The behavioral biases on investment decision behavior: Evidence from Indonesia

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Abstract: The purpose of this study to analyze the behavior of investors in making financial investments in Indonesia. Although the overall financial literacy level in Indonesia has increased, individuals with higher levels of financial literacy tend to make more rational investment decisions. Being well-literate can be interpreted as the personal ability to understand and create financial concepts. However, some individuals still need help understanding investment products and services in Indonesia. This is due to the fact that there are still individuals who invest in illegal products. This study focuses on four biases: overconfidence bias, optimism bias, herding effect, and flexing, using quantitative analysis. The decision to invest is influenced by the thoughts of each investor and their optimistic behavior in seeking the highest return on their investment. This study used primary data with descriptive quantitative analysis. The number of respondents used in the overall research was 400, with criteria for investment products. The result of this study shows that the variable of overconfidence, optimism, and flexing affects the behavior of financial investment decisions. However, the variable bias herding effect does not affect the behavior of financial investment decisions. In conclusion, investors should be more cautious in making investment decisions by paying attention to the variables of overconfidence, optimism, herding effect, and flexing social media in Indonesia.

Keywords: Flexing, Investment, Herding effect, Optimism, Overconfidence.

1. Introduction

Nowadays, the decisions to invest have increased by individuals. According to Teare [1], the average investment decision of up to $4 million in a start-up is one of the investment products. As everyone knows, many factors affect the investor. Based on external factors, there are macroeconomic factors and microeconomic factors that can influence investment decisions. Meanwhile, based on internal factors, the decision to invest is influenced by the thoughts of each investor and optimistic behavior to get the highest return on their investment [2]. On the other hand, investors have the highest opportunity to play out in the stock markets because of their preferences on risk and return. It is because the preferences to invest still differ from individual to individual and country to country.

In America, the preferences of individuals still believe in real estate or gold, especially for long-term investment [3]. The belief is that long-term investment has the highest security during economic uncertainty, especially on the high demand for gold increases [4]. The preferences in America differ with Asian countries because of different economic conditions. In previous research from Widyastuti in Imron et al. [5], psychological factors can influence investment decisions. The Psychological principles of investment decisions affect the preference for investment products. Another study conducted by Kahneman [6] explains that the way of thinking of individuals as humans are divided into three types,

(i) decisions by considering risk, (ii) intuitive perception, and (iii) analytical way of thinking. Investment decisions have a side of rationality, emotions, and irrationality.

The theory by Kahneman and Tversky [7] also proves that individual irrational behavior and emotional involvement affect the country's stock market movements and finance. Based on the many kinds of literature, irrational individual viewpoints affect investment biases. In line with Imron [8], psychological factors affect positive and negative impacts. The negative impact influence from psychological factors is the rational concept of investors having deviations in behavioral biases socially, cognitively, and emotionally. Related to investment bias on risk-taking profiles has been conducted [9], [10], [11]. There is a psychological bias in the behavior of economic actors and the lack of rational investment models in explaining the return of stock market trades [12]. Some Individual investors consistently face poor performance due to a lack of theoretical understanding of the stock market and behavioral biases [13]. Investment biases include optimism and overconfidence.

Odean [14] argues that overconfident investors impact the markets to react to less rational investor information. Generational bias theory fits perfectly with previous research showing the role of generational influence in educational choices [15] and work behavior [16]. On the other hand, investment decisions are influenced by generational groups. Generational group differences prove differences in preferences, either for saving or choosing pension funds [17]. In the millennial generation, the decision to invest is influenced by the surrounding environment, such as the herding effect. In previous research conducted by Dickason and Ferreira [18], the choice of millennials to invest is influenced by certain ethnicities. In addition to the herding effect, the desire to show financial capabilities through social media can also encourage discriminatory behavior in investing.

