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# The Influence of Herding, Anchoring, Disposition, Personal Income, and Financial Literacy on Generation Z's Investment Decision Making in Surabaya City

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**Abstract.** This study examines the investment decisions of Generation Z in the city of Surabaya and analyzes the relationship between herding, anchoring, disposition, personal income, and financial literacy. The object of this research is Gen Z in the city of Surabaya, and the data collection technique uses a purposive sampling technique. The total number of respondents obtained was 232 people by distributing questionnaires online. This research concludes on causality and utilizes Structural Equation Modeling analysis techniques on AMOS version 24 software. The results of this study indicate that herding and disposition have a significant positive effect on investment decisions, while anchoring, personal income, and financial literacy have no effect on investment decisions. This study can serve as a useful reference for various parties, especially investors who should always act and behave wisely when making decisions in the capital market.

**Keywords.** Herding, Anchoring, Disposition, Personal Income, Financial Literacy, Investment Decision.

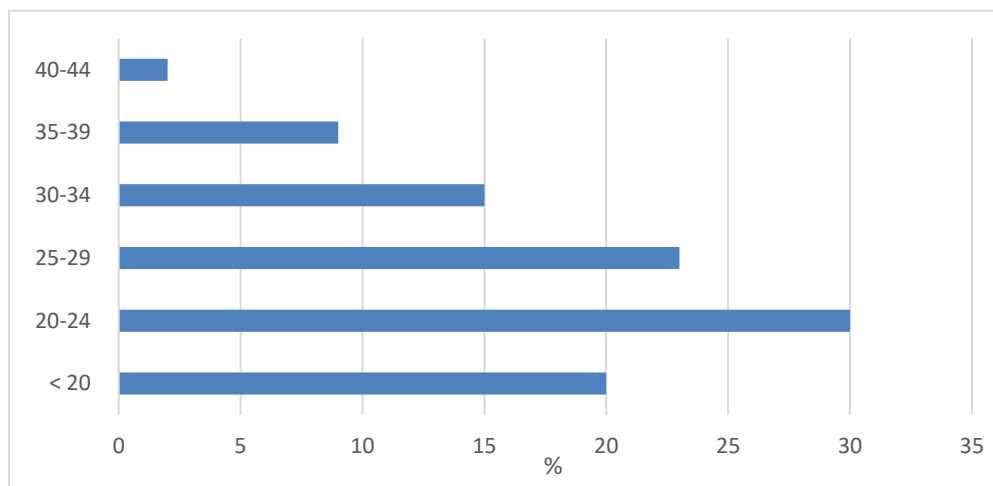
## 1. Introduction

Investment is the act of postponing consumption for a certain period of time with the goal of increasing future consumption. Both institutions and individuals can choose to delay consumption and allocate their funds to investment instruments. In this process, they gain additional benefits such as interest rates, capital gains, or dividends. It is crucial for individuals to start investing at a young age, considering that the returns from these investments can serve as savings and emergency funds for future needs. More and more people in Indonesia are starting to invest as a guarantee for their future.

Based on the information provided by the Indonesian Central Securities Depository (KSEI), there has been a significant increase in the number of investors in Indonesia since 2021. By the end of June 2022, the number of investors reached 4,002,289, a 15.96% increase from the figure of 3,451,513 at the end of 2021. This increase can be traced back to 2020 when the number of investors was only 1,695,268. In the first half of 2022, the majority of stock investors were from Generation Z and millennials under the age of 30, accounting for 81.64% of the total investors. The assets owned by this group amounted to Rp144.07 trillion [22].

Based on a JakPat survey conducted by [3] also indicates that the majority of the Indonesian population has started investing at a young age. The survey involved 2,411 respondents from across Indonesia, conducted online through the JakPat application on July 4-6, 2022, with a margin of error below 3%. The survey results show that 73% of the respondents started investing below the age of 30. Out of that number, 20% of the respondents began investing below the age of 20, while 30% of the respondents started investing between the ages of 20 and 24. The productive-age population in Indonesia exceeds 191 million people, with the majority of them belonging to Generation Z [12]. By engaging in investment activities at an early stage, Generation Z can secure funds for the future. It also serves as a source of funding for business players and startups, which directly impacts Indonesia's economy.

Figure 1. Indonesian young investor JakPat survey results



In East Java, the number of investors has experienced significant growth. From 996,574 SID (Single Investor Identification) at the end of 2021, the number increased by 14.64% to 1,142,505 SID on April 28, 2022 [20]. Out of the total number of investors until August 2021, there were 360,414 SID in East Java (Jatim). Among the top 10 cities with the largest number of SID, Surabaya contributed the most with 98,142 SID, followed by Malang with 39,143 SID, Sidoarjo with 32,532 SID, Kediri with 18,130 SID, Gresik with 13,447 SID, Madiun with 10,753 SID, Banyuwangi with 10,178 SID, Mojokerto with 9,991 SID, and Blitar with 9,706 SID [32]. Based on this, Generation Z residents in Surabaya were selected as the subject of research to investigate the factors influencing investment decisions through several tested research variables.

The number of investors in Indonesia exhibits different investment behaviors in decision-making. When engaging in investment activities, an investor not only considers fundamental analysis of a stock but also behavioral aspects. Behavioral factors can influence investment decisions, including herding behavior, anchoring effect, and disposition effect. Herding behavior occurs when investors make investment decisions based on information collected collectively from other investors. The anchoring effect occurs when investors make judgments based on initial information received. The disposition effect refers to the tendency of investors to sell stocks when they are in a profitable position and hold on to stocks when they are in a loss position. Personal income and financial literacy also play a role in investment decision-making [27].

