The survey was selected to distribute questionnaires and expedite the data-gathering procedure. The target population consisted of Generation Z residents of Malang City, Indonesia. A questionnaire created specifically to collect data from Malang City, Indonesia's generation Z stock investors, is the data collection strategy used. This questionnaire consisted of 41 items intended to assess overconfidence, loss aversion, FOMO, financial literacy, and investment decisions. Overconfidence was measured with nine items based on research by Maheshwari and Samantaray (2025) and Jain et al. (2020). Loss aversion is measured using five question items referring to the research of Gupta and Shrivastava (2022) and Jain et al. (2020). FOMO is assessed via research by Gupta and Shrivastava (2022) and Maheshwari dan Samantaray (2025) and is measured with seven question items. The financial literacy variable instrument refers to the research of Raut (2020) and Alkhwaldi (2024) and is measured with eight question items. Investment decision is measured with twelve question items, referring to the research of Rahman and Gan (2020), Kumar et al. (2024), and Maheshwari and Samantaray (2025). A five-point Likert scale was employed to score each issue in this study, with 1 representing "strongly disagree" and 5 representing "strongly agree", strongly agree.

3.3 Data Analysis Method

The collected data were analysed using SPSS version 26. Regression analysis techniques are used to examine how overconfidence, loss aversion, and FOMO affect investment decisions. A Moderating Regression Analysis (MRA) was used to evaluate the moderating influence of financial literacy. A number of tests, including validity and reliability tests, were conducted to evaluate the reliability and validity of a questionnaire item prior to testing the MRA. Ghozali (2018) states that the significance value of the validity test must be less than 0.05. Cronbach's alpha was > 0.6 indicates a credible test (Ghozali, 2018). The F and T tests were performed after the validity and reliability were examined. The F-test determines whether all independent factors have a significant impact on the dependent variable at the same time, with a significance value < 0.05, as the threshold. The effect of each independent variable on the dependent variable was evaluated using a T test. Using a sig value < 0.05, the moderating regression analysis is evaluated in the last stage to determine whether the moderator variable affects how strongly the independent and dependent variables are associated (Ghozali, 2018).

4. Results and Discussion

4.1. Characteristics of Respondents

This study included 53 male (55.2%) and 43 female (44.8 %) respondents, as shown in Table 1. Eighty-seven (81.3%) responders were within the 17–20 age range. Those in the next largest age group were those aged 25–28 (3.1%) and those aged 21–24 (15.6%). No responders (0%) were 13–16 years of age. In terms of employment status, the vast majority of respondents (93 or 96.9 %) were students, whereas only three (3.1 %) worked in the private sector. This result shows that the respondents were predominantly young people who were still active in the educational field.

Table 1. Characteristics of Respondents

Description	Frequency	Percentage
Gender		
Male	53	55.2
Female	43	44.8
Age		
13 – 16 Years Old	0	
17 – 20 Years Old	78	81.3
21 – 24 Years Old	15	15.6
25 – 28 Years Old	3	3.1
Status		
Student	93	96.9
Employee	3	3.1

4.2. Validity Test Result

The data analysis findings in Table 2 show that, with the exception of item ID6 on the investment choice question, which has a significance score of 0.041, all items pertaining to overconfidence, loss aversion, FOMO, financial literacy, and investment decisions have values of 0.000. This number was less than the significance level of α = 0.05. The overconfidence for questions 1 to 9 has a significance value of 0.000, loss aversion for questions 1 to 5 has a significance value of 0.000, FOMO for questions 1 to 7 has a significance value of 0.000, financial literacy for questions 1 to 8 has a significance value of 0.000, and investment decisions for questions 1 to 12 have a significance value of 0.000. Consequently, all the items in these variables were deemed valid according to the standards set for this study.