Bias behaviors in investment are also indicated in Indonesia. Although, in general, the financial literacy level in Indonesia has increased [19]. With the highest financial literacy has the highest rationality. Being well-literate can be interpreted as the personal ability to understand and create financial concepts [20]. Based on press release data from KSEI, the distribution of domestic investors in Indonesia is spread by 71.87% in Java. The distribution of Single Investor Identification (SID) in Java Island is divided into three parts, (i) East Java, (ii) Central Java, and (iii) West Java. However, some individuals need help understanding investment products and services in Indonesia. Thus, there are individuals still invested in illegal products. Financial literacy positively affects the ability to detect investment fraud. This well-literary phenomenon in Indonesia indicates an anomaly in the decision to invest illegally or by prioritizing discriminatory behavior.

Therefore, it is crucial to study the effects of biased behaviors on stock market performances [21], [22]. Investors with discriminatory behavior tend to experience greater risk [23]. This research will focus on four biases, overconfidence bias, optimism bias, herding effect, and flexing on social media. Therefore, this study aims to analyze the behavior of investors in making financial investments so that in the future, investors can be more careful in making investment decisions that will be carried out by paying attention to the variables of overconfidence, optimism, herding effect, and flexing social media in Indonesia. This study used primary data with descriptive quantitative analysis. The number of respondents used in the overall research was 400, with criteria for investment products. The data collection results were analyzed to determine the impact of discriminatory behavior on the investment decisions of Indonesian. Not only quantitative analysis, this study also describes the results of descriptive analysis to determine the characteristics of respondents.

This paper is structured as follows. Section 2 presents the literature review and previous studies about the investment decision and the factors that affect it. Section 3 explained the methodology and the characteristics of respondents. Meanwhile, section 4 is about the results and discussion, and section 5 is about the conclusions.

2. Literature Review
Over two decades, rapid developments have impacted decision-making to invest in the hope of maximum profits. Investments in financial assets are divided into two: direct investment and indirect

investment. Direct investment means that the owner can determine the wisdom that affects his investment by owning securities or shares and managing them himself. Meanwhile, investment is indirectly defined as the management of securities represented by an institution that processes the investments of the holders of these securities [24]. The decision of an individual to invest, one of which can be influenced by financial literacy. Financial literacy can be defined as knowledge of a concept, fact, principle, or technological tool to manage money.

In investment decisions, financial behavior is essential for an investor because financial behavior is a basic approach. To make investment decisions, investors minimize the investment risks. So, Investors need attention to know the macro and micro conditions to get a high return. In this case, macro conditions include income, interest rates, and inflation. At the same time, the micro condition is related to the liquidity of an enterprise. The behavior of each individual is dynamic, constantly evolving with the times and the behavior of individuals around him. It can have an impact on biased decision-making. In this study, the decision to invest is indicated to be biased in Indonesia. This discriminatory behavior is classified based on three behaviors, namely overconfidence, optimism, herding effect, and the ability to flex on social media.

2.1. Overconfidence

Overconfidence is a state in which people tend to think they are better than they are [25]. Overconfident investors affect high investment [26]. According to Wulandari and Iramani [27], by the time the investor has succeeded and is comfortable with the investment, the level of investor confidence will increase to make investments in the future. The negative impact of being too confident in making investment decisions is that losses are not calculated. Based on psychological concepts, confident behavior is often associated with bad luck in investors in the money market [28]. Not only overconfidence in behavior but decision-making bias is also associated with an optimistic attitude.
H^1 : Overconfidence has a positive and significant effect on Investment Decision Behavior

2.2. Optimism

Investors make profits as expected to be more optimistic in making investments, so they believe that the situation in the future will improve and encourage investors to be more courageous to invest in uncertain times [29]. Previous research from Magnuson [30] shows that investors who profit from a company based on their expectations will invest in it the following year and vice versa. External factors can influence the decisions to invest. Herding occurs when decision-making carried out by a person follows the decisions of others [23]. This theory is strengthened in research conducted by Nugraha [31]; herding is a form of irrational behavior when they make decisions not based on the economic fundamentals of risky assets but based on other investors.
H^2 : Optimism has a Positive and Significant effect on Investment Decision Behavior

2.3. Herding Effect and Flexing Behavior

Based on psychological theory, several generations' classifications can impact decision-making [32]. One of the generations that tends to have the most significant influence is the millennial generation. Millennials tend to buy or sell stocks when other millennials also buy or sell the same stock. This phenomenon can further be categorized as generational bias [33]. This behavior related to new online digital media is widely associated with the development of the Internet [34]. If previously, media was known in physical forms, such as newspapers, radio, television, billboards, and others. Many companies use digital media to improve their branding [35] due to the ease of reaching consumers to dialogue and influence themass [36]. New online digital media into four marketing communication channels: email, mobile phone, social media, and websites. This behavior is also one of the negative impacts of technology, information, and communication development.

