COGNITIVE BIAS BEHAVIOR IN GENERATION Z INVESTMENT DECISIONS MODERATED BY GENDER

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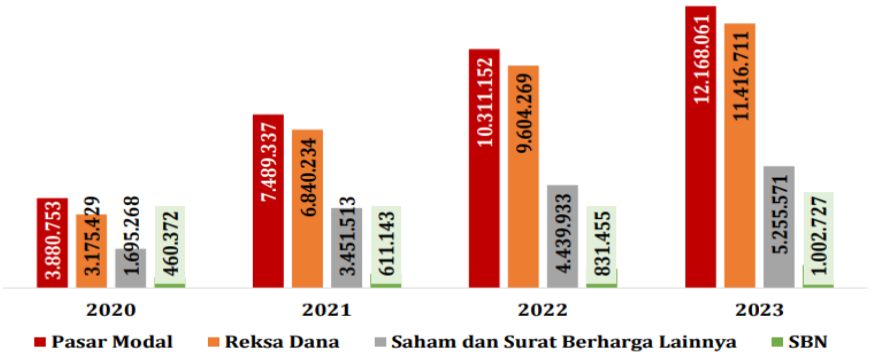
Abstract

Investment was the allocation of resources with the expectation of future financial gain. Investors logically expect optimal profits. To achieve these objectives, informed investment decisions were crucial. However, a lack of understanding regarding stock analysis often leads to irrational investment decisions, influenced by psychological factors causing cognitive bias. Cognitive bias behavior was common among Generation Z investors both male and female. This was attributed to their young age, associated with heightened emotionality and a lack of emotional control. Common cognitive bias behaviors observed among Generation Z investors include availability bias, confirmation bias, and illusion of control bias. This research seeks to understood the influence of cognitive bias on Generation Z's investment decisions, with the moderating influence of gender. A quantitative research approach was used in this study, with the population being comprising all Generation Z investors in Surabaya. A purposive sampling method was used to identify and recruit 85 participants. Questionnaires were used to collect data, which was subsequently analyzed using the Structural Equation Model-Partial Least Square (SEM-PLS) through the SmartPLS software. Results demonstrated that availability bias, confirmation bias, and illusion of control bias exert a considerable negative influence on investment decisions. Meanwhile, the gender moderation variable was unable to moderate the correlation between availability bias, confirmation bias, and illusion of control bias on investment decisions.

Keywords: Investment decision, cognitive bias, gender, availability bias, confirmation bias, illusion of control bias.

1. Introduction

Companies in Indonesia are now competing for new opportunities to diversify their sources of income, which involves utilizing investment opportunities to increase the company's capital, and may lead to further expansion. Through this approach, companies not only aim to survive, but also to explore new potential through active participation in the capital market. With the development of the capital market, it will be easier for a country to build a positive impact on the growth and development of the national economy. One method to measure the development of the capital market is by looking at the number of investors involved in capital market activities (Ady & Hidayat, 2019). Data obtained from the Indonesian Kustodian Sentral Efek Indonesia (KSEI, 2023) shows that the growth of SID (Single Investor Identification) in Indonesia can be seen in Figure 1 below:



Source: (Kustodian Sentral Efek Indonesia (KSEI), 2023

Figure 1: Number of Capital Market Investors in 2019-2023

Referring to Figure 1 above, it can be seen that there has been an increase in the number of investors over the past four years, and more than half of these investors is from Generation Z in 2023 (KSEI, 2023). Generation Z is focused on achieving significant and fast returns without thinking about future losses when making investment decisions. Investment decision is a selection made between two or more investment options with the desire to get future profits (Ady & Hidayat, 2019).

Generation Z is prone to irrational behavior that is based on psychological factors and may bias their investment decisions to be inappropriate. Cognitive bias behavior often appears in Generation Z investors. Some examples of cognitive biases include availability bias, confirmation bias, illusion of control bias.

Investors who have availability bias are investors who tend to make various considerations and conclusions based on the extent to which an outcome or information is related to their personal experience or life (Ady, 2018). Research from (Fajri & Setiawati, 2023; Raafifalah, 2021) found that availability bias affects investment decisions, but in contrast to research from (Candy & Vincent, 2021) which shows that availability bias has no effect on investment decisions.

According to (Elfahmi et al., 2022) Confirmation bias is a bias that arises when investors seek out and pay special attention to information that supports their beliefs, while ignoring information that contradicts their beliefs. Research from (Armansyah et al., 2023; Elfahmi et al., 2022) found that confirmation bias affects investment decisions, but in contrast to research from (Nurvitasari & Rita, 2021) which shows that confirmation bias has no effect on investment decisions.