Table 2. Validity Test Result

Variable	Indicator	Sig.
Overconfidence (OC)	OC1	0.000
	OC2	0.000
	OC3	0.000
	OC4	0.000
	OC5	0.000
	OC6	0.000
	OC7	0.000
	OC8	0.000
	OC9	0.000
Loss Aversion (LA)	LA1	0.000
	LA2	0.000
	LA3	0.000
	LA4	0.000
	LA5	0.000
Fear of Missing Out (FOMO)	FOMO1	0.000

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Variable	Indicator	Sig.
	FOMO2	0.000
	FOMO3	0.000
	FOMO4	0.000
	FOMO5	0.000
	FOMO6	0.000
	FOMO7	0.000
Financial Literacy (FL)	FL1	0.000
	FL2	0.000
	FL3	0.000
	FL4	0.000
	FL5	0.000
	FL6	0.000
	FL7	0.000
	FL8	0.000
Investment Decision (ID)	ID1	0.000
	ID2	0.000
	ID3	0.000
	ID4	0.000
	ID5	0.000
	ID6	0.041
	ID7	0.000
	ID8	0.000
	ID9	0.000
	ID10	0.000
	ID11	0.000
	ID12	0.000

4.3. Reliability Test Result

The reliability analysis results in Table 3 indicate that Cronbach's alpha values for all the question items pertaining to the variables of overconfidence, loss aversion, FOMO, financial literacy, and investment decisions are more than 0.6. Cronbach's alpha for overconfidence, loss aversion, FOMO, and financial literacy were 0.903, 0.650, 0.833, 0.734, and 0.787, respectively. Therefore, each item in these variables was considered to meet the dependability criteria and be suitable for inclusion in this study.

Table 3. Reliable Test Result

Variable	Cronbach's Alpha
Overconfidence	0.903
Loss Aversion	0.650
Fear of Missing Out	0.833
Financial Literacy	0.734
Investment Decision	0.787

4.4. Hypothesis Test Result

The hypothesis test findings in Table 4 indicate that the overconfidence variable has a significance value of 0.000, below the criterion of 0.05. This finding suggests that overconfidence has a positive and statistically significant influence on investment decisions, supporting the initial premise that overconfidence has a beneficial impact on these decisions. Similarly, the significance value of 0.008 for the loss aversion variable is below the cutoff of 0.05, indicating that loss aversion significantly and positively affects investment decisions. Evidence supports the second hypothesis, which states that investment decisions are positively impacted by loss aversion. On the other hand, the

FOMO variable has a significance level of 0.280, over the threshold of 0.05. This implies that FOMO has little influence on investment choice. Thus, the third hypothesis states that FOMO negatively influences investment decisions.

Table 4. Hypothesis Test Result

Model	Unstandardized Coefficients		Standardized Coeffiecients		
	B	Std. Error	Beta	t	Sig.
(Constant)	16.246	3,906		5.247	0.000
Overconfidence	0.523	0.077	0.551	6.757	0.000
Loss Aversion	0.469	0.174	0.203	2.695	0.008
Fear of Missing Out	0.106	0.097	0.094	1.087	0.280

4.5. F Test Result

Table 5 indicates a significance level of 0.000, which falls below the cut-off of 0.05. This result suggests that the collective influence of overconfidence, loss aversion, and FOMO on investment decisions is statistically significant.

Table 5. F Test Result

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1669.160	3	556.387	36.103	0.000
Residual	1417.829	92	15.411		
Total	3086.990	95			

4.6. Coefficient of Determination Test

The coefficient of determination yielded an adjusted R-squared value of 0.526, as shown in Table 6. This suggests that the combined effects of FOMO, loss aversion, and overconfidence may explain 52.6% of the variance in investment choices, with other factors not included in this study's model accounting for the remaining 47.4%.