Herding occurs when an individual's decision-making is influenced by the decisions of others [23]. This theory is supported by Nugraha [31] research, which claims that herding is a type of irrational

behavior that investors exhibit when they make decisions based not on the economic fundamentals of risky assets, but on decisions made by other investors. According to Virigineni and Bhaskara [37], the herding effect occurs when a group of investors makes investment decisions based on specific pieces of information that trumps other information, such as news or financial reports. Investors are concerned about how others perceive their investment decisions.

Flexing is another bias behavior. Flexing is associated with flaunting all material possessions and wealth. Flexing in economics is similar to conspicuous consumption, or spending money on luxury goods and services to demonstrate economic status or strength. Furthermore, this way of life is associated with hedonistic impulses, which are also underlying causes of flexing behavior [38].

H^3 : Herding has a positive and significant effect on Investment Decision Behavior
H^4 : Flexing Behavior in Social Media has a positive and significant effect on Investment Decision Behavior
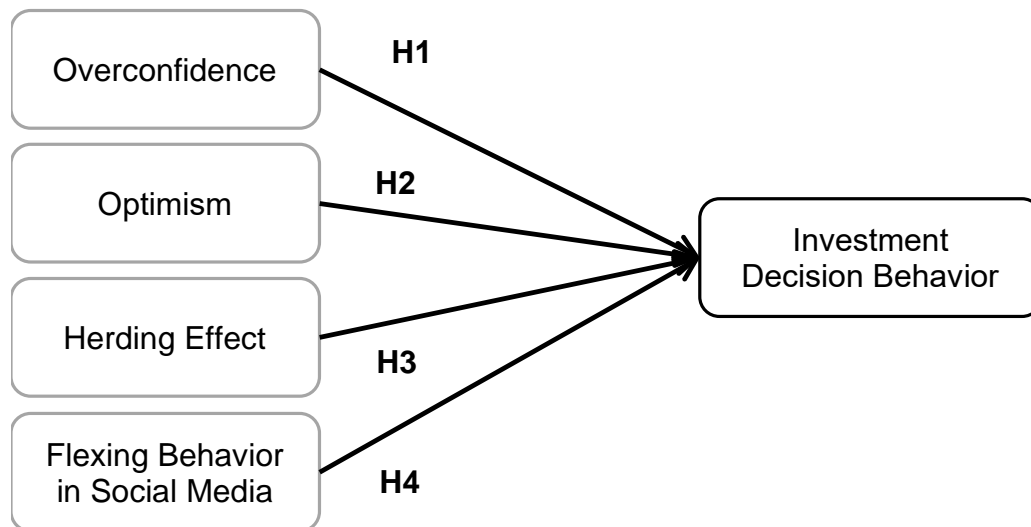
Figure 1.
Research model.

3. Research Method

3.1. Sample

This study used descriptive quantitative with primary data from random sampling. Krejie and Morgan in Khan et al. [39] convey that a large population is inaccessible due to time and budget constraints. According to the authors, with the increase in the population, the sample size increases at an increasingly decreasing rate. As the population grows above 1 million, the sample size becomes constant at 384 (at a confidence interval of 95%). In this survey, the sample used as research respondents were 400 respondents who filled out the questionnaire using a Likert scale.

3.2. Data Collection

Structured questionnaires that are distributed to respondents via Google Forms, email, or other electronic media will be used in this quantitative research's method of data collection. Both primary and secondary data were used to gather the information. When it comes to primary data, questionnaire responses with Likert scale responses were gathered, whereas secondary data was sourced from scholarly publications and online sources.