According to (Saputro & Wikartika, 2023), illusion of control bias is a bias that refers to the tendency of investors to believe that they have the ability to control the surrounding environment, as if they can influence certain outcomes even though this is not the case. Research from (Bilal et al., 2021; Harischandra et al., 2020) found that illusion of control bias affects investment decisions, but in contrast to research from (Fajri & Setiawati, 2023; Saputro & Wikartika, 2023) which shows that illusion of control bias has no effect on investment decisions.

In addition to cognitive bias factors, individual investment decisions according to research (Ady, 2015), are influenced by various factors such as gender, experience, age, education, culture, character, and values that investors believe in. Gender according to (Afandi, 2019) is a characteristic possessed by men and women that is formed through social and cultural processes by society. Gender differences create variations in various aspects, including differences in roles, attitudes and mindsets that affect perceptions of the investment decision-making process. Research by (Syarkani & Alghifari, 2022) found that the moderating effect of gender weakens the relationship between illusion of control bias and investor decisions. Research by (Nurvitasari & Rita, 2021) examined and found that gender cannot moderate the relationship between confirmation bias and investment decisions. This research is inversely proportional to research by (Violeta & Linawati, 2019) where gender has a significant effect on investment decisions.

Based on the background explanation, there are problems as well as research gaps in previous research. Therefore, the author wants to conduct research on the effect of availability bias, confirmation bias, and illusion of control bias on investment decisions with gender as a moderating variable. So a study was conducted with the title "Cognitive Bias Behavior in Generation Z Investment Decisions with Gender Moderation".

2. Literature Review

2.1. The Relationship between Availability Bias and Investment Decisions

Availability bias is the tendency of investors to make investment decisions based on information that is easily obtained without conducting in-depth analysis or seeking additional data to test the truth of the information (Siraji, 2019). In certain situations, especially when quick decision-making is required, availability bias is often used by investors. However, the use of this bias can cause investors to make mistakes in decision making. Based on the explanation, it is concluded that the greater the availability bias factor, the less optimal investment decision making. This is supported by research from (Abdin et al., 2017; Ahmad & Shah, 2020; Dangol & Manandhar, 2020; Raafifalah, 2021; Saeed, 2019; Shah et al., 2018), which shows that availability bias has a significant negative effect on investment decisions.

H1: It is suspected that there is a significant negative effect of Availability Bias on Generation Z Investment Decisions

2.2. The Relationship between Confirmation Bias and Investment Decisions

Confirmation bias is a bias that occurs when investors seek and pay special attention to information that supports their beliefs, while information that contradicts their beliefs is ignored (Elfahmi et al., 2022). Often, confirmation bias in investors is the cause of inaccurate decision making due to lack of complete information. confirmation bias results in investors making investment decisions that are not always correct. Based on the explanation, it is concluded that the greater the confirmation bias factor, the less optimal investment decision making. This is supported by research from (Akhtar & Das, 2019; Armansyah et al., 2023; Cheng, 2019; Elfahmi et al., 2022; Park et al., 2012) which shows confirmation bias has a significant negative effect on investment decisions.

H2: It is suspected that there is a significant negative effect of Confirmation Bias on Generation Z Investment Decisions

2.3. The Relationship between Illusion of Control Bias and Investment Decisions

Illusion of control bias is a bias that refers to the tendency of investors to believe that they have the ability to control their surrounding environment, as if they can influence certain outcomes even though this is not the case (Saputro & Wikartika, 2023). Illusion of Control Bias can cause investors to tend to lose control in investing. Sometimes, unfavorable impacts can arise from illusion of control bias when making investment decisions. Based on the explanation, it is concluded that the greater the illusion of control bias factor, the less optimal investment decision making. This is supported by research from (Bilal et al., 2021; Harischandra et al., 2020; Zakaria & Megawati, 2022) which shows illusion of control bias has a significant negative effect on investment decisions.

H3: It is suspected that there is a significant negative effect of Illusion of Control Bias on Generation Z Investment Decisions

2.4. The Relationship between Availability Bias and Investment Decisions with Gender as Moderating Variables

This availability bias can be experienced by all genders, in both women and men. The difference in behavior between the two genders has an impact on investment decision making. Most male investors tend to have prior knowledge about the companies they invest in, while female investors rely more on information from friends and the media before they invest (Onsomu, 2014). Based on the explanation, it is concluded that the female gender is more affected by availability bias. Therefore, gender can moderate the effect of availability bias on investment decisions. This is supported by research from (Khan, 2017) which shows that gender can moderate the effect of availability bias on investment decisions.