Table 6. Coefficient of Determination Test Result

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.735[a]	0.541	0.526	3.92571

4.7. Moderating Regression Analysis Test Result

The MRA test results are presented in Table 7. The overconfidence variable and financial literacy combine to produce a significance level of 0.163, which is higher than the limit of 0.05. This finding suggests that financial literacy does not lessen the impact of overconfidence on investment decisions. This rejects Hypothesis 6, which holds that financial literacy can mitigate the association between overconfidence and investment decisions. Similarly, above the significance threshold of 0.05, there is a 0.116 link between financial literacy and loss aversion. This result implies that financial literacy does not affect the link between investment decisions and loss aversion. This suggests that Table 7, according to which financial literacy might lessen the correlation between investment choices and loss aversion, is rejected. Finally, the correlation between financial literacy and FOMO has a significance level of 0.128, which is higher than 0.05. This implies that the relationship between investment choices and FOMO is unaffected by financial literacy. Consequently, Hypothesis 6, which maintains that financial literacy may lessen the correlation between FOMO and investment decisions, is rejected.

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Table 7. Moderating Regression Analysis Test Result

Model	Unstandardized Coefficients		Standardized Coeffiecients		
	B	Std. Error	Beta	t	Sig.
(Constant)	-20.424	17.161		-1.190	0.237
Overconfidence	1.384	0.702	1.457	1.973	0.052
Loss Aversion	2.140	1.230	1.051	1.739	0.085
Fear of Missing Out	-0.1463	0.993	-1.302	-1.474	0.144
Overconfidence*Financial Literacy	-0.031	0.022	-1.558	-1.406	0.163
Loss Aversion*Financial Literacy	-0.063	0.040	-1.599	-1.588	0.116
Fear of Missing Out*Financial Literacy	0.046	0.030	1.859	1.536	0.128

4.8. Discussion

4.8.1. The Effect of Overconfidence on Investment Decision

The first hypothesis which posits that overconfidence positively affects investment decisions, is supported by the studies of Kumar dan Chaurasia (2024) and Shunmugasundaram and Sinha (2024). This implies that increased self-confidence among investors can enhance decision-making processes. In other words, having a high conviction in one's own skills tends to make investment decisions more likely. This is in line with Ajzen's (1991) TPB, which asserts that a person's behavioural control over attitudes and decisions is influenced by their level of self-belief. These findings support the research showing that overconfidence has a favourable impact on investment decisions by Kumar and Chaurasia (2024) and Shunmugasundaram and Sinha (2024).

4.8.2. The Effect of Loss Aversion on Investment Decision

Result from Gupta and Shrivastava (2022); Sharma et al. (2024) support the second hypothesis, which holds that investment decisions are favorably impacted by loss aversion. Additionally, this study reinforces the results of Jayawardena and Nanayakkara (2025), who discovered that loss aversion influences investment decisions. Similar effects are shown by the research's incomplete test results, leading to the conclusion that a higher level of loss aversion prompts investors to exercise greater caution in their decision making to minimise the risk of potential losses. This is in line with Ajzen's (1991) TPB, which explains that a person's perception can control their decisions or attitudes.

4.8.3. The Effect of Fear of Missing Out on Investment Decision

The third hypothesis suggests that investment decisions are positively impacted by FOMO. The third hypothesis is supported by the findings of Gupta and Shrivastava (2022), Bich et al. (2023), Prasaja et al. (2023), Martaningrat and Kurniawan (2024), Jowey et al. (2024) all of whom reported similar outcomes. However, the partial test results of this study differ from those of prior research, indicating that Investment decisions are not significantly impact investment decisions. This finding aligns with Pratiknjo et al. (2024) research, which found no discernible impact of FOMO on investing decisions. Consequently, one may say although FOMO is frequently thought of as a trigger for rash-investing decisions, the results of this study demonstrate that its influence is insufficient to influence judgments that are primarily informed by rational concerns. This outcome is in line with Ajzen's (1991) TPB, which holds that societal norms, personal attitudes, and perceived behavioural control, rather than emotional reactions such as FOMO, are the main logical elements that influence investment decisions. Thus, while individuals may feel anxious about missing opportunities, this

does not significantly influence investment decisions grounded in logical assessments and anticipated outcomes.