Following the methodology of earlier research, the statements on each variable in the questionnaire have a different number. There are a total of six statements in the investment decision behavior indicators (Y), seven statements in the Overconfidence Measurement Indicators (X1), nine statements in

the optimism measurement indicator (X2), five measurement indicators for the herding effect (X3), and a total of six statements from the Social Media Flexing measurement indicators (X4)

Pre-testing was done to determine whether the used questionnaire was feasible before the full data collection for the study was done.

3.3. Measurement

The variables in this study were chosen based on the literature and the formulation of the problems. The following variables were used in this study:

Table 1.
The definition of variables.

Variable	Operational definition	Measurement item	Sources
Overconfidence (X1)	Overconfidence is a belief based on one's intuition and judgment that the information he has is more precise than the actual situation (Pompian, 2012)	1. Have confidence in the success of his investment plan. 2. Have performance in making better financial investments than other investors. 3. Have confidence that the results of his analysis in making financial investments are very appropriate. 4. It tends to prioritize micro condition analysis related to company fundamentals and pay less attention to macro conditions in making investment decisions.	[40]
Optimism (X2)	Optimism is a behavioral bias that occurs when a person believes that investment decisions made will be more successful than other investors (Baker & Ricciardi, 2014).	1. Have confidence in obtaining a higher return on financial investment than other investors. 2. Have confidence that the financial investments will be more successful than other investors. 3. Pay attention to changes in macro and micro economic conditions (about revenue, interest rates, inflation, and company liquidity) when deciding to invest in a company.	[40]
Herding effect (X3)	Herding is a behavioral bias that occurs when investment decision-making follows the decisions of other investors (Baker & Ricciardi, 2014)	1. Easily influenced by decisions taken by other investors. 2. Believing that decisions taken by other investors	[40]

Variable	Operational definition	Measurement item	Sources
		are always right.	
Flexing behavior in social media (X4)	Flexing is related to showing off all material possessions and wealth. In economics, flexing is similar to conspicuous consumption or using money to buy luxury goods and services to show economic status or strength.	1. Have interaction with social media. 2. Have faith in one of the characters.	[40], [41]
Investment decision behavior (Y)	Investment decision behavior is a tendency to make investment decisions that are influenced by information and knowledge from investors, which leads to rational or irrational attitudes of investors towards investment decisions taken, which can be seen based on *psychological, personal, social, cultural, and beliefs* (Christanti & Mahastanti, 2011)	1. Have knowledge, especially about financial investment 2. Have a vision in making financial investments to achieve life goals 3. Able to analyze before investing in economic conditions in terms of macro and micro.	[40]

Note: The data were analyzed with the Partial Least Square (PLS) after passing the validity and reliability test stages.

4. Results

4.1. Characteristics of Respondents

Based on the data, the characteristics of respondents in this research have many categories. Based on age categories, most respondents are at the productive age, which is 15-64 years, with the most number aged 17-25 years. Regarding education level, most respondents had a diploma and bachelor's degree, as many as 76,75% or 307 people. The lowest level of education owned by respondents was senior high schools, with as much as 20.25% or 81 people.

So, based on the level of education, can affect preferences to invest directly or indirectly in their income. Respondent income data shows that the majority are in the category of Rp. 500,000 − Rp. 2,999,000. The next highest income, Rp. 3,000,000 − Rp. 5,999,000, Rp. 6,000,000 − Rp. 9,900,000. The highest income category was more than Fifteen million as many as three respondents. However, their income is calculated from their main job.

Based on the data, respondents depended on the main work and invested in various products. The types of investments that many respondents choose are savings, stocks, mutual funds, bonds, gold, to property such as land.

Table 2.
Type of product investments.

No.	Type of investments	Total
1.	Savings	350
2.	Stock	107
3.	Gold	56
4.	Land property	19
5.	Fund	14
6.	Building property	14
7.	Bond	1
8.	Sukuk	1

The most investment products owned by respondents were savings, as many as 350 respondents. The second most significant type of investment product is stocks, with as many as 107 respondents. Furthermore, the best type of investment product is gold. The types of investment products that respondents have the least are bonds and sukuk. However, some respondents have invested in more than one product. Based on various types of investment products owned by respondents. Most respondents who invest are still relatively new investors, which is 0-1 year. The next most investment duration is 1-3 years, 4-7 years, and more than seven years. As investors, respondents in this research get knowledge from various ways, especially information from social media. So, social media is not only used for entertainment but also to educate.