H4: It is suspected that Gender can moderate the effect of Availability Bias on Generation Z Investment Decisions

2.5. The Relationship between Confirmation Bias and Investment Decisions with Gender as Moderating Variables

When confirmation bias arises in investment decisions, male investors are considered to have an advantage in information processing and the ability to make rational judgments. On the other hand, the low level of self-confidence of female investors encourages them to seek opinions and information in line as an effort to strengthen their confidence, which makes women vulnerable to confirmation bias (Nurvitasari & Rita, 2021). Based on the explanation, it is concluded that female gender is more affected by confirmation bias. Therefore, gender can moderate the effect of confirmation bias on investment decisions. This is supported by research from (Onsomu, 2014) which shows that gender can moderate the effect of confirmation bias on investment decisions.

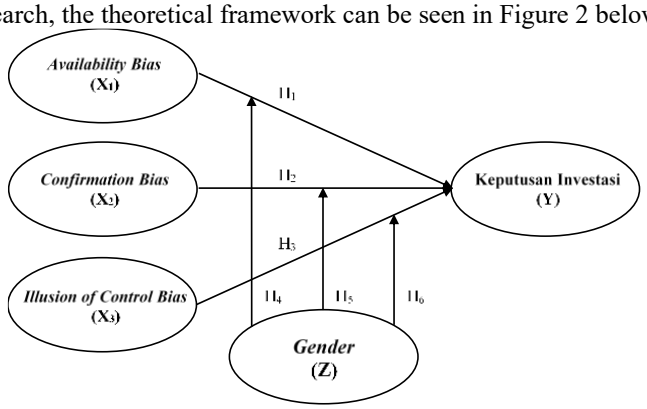
H5: It is suspected that Gender can moderate the effect of Confirmation Bias on Generation Z Investment Decisions

2.6. The Relationship between Illusion of Control Bias and Investment Decisions with Gender as Moderating Variables

Illusion of control bias in investment decision-making is encountered by a wide range of investors, including both men and women. However, male investors tend to be exposed to illusion of control bias compared to female investors (Qadri & Shabbir, 2014). This is because from a psychological perspective, men tend to be confident and courageous when making high-risk investment decisions. Based on the explanation, it is concluded that the male gender is more affected by illusion of control bias. Therefore, gender can moderate the effect of illusion of control bias on investment decisions. This is supported by research from (Syarkani & Alghifari, 2022) which shows that gender can moderate the effect of illusion of control bias on investment decisions.

H6: It is suspected that Gender can moderate the effect of Illusion of Control Bias on Generation Z Investment Decisions

By detailing the research, the theoretical framework can be seen in Figure 2 below:



Source: Processed by the Author (2024)

Figure 2: Theoretical Framework

3. Methods

This research used a quantitative approach, with population being comprising all Generation Z investors in Surabaya which is 16,785,227 investors. Samples were taken using non-probability sampling methods, namely purposive sampling techniques with certain criteria such as being less than 27 years old, domiciled in Surabaya and having invested in stocks for at least 2 years and after calculating with the hair formula, obtained a sample of 85 respondents. Questionnaires were used to collect data, which was subsequently analyzed using the Structural Equation Model-Partial Least Square (SEM-PLS) through the SmartPLS software. Variables used in this research consist of independent variables, dependent variable, and moderating variable. The independent variable are Availability Bias, Confirmation Bias, and Illusion of Control Bias. The dependent variable is Investment Decisions. And the moderating variable is Gender. Variables and indicators in this study are as follows:

Table 1: Variables Operations

Variable	Indicator	Scale
Availability Bias (X_1)	1. Search for easily available information 2. Choosing investments that are easy to remember 3. According to life experience 4. According to the investor's character	Likert
Confirmation Bias (X_2)	1. Dismiss views that differ from one's own thinking 2. Uses information that is in line with his/her thinking 3. Paying attention to feedback that is in line with opinions 4. Ignores information that is not in line with his/her understanding	Likert
Illusion of Control Bias (X_3)	1. Ignoring the risk 2. Thinks everything is easy to do 3. Believes that they can control the outcome of their decisions	Likert
Investment Decision (Y)	1. Using some of the income for investment 2. Investing with consideration 3. Willing to spend all income on investments that provide greater returns 4. Investing with quick and careful calculation 5. Unsecured financing	Likert
Gender (Z)	0 = Male 1 = Female	Dummy