4.8.4. The Role of Financial Literacy as a Moderator between Overconfidence and Investment Decisions

Financial literacy moderates overconfidence and investment judgments. This hypothesis is supported by earlier research, including findings from Dinarjito (2023), Firmansyah (2023), and Nadhila et al. (2024) which aligns with this assertion. Nonetheless, this study's MRA results show that financial literacy has little effect on the association between overconfidence and investment decisions. These results are consistent with those of Arik and Sri (2021), who reported comparable outcomes. According to research, overconfidence still predominates when making investment decisions, even when one has a high level of financial literacy. This phenomenon can be attributed to overconfidence being a significant cognitive bias that causes people to exaggerate their skills and knowledge quality. In this case, high financial literacy does not mitigate these biases sufficiently. This finding challenges the TPB of Ajzen (1991), who asserts that behaviour is shaped by intents derived from attitudes, perceived behavioural regulation, and subjective standards. Even though financial knowledge can increase one's sense of power, it is clear that the impact of overconfidence, as an internal cognitive bias, can overshadow rational decision-making processes. This results in investment decisions that are more significantly affected by bias than by logical analysis.

4.8.5. The Role of Financial Literacy as a Moderator between Loss Aversion and Investment Decision

According to the study's fifth hypothesis, financial literacy moderates the relationship between investment decisions and loss aversion. Research by Butt et al. (2023), Firmansyah (2023), and Hussain et al. (2023) supports this hypothesis, which corroborates this assertion. However, the current study's MRA results show that financial literacy does not mitigate the impact of loss aversion on investment choices. These results imply that financial literacy does not affect the impact of loss aversion. Ajzen's (1991) TPB predicts that financial literacy increases a person's sense of control over their investment choices. However, these results indicate that emotional factors, such as loss aversion, have a more dominant influence than rational considerations derived from financial literacy. It can be said that even though individuals feel capable of making rational decisions due to financial understanding, fear of loss still dictates actual behaviour. This emphasises that, in investment decision-making, emotional factors often overshadow cognitive considerations.

4.8.6. The Role of Financial Literacy as a Moderator between Fear of Missing Out and Investment Decision

The sixth hypothesis states that financial literacy lessens the influence of FOMO on investment decisions. This position is supported by research from Martaningrat and Kurniawan (2024). Nonetheless, the findings of the MRA study show that financial awareness has little impact on the relationship between FOMO and investment decisions. These results support those of Wilamsari et al. (2025), who find no moderating effect of financial literacy. This study suggests that FOMO is more heavily influenced by social and emotional factors, such as peer pressure or social media trends, rather than by financial knowledge. While individuals may possess a strong financial understanding, the urge to conform to trends or social norms often overrides

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these rational considerations. According to Ajzen's (1991) TPB, perceived control and societal norms have a greater impact than financial literacy, indicating that social considerations are more important in determining investment choices influenced by FOMO.

5. Conclusion

This study reveals that investing decisions are positively affected by overconfidence and loss aversion, but FOMO exhibits either a negative or minimal influence. Furthermore, financial knowledge does not lessen the influence of FOMO, overconfidence, or loss aversion on investment decisions. Considering that these traits may significantly influence people's financial decisions, our findings suggest that investors, especially those in Generation Z, should be more conscious of psychological biases such as loss aversion and overconfidence. In addition, financial service providers and investment education institutions should integrate psychological aspects into the educational materials provided, considering the significant influence of psychological factors compared to financial literacy on investment behaviour. Therefore, financial literacy programs should not only focus on cognitive aspects related to financial knowledge but also include strategies for emotional management and investment behaviour more comprehensively. One limitation of this research pertains specifically to Generation Z stock investors in Malang City, Indonesia. Consequently, the researchers recommend that future studies broaden the participant base and explore additional independent variables that may impact investment decisions.

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