Based on data, the total respondents that only one respondent does not have social media. In contrast to other respondents who have more than five social media accounts. The types of social media used by respondents vary, namely (i) Facebook, (ii) Instagram, (iii) Youtube, (iv) Tiktok, (v) Twitter, (vi) Line. Most respondents use social media for 5 hours or more, 3-4 hours, and 1-2 hours.

4.2. Data Analysis

The first test carried out is the outer model by going through three stages, namely the convergent validity test, *discriminant validity* test, and reliability test.

The outer model testing that has been carried out will produce outer loading as a form of convergent validity test that has been carried out. According to Haji et al. [42], an attempt to assess the validity of convergence is to have a value of more than 0.5. The value in each variable shows a value of more than 0.5. It shows that the variables and items are categorized as valid and highly correlated. In addition to the convergent validity test, the next test will be carried out is the discriminant validity test. Meanwhile, the reliability test can be known at the composite reliability value showing more than 0.5 so that it can be said to be valid. Internal model testing aims to ensure that the structural model built is robust and accurate through three events: looking at R Square, Q square, and Goodness of Fit [43].

The *value of R Square* is 0.510. It shows that the influence of the variables used in the study is 50%, and the rest is influenced by other variables not contained in the study. Hypothesis testing can be done by paying attention to t-statistical and probability values. The *alpha* value used is 5%. Meanwhile, the accepted and rejected criteria for the hypothesis test are Ha accepted and H0 rejected, provided that the value of Ha shows a number less than 0.05.
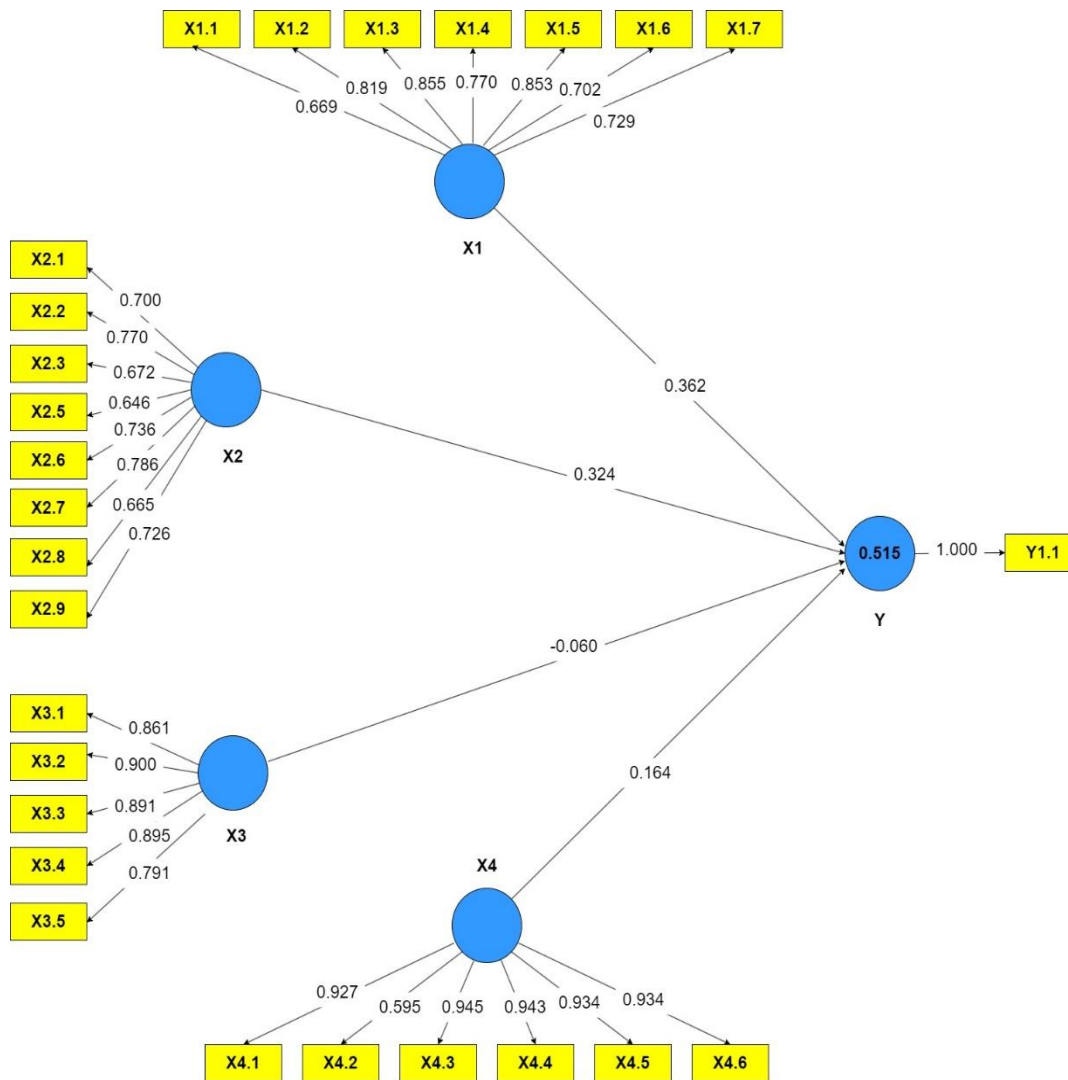
Figure 2.
Outer model test results.