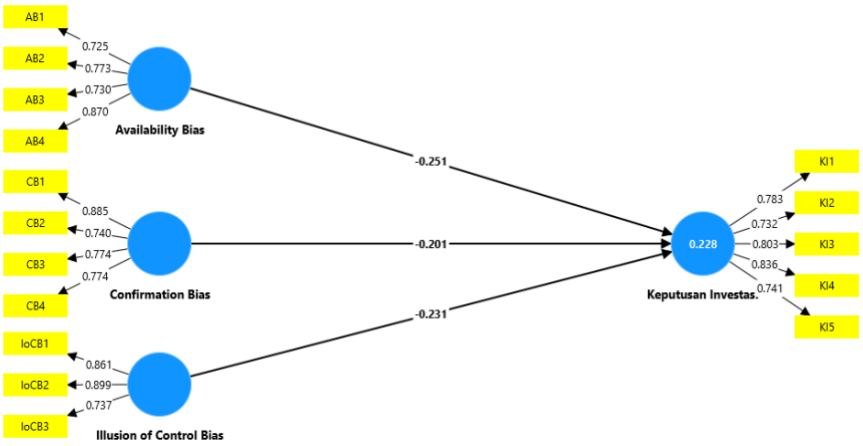
Source: Processed by the Author (2024)

4. Results and Discussion

4.1 Results

4.1.1. Outer Model

The Outer Model is used to test the validity and reliability of each variable. The Outer Model of this study was calculated using SmartPLS version 4 and can be shown in Figure 3 below:



Source: Processed by the Author (2024)

Figure 3: Outer Model

Validity test refers to the ability of the instrument to measure exactly what needs to be measured (Taniredja & Mustafidah, 2011). In this study, validity testing was carried out through convergent validity and discriminant validity. Convergent validity test can be calculated from Average Variance Extracted (AVE) with criteria considered valid if the AVE value is > 0,5 (Zhang et al., 2014).

Table 2: Average Variance Extracted

Variable	AVE	Critical Value	Description
Availability Bias	0,603	> 0,5	Valid
Confirmation Bias	0,632	> 0,5	Valid
Illusion of Control Bias	0,698	> 0,5	Valid
Investment Decisions	0,609	> 0,5	Valid

Source: Processed by the Author (2024)

Based on the table above, it is known that each variable has an AVE value greater than 0,5. From these results, it is known that each variable meets the requirements of convergent validity, so all these variables are declared valid.
In discriminant validity, the validity of a variable is seen in its Cross Loading. Cross Loading must be higher on the indicator being measured than other latent variables. Indicators are considered valid if the Cross Loading value is > 0,7 (Sholihin & Ratmono, 2021).

Table 3: Cross Loading

	Availability Bias	***Confirmation Bias***	***Illusion of Control Bias***	**Investment Decisions**
AB1	0,725	0,159	0,053	-0,203
AB2	0,773	0,244	0,184	-0,198
AB3	0,730	0,041	0,035	-0,166
AB4	0,870	0,086	0,104	-0,341
CB1	0,062	0,885	0,412	-0,405
CB2	0,132	0,740	0,367	-0,166
CB3	0,217	0,774	0,314	-0,176
CB4	0,198	0,774	0,265	-0,213
IoCB1	0,062	0,344	0,861	-0,347
IoCB2	0,088	0,382	0,899	-0,294

IoCB3	0,194	0,381	0,737	-0,210
KI1	-0,369	-0,271	-0,213	0,783
KI2	-0,166	-0,135	-0,132	0,732
KI3	-0,156	-0,415	-0,381	0,803
KI4	-0,234	-0,287	-0,256	0,836
KI5	-0,271	-0,144	-0,314	0,741

Source: Processed by the Author (2024)

Based on the table above, it is known that all cross loading in each indicator is higher than other latent variables and each indicator has a cross loading value of more than 0,7. It is known that each indicator meets the discriminant validity requirements, so all indicators are declared valid.

A reliable variables means that the instrument has trustworthy properties because it has stable results when tested many times (Idrus, 2009). Reliability test is measured by two criteria, namely Cronbach Alpha and Composite Reliability. The reliability test requirement is if the value of Cronbach's Alpha > 0,7 and Composite Reliability is > 0,7.

Table 4: Cronbach Alpha and Composite Reliability

Variable	*Cronbach Alpha*	*Composite Reliability*	Critical Value	Description
Availability Bias	0,786	0,858	> 0,7	Reliable
Confirmation Bias	0,820	0,873	> 0,7	Reliable
Illusion of Control Bias	0,786	0,873	> 0,7	Reliable
Investment Decisions	0,842	0,886	> 0,7	Reliable

Source: Processed by the Author (2024)

Based on the table 4, it is known that the reliability requirements of all variables are met. This is indicated by Cronbach Alpha and Composite Reliability on each variable having a value greater than 0.7. Therefore, it is concluded that all variables are declared reliable.