Table 3.
Estimation result.

		Original sample (O)	T statistics (|O/STDEV|)	P values
H1	X1 → Y	0.362	5.409	0.000
H2	X2 → Y	0.324	4.878	0.000
H3	X3 → Y	-0.060	1.080	0.280
H4	X4 → Y	0.164	2.839	0.005

4.3. Hypothesis Test

Based on the data provided in Tables 3, it is known that H1, H2, and H4 are approved because they fulfill statistical criteria with p-values ≤0.05. However, H3 is rejected because they do not match the requirements.

5. Discussion

5.1. The Effect of Overconfidence on the Investment Decision Behavior

H0 is rejected because the p-value shows 0.000, which means less than 0.5, and the original sample value is 0.362, showing the relationship positively. So, the behavior of Overconfidence indicates a positive influence on the investment decision. Overconfidence is one of the behaviors that play a role in the investment decision-making of the people of East Java. This result detects the presence of overconfident behavior in investment activities because they are too confident in their ability to identify a potential investment option and feel that the analysis and predictions are correct. However, on the other hand, this activity is irrational in economics.

This means that investors often base their decisions on their perceived ability to predict market movements and their own knowledge or expertise. Overconfident investors may overestimate the accuracy of their predictions, leading them to take on more risk or make hasty investment decisions without fully considering potential downsides. In line with Umairoh's [44] research, the overconfidence variable affects investment decisions significantly. Pompian in Imron et al. [8], another symptom of investor overconfidence is to make excessive transactions because they think the decision is correct without heeding the risks. The overconfidence behavior is contrary to the heuristic theory, which states that individuals who act irrationally will have excessive self-confidence. Meli [45]; Wulandari and Iraman [27] research results show that Overconfidence does not affect investment decisions.

5.2. The Effect of Optimistic on the Investment Decision Behavior

H0 is rejected because the p-value shows 0.000, which means less than 0.5, and the original sample value is 0.324, showing the relationship positively. It means the optimism factor to invest makes it more successful than others. In this study, optimism bias (X2) has a significant positive effect on investment decisions (Y); this can be seen that the average investor who has earned the profit as expected will be more confident and more courageous in the future.

Investors who have experienced profitable results in the past tend to develop a positive outlook on future investments, which increases their confidence and willingness to take risks. This optimism can lead to more aggressive investment behavior as these investors expect similar or better returns in the future. However, while optimism can drive market participation and economic growth, it can also lead to excessive risk taking, particularly if the optimism is unwarranted. The influence of optimism bias is not only limited to investment activities but also has an important influence on micro and macroeconomic activities. At the micro level, optimism bias influences individual behaviors; in this case, the psychological investor can become more optimistic after having experienced getting a return on previous investments. Meanwhile, at the macro level, the optimism bias increases the intensity t of investment and takes higher risks. It means that when the intensity and amount of investment increase, the demand will increase more than the supply.