4.1.2. Inner Model

The inner model can be explained as a relationship between variables that shows the bond between latent variables and the substantive theory of research to observe causal relationships or cause-and-effect relationships between latent variables. The inner model is evaluated through the coefficient of determination test, effectiveness test, and hypothesis testing. The determination test is evaluated by R^2 or R-square for the dependent variable. the greater the R-square value, the better the model's ability to make predictions in research. R-square values of 0.75; 0.50; and 0.25 are interpreted as indications of strong, medium, and weak models, respectively (Hair et al., 2011).

Table 5: R-square

Variable	*R-square*
Investment Decisions	0,200
After Gender Moderation (Male)	0,147
After Gender Moderation (Female)	0,289

Source: Processed by the Author (2024)

Based on the table 5, it can be seen that the R-square on the Investment Decisions variable is 0,200. This value shows that the Investment Decision variable can be explained by the Availability Bias, Confirmation Bias, and Illusion of Control Bias variables by 20%, while the remaining 80% of other variations are explained by other variables outside the study. It is also known that the inner model of this study has a weak prediction model because the R-square is less than 0,25. Meanwhile, after the addition of the moderating variable Gender for male gender, the R-square decreased to 0,147, showing that the prediction model in this study remains weak. And when the moderating variable Gender for female gender is added, the R-square value increases to 0,289, but the prediction model is still weak.
The Effectiveness test or the Effect Size test shows the magnitude of the influence of the independent variable on the dependent variable through the value or f--square or F^2. F-square in (Hair et al., 2011) is interpreted as 0,02; 0,15; and 0,35, which are small, medium, and large values, respectively.

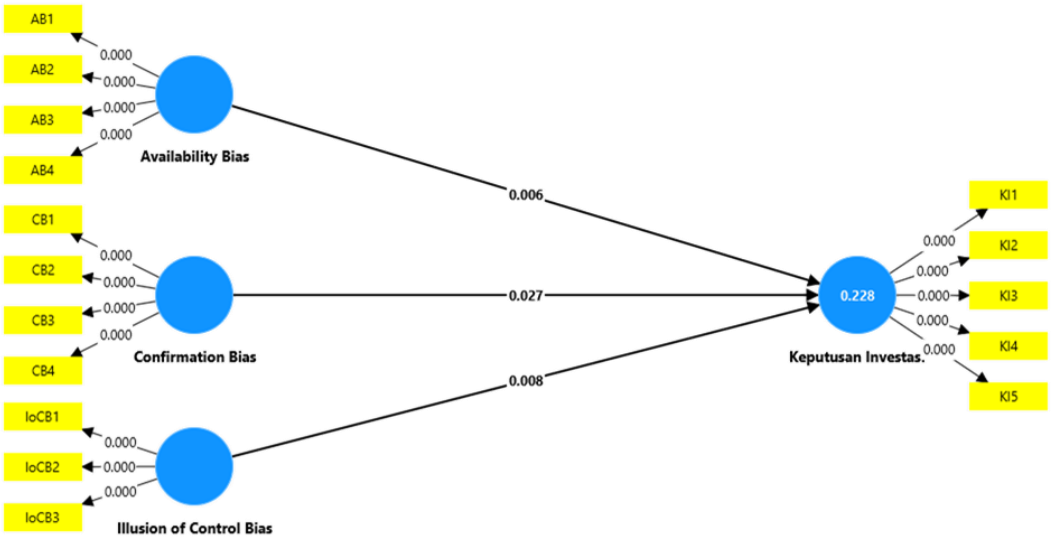
Table 6: f-square

Relationship	F^2	F^2 (Moderated by Male Gender)	F^2 (Moderated by Female Gender)
Availability Bias → Investment Decisions	0,079	0,160	0,062
Confirmation Bias → Investment Decisions	0,042	0,052	0,029
Illusion of Control Bias → Investment Decisions	0,056	0,151	0,041

Source: Processed by the Author (2024)