In a previous study conducted by Usman (2020) in Magnuson [30], optimism significantly influences investment decisions. The results of this study and some of the studies already mentioned are the phenomenon of animal spirits, understood as irrational behavior possessed by investors. Animal spirits are self-gratification of optimism and pessimism towards economic conditions that affect the level of investment. The overconfidence bias and optimism bias have different goals. Based on Khan et al. [39]; Ullah et al. [46], when investors have an overconfidence bias, they think the result of their investment will be correct. Nevertheless, when the investors have an optimism bias conducted by knowledge and experience, they think the return on investment has been taken.

5.3. The Effect of Herding Effect on the Investment Decision Behavior

H0 is accepted because the p-value indicates 0.280, which means more than 0.5, and the original sample value is -0.060, so the hypothesis is rejected. It means the herding effect or irrational behaviors can not affect investment decisions. In this study, the herding effect (X3) did not affect the behaviors of financial investment decisions (Y). This study is related to the improving level of financial literacy in

Indonesia; with the increase in the financial literacy index, investors will be more careful in making decisions. People with higher levels of financial literacy tend to make independent, well-informed decisions rather than simply following the crowd. The absence of herding suggests that investors have confidence in their own analysis and are less likely to be swayed by market rumors or trends driven by collective action. This finding is particularly important in developing markets such as Indonesia, where financial literacy initiatives appear to be having a positive impact on investor behavior.

The results of this study are strengthened by previous research conducted by Usman [47]; Kornitasari et al. [48] the results show that herding does not affect individual decisions in investing, especially stock. It is because the investors have studied before making a decision. Khalid et al. [49] herding does not affect investment decisions. Herding encourages investors to imitate the steps taken by others even if there is a possibility that the other person is making inappropriate investment decisions. It happens if investors in investing are only limited to following the trend or not on their wishes and awareness. However, because most investors today have studied investing and are better aware of investment, the influence of herding in making investment decisions is decreasing.

5.4. The Effect of Flexing on the Investment Decision Behavior

H0 is rejected because the p-value shows 0.005, meaning less than 0.5, and the original sample value is 0.164, showing the relationship positively. It means that activities carried out with the aim of flexing or showing off using social media have an effect on investment decisions. Flexing is one of the behaviors that give a role in the investment decision-making of the people of East Java. Based on this, one aims to invest because they want to show the results of their investments to the community. This study's results align with previous research conducted by Burnasheva & Suh [41] and Madzunya et al. [50]. Flexing conveyed through social media is a place to show his ability and confidence [41].

Based on this study, millennials decided to invest due to the Flexing in social media. Seeing others display their wealth or investment success on social media can motivate individuals to make similar investment decisions, often because they aspire to achieve the same financial status or recognition. This influence is particularly strong among younger generations who are more active on social media platforms. However, it's important to note that while social media can be a motivator, it can also lead to impulsive or ill-considered investment decisions driven by a desire to "keep up" with peers. Assiddiq [51] and Rizaty [52] show that currently, Flexing is a trend to be shown on social media, causing people who see social media people also want to get wealth instantly and quickly. It gives rise to inappropriate and irrational investment decisions. Investment decisions are caused only by the desire to show off but do not think about the risks of the investment decisions.

6. Conclusion

Based on the results of the research, the conclusion is as follows. (i) The variable of overconfidence bias affects investment decisions. It means that investment decisions made by the community are based on beliefs. (ii)The variable of optimistic bias has a significant positive effect on investment decisions. It is because the investors who have made the profit as expected will be more confident and more courageous in making investment decisions in the future. (iii) The variable of the herding effect does not affect the investment decisions. It is because investment decisions made by others cannot influence investors. It is also related to the level of financial literacy of the people in Indonesia, which is getting better with the increase in the financial literacy index of investors. (iv) Flexing variables on social media have a significant positive effect on investment decisions. It means that Flexing affects investment decisions.

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