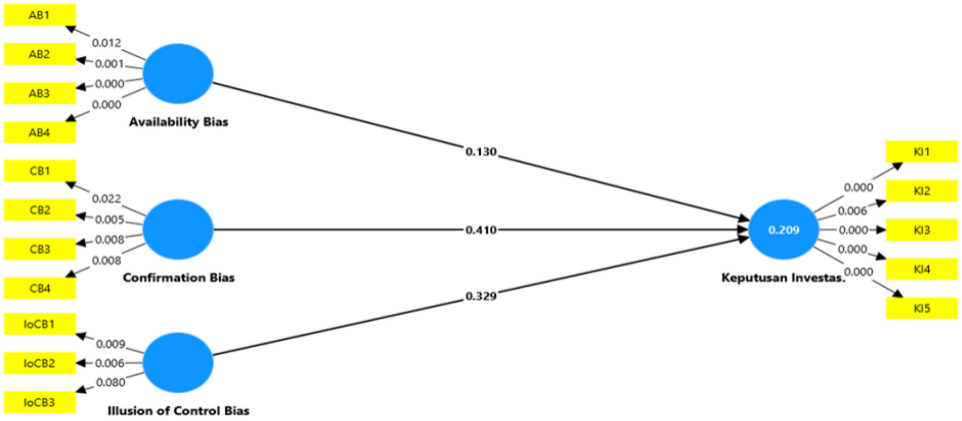
Based on the table 6, it can be concluded that f-square on Availability Bias on Investment Decisions is 0,079 which means that the variable has a small influence. Meanwhile, after the addition of moderation of male gender, the f-square value increases to 0,160, so the effect becomes moderate. And when female gender moderation is added, the f-square value decreases to 0,062, so the effect remains small. The f-square value for Confirmation Bias on Investment Decisions is 0,042, which means that the variable has little effect. Meanwhile, after the addition of male gender moderation, the f-square value increases to 0,052, but the effect is still small. And when female gender moderation is added, the f-square value decreases to 0,029, so the effect remains small. The f-square value for Illusion of Control Bias on Investment Decisions is 0,056, which means that the variable has little effect. Meanwhile, after the addition of Gender moderation for male gender, the f-square value increases to 0,151, so the effect becomes moderate. And when female gender moderation is added, the f-square value decreases to 0.041, so the effect remains small.

Hypothesis testing is carried out with the path coefficient to determine whether the hypothesis can be accepted or rejected based on the significance of the effect between variables, t-statistic, and p-value. In this study, hypothesis testing can be calculated with SmartPLS using bootstrapping as shown in the figure 4 below:



Source: Processed by the Author (2024)
Figure 4: Bootstrapping

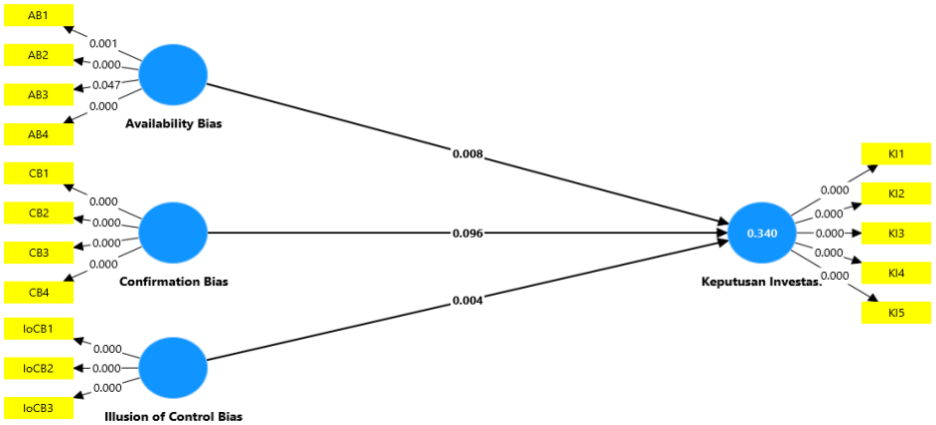
Meanwhile, the results of the bootstrapping calculation after adding the male gender moderation variable are shown in Figure 5 below:



Source: Processed by the Author (2024)

Figure 5: Bootstrapping After Moderated Male Gender

Meanwhile, the results of the bootstrapping calculation after adding the female gender moderation variable are shown in Figure 6 below:



Source: Processed by the Author (2024)

Figure 6: Bootstrapping After Moderated Male Gender

In this research, the level of confidence is 95%, so the alpha value is 5% or 0,05. The hypothesis test requirements for this study are If the t-statistic value > t-table (1,988), then H0 is rejected and Ha is accepted. If the p-value < 0,05, then the result is considered significant. Also whether the original sample is positive or negative to determine the direction of influence.

Table 7: Path Coefficient

Hypothesis	Original Sample	T statistics	P values	Description
AB → KI	-0,251	2,739	0,006	Hypothesis Accepted
CB → KI	-0,201	2,211	0,027	Hypothesis Accepted
IoCB → KI	-0,231	2,639	0,008	Hypothesis Accepted
AB*G_M → KI	-0,228	1,515	0,130	Hypothesis Rejected
AB*G_F → KI	-0,330	2,652	0,008	
CB*G_M → KI	-0,180	0,824	0,410	Hypothesis Rejected
CB*GF → KI	-0,200	1,667	0,096	
IoCB*G_M → KI	-0,215	0,976	0,329	Hipotesis Rejected
IoCB*G_F → KI	-0,334	2,848	0,004	

Source: Processed by the Author (2024)

Based on the table 7 above, the Availability Bias on Investment Decisions has negative original sample value of -0,251, t-statistic 2,739 > 1,988 and p-value 0,006 < 0,05 which indicates that H1 of this study is accepted, Availability Bias has a significant negative effect on Investment Decisions. The Confirmation Bias on Investment Decisions has negative original sample value of -0,201, t-statistic 2,211 > 1,988 and p-value 0,027 < 0,05 which indicates that H2 of this study is accepted, Confirmation Bias has a significant negative effect on Investment Decisions. The Illusion of Control Bias on Investment Decisions has negative original sample value of -0,231, t-statistic 2,639 > 1,988 and p-value 0,008 < 0,05 which indicates that H3 of this study is accepted, Illusion of Control Bias has a significant negative effect on Investment Decisions.

The Availability Bias variable on Investment Decisions is moderated by gender, in the male gender, t-statistic 1,515 < 1,988 and p-value 0,130 > 0,05, so male gender does not moderate the effect of Availability Bias on Investment Decisions. Meanwhile, for female gender, the original sample value is smaller than before being moderated at -0,330, t-statistic 2,652 > 1,988 and p-value 0,008 < 0,05, so female gender weakens the effect of Availability Bias on Investment Decisions. Since only female gender can moderate, while male gender cannot, then H4 of this study is rejected, Gender cannot moderate the effect of Availability Bias on Investment Decisions.

The Confirmation Bias variable on Investment Decisions is moderated by gender, in the male gender, t-statistic 0,824 < 1,988 and p-value 0,410 > 0,05. Meanwhile, for female gender, t-statistic 1,667 < 1,988 and p-value 0,096 > 0,05. So it is concluded that the H5 of this study is rejected, because neither male nor female gender cannot moderate the effect of Confirmation Bias on Investment Decisions.

The Illusion of Control Bias variable on Investment Decisions is moderated by gender, in the male gender, t-statistic 0,976 < 1,988 and p-value 0,329 > 0,05, so male gender does not moderate the effect of Illusion of Control Bias on Investment Decisions. Meanwhile, for female gender, the original sample value is smaller than before being moderated at -0,334, t-statistic 2,848 > 1,988 and p-value 0,004 < 0,05, so female gender weakens the effect of Illusion of Control Bias on Investment Decisions. Since only female gender can moderate, while male gender cannot, then H6 of this study is rejected, Gender cannot moderate the effect of Illusion of Control Bias on Investment Decisions.

4.2. DISCUSSION

4.2.1. The effect of Availability Bias on Investment Decisions

From the analysis, it is known that Availability Bias has a significant negative effect on Investment Decisions. The results of this study support research from (Abdin et al., 2017; Ahmad & Shah, 2020; Dangol & Manandhar, 2020; Raafifalah, 2021; Saeed, 2019; Shah et al., 2018) which also shows similar findings that Availability Bias has a significant negative effect on Investment Decisions. However, contrary to research by (Candy & Vincent, 2021) which shows the results of availability bias has no effect on investment decisions.

The negative effect means that the greater the availability bias factor, the less optimal investment decision making. The negative effect of availability bias on investment decisions results in increased irrationality in Generation Z investors. Irrationality in investment decisions increases the likelihood of error, so Generation Z investors will get a return that is not optimal but the risk is greater.

4.2.2. The effect of Confirmation Bias on Investment Decisions

From the analysis, it is known that Confirmation Bias has a significant negative effect on Investment Decisions. The results of this study support research from (Akhtar & Das, 2019; Armansyah et al., 2023; Cheng, 2019; Elfahmi et al., 2022; Park et al., 2012) which also shows similar findings that Confirmation Bias has a significant negative effect on Investment Decisions. However, contrary to research by (Nurvitasari & Rita, 2021) which shows the results of confirmation bias has no effect on investment decisions.

The negative effect means that the greater the confirmation bias factor, the less optimal the investment decision-making. This bias is common among Generation Z as they believe the advice they are given is better than their own decisions. Generation Z investors who experience confirmation bias often claim that their beliefs are based on objective, logical and rational thoughts and experiences. However, they may actually be based on information that reinforces their existing beliefs and views, while ignoring other information that contradicts them. In some situations, what is believed to be true does not necessarily reflect reality accurately.

4.2.3. The effect of Illusion of Control Bias on Investment Decisions
From the analysis, it is known that Illusion of Control Bias has a significant negative effect on Investment Decisions. The results of this study support research from (Bilal et al., 2021; Harischandra et al., 2020; Zakaria & Megawati, 2022) which also shows similar findings that Illusion of Control Bias has a significant negative effect on Investment Decisions. However, contrary to research by (Fajri & Setiawati, 2023; Saputro & Wikartika, 2023) which shows the results of Illusion of Control bias has no effect on investment decisions.

The negative effect means that the greater the illusion of control bias factor, the less optimal investment decision making. This illusion of control bias makes Generation Z investors feel able to control external conditions with their abilities, even though these conditions are beyond their control. Illusion of control bias is considered to be a dangerous thing for investors, especially when making investment decisions, because they tend to believe that they can control or at least influence outcomes that they cannot actually control.

4.2.4. The effect of Availability Bias on Investment Decisions moderated by Gender
From the analysis, it is known that Gender cannot moderate the effect of Availability Bias on Investment Decisions. The results of this study support research from (Bilal et al., 2021; Harischandra et al., 2020; Zakaria & Megawati, 2022) which also shows similar findings that Gender cannot moderate the effect of Availability Bias on Investment Decisions. However, contrary to research by (Khan, 2017) which shows the result that gender moderates the relationship between availability bias and investment decisions.

Differences in behavior between female and male investors affect investment decision-making. Most male investors tend to have prior knowledge about the companies they invest in. While female investors rely more on information from friends and the media before they make an investment, they tend to be cautious as well as conservative when making investment decisions.

4.2.5. The effect of Confirmation Bias on Investment Decisions moderated by Gender
From the analysis, it is known that Gender cannot moderate the effect of Confirmation Bias on Investment Decisions. The results of this study support research from (Nurvitasari & Rita, 2021) which also shows similar findings that Gender cannot moderate the effect of Confirmation Bias on Investment Decisions. However, contrary to research by (Onsomu, 2014) which shows the result that gender moderates the relationship between confirmation bias and investment decisions.

Gender in Generation Z Investors both women and men are not affected by confirmation bias because they can be careful and consider many factors when making investment decisions, so that the decisions made become more optimal. When confirmation bias appears in investment decisions, male investors are considered to have an advantage in information processing and the ability to make rational judgments over women, so their investment decisions are more resistant to confirmation bias. Female investors are also often encouraged by technological advances, making it easier to find available information so that the information is used as lessons about investments that are appropriate, appropriate, useful, and make them less vulnerable to confirmation bias.

4.2.6. The effect of Illusion of Control Bias on Investment Decisions moderated by Gender
From the analysis, it is known that Gender cannot moderate the effect of Illusion of Control Bias on Investment Decisions. The results of this study support research from (Labajova et al., 2022) which also shows similar findings that Gender cannot moderate the effect of Availability Bias on Investment Decisions. However, contrary to research by (Syarkani & Alghifari, 2022) which shows the result that gender moderates the relationship between availability bias and investment decisions.

It is known that the female gender tends to have the illusion of control regarding their investment decisions but still tends to be weak, therefore the illusion of control they have involves factors such as information, return, investment risk, then the investments they make will be exposed to bias. As for male investors, they are more resistant to illusion of control bias because from a psychological perspective, men tend to be confident and brave when making high-risk investment decisions.

5. Conclusion

Based on the results of data analysis from investors Generation Z in Surabaya and discussion in this study. Thus, it is concluded that Availability Bias has a significant negative effect on the Investment Decisions. Confirmation Bias has a significant negative effect on the Investment Decisions. Illusion of Control Bias has a significant negative effect on Investment Decision. Meanwhile, Gender does not moderate the relationship between Availability Bias on the Investment Decisions. Gender are unable to moderate the relationship between Confirmation Bias on Investment Decisions. And Gender does not moderate the relationship between Illusion of Control Bias on Investment Decisions.

This research is used to design effective education and training programs to help Generation Z make more rational investment decisions. The suggestion from the results of this study is that the public is expected to conduct in-depth analysis before making investment decisions, using various analytical techniques such as technical analysis as well as fundamental analysis, and supported by good financial literacy in order to reduce cognitive bias behavior and make investment decision making more rational. This study has several limitations, namely only using several cognitive bias variables and there is only one moderating variable. Therefore, for future research, it is recommended to add other cognitive bias variables and emotional bias to the research.

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