Investment activities carried out by Generation Z and millennials in Indonesia are expected to become a source of future funds, strengthen capital for businesses and startups, and have a positive impact on the country's economy. It is important for young individuals to understand the potential benefits and risks of investing, and to seek appropriate guidance and education to make informed investment decisions.

## **2. Literature Review and Hypotheses**

### *2.1. Heuristic Theory*

Heuristic Theory is a decision-making method used in complex and uncertain situations. [39] explain that heuristics can influence decision-making by creating biases, although they also enable faster decision-making. These heuristics can be applied in the context of stock investments, where heuristic behavior can assist in making speculative decisions that may result in gains or losses. Some types of heuristics included in this framework are representativeness, anchoring, overconfidence, availability bias, randomness, escalation of commitment, gambler's fallacy, hindsight, disposition effect, herding effect, and home bias [30].

### *2.2. Investment Decisions*

Investment decision involves selecting investments based on past outcomes and expected future results [34]. There are rational and irrational investors, with rational ones making logical decisions based on information, while irrational ones are influenced by psychological factors. Long-term considerations are important in investment decisions, which are also known as capital budgeting [36]. [42] states that past performance and future expectations influence investment decisions. Investment decisions impact a company's profitability and cash flow. Managers determine the total assets needed and their composition, including current and fixed assets. To optimize asset utilization, uneconomical assets are reduced, eliminated, or replaced. [14] identify indicators for investment decisions: rate of return, return of risk, and the time factor.

### *2.3. Herding*

Herding behavior in investment refers to the phenomenon where investors make decisions based on collective information from others, rather than considering relevant individual information [4]. This behavior can lead to market inefficiencies and irrational investment decisions. Rational investors, however, tend to rely on their own analysis and information [9]. Herding behavior is influenced by the belief that others possess better information. It can distort market prices and reduce risk assessment [28]. Indicators of herding behavior include choosing investments based on others, buying and selling based on others, and responding quickly to the decisions of others [21].

### *2.4. Anchoring*

Anchoring bias according to [40], refers to the tendency of individuals to evaluate decisions based on a reference value they know or possess, even if that value is irrelevant to the actual evaluation. In the context of the stock market, anchoring bias is often observed when investors refer to the initial purchase price during sales or analysis, leading to current evaluations being influenced by past values that should be irrelevant. Anchoring bias affects investors by relying on historical trends to determine stock prices or company earnings range, resulting in less responsiveness to unexpected changes [38]. Anchoring can lead investors to make irrational investment decisions by giving unnecessary importance to statistically and psychologically determined anchors. Indicators of anchoring bias include relying on past investment performance, setting targets before buying or selling, trusting one's own

calculations, and believing that past information always leads to accurate investment decisions [34].

### 2.5. *Disposition*

The disposition effect refers to the tendency of investors to sell stocks when they are making a profit and hold onto them when they are experiencing losses [31]. This behavior deviates from rational decision-making and can lead to inefficiencies in the stock market. The effect is characterized by investors selling more of their winning stocks than their losing stocks [19]. [26] explain that the disposition effect is a deviation from rational behavior in the capital market, where investors tend to hold onto their stocks when prices decline, hoping for future price recovery. This decision-making pattern can contribute to market inefficiency. The disposition effect can be explained by factors such as portfolio rebalancing and investors' expectations of average returns [26]. Indicators of the disposition effect include selling stocks too early during price increases, holding onto stocks for too long during price declines, not acknowledging losses, and being fearful of experiencing losses (Baker et al., 2019). This phenomenon highlights the behavioral biases that can influence investment decisions.

### 2.6. *Personal Income*

Personal income refers to the money received by individuals during a specific period, such as profits, wages, rent, and other forms of income [18]. It encompasses earnings from sales, company salaries, investments, and other sources, which can be in the form of goods, money, or psychological satisfaction [27]. The concept of personal income involves economic growth, including income, asset increases, or liability decreases, leading to equity growth not attributed to investor contributions. In the context of individuals, personal income represents the total earnings obtained by individuals in a particular country, including reductions in retained earnings, insurance and social security contributions, additional transfer payments, and investment returns. The income levels can be categorized into very high, high, middle, and low-income groups based on average monthly earnings. The indicators of personal income include bonuses and incentives, additional income, salary, and investment fund allocation [25].

### 2.7. *Financial Literacy*

Financial literacy encompasses the understanding and knowledge of financial institutions, concepts, and instruments for effective personal finance management and decision-making [27]. High financial literacy also affects high financial management behaviour [10]. It involves the ability to process financial information and make rational choices. Improved financial literacy empowers individuals to plan and make informed decisions regarding financial aspects like savings, debt, and retirement [13]. It plays a vital role in influencing financial behavior and enables individuals to achieve desired financial stability [7]. The indicators of financial literacy include general financial knowledge, savings and loans, insurance, and investments [24].

### 2.8. *Herding on Investment Decisions*

The herding effect occurs when investors rely on collective information from the group or crowd, ignoring important individual information, leading to biased and influenced investment decisions [9]. According [41] also found in their research on investment behavior during the COVID-19 pandemic that herding has a moderate impact on investment decision-making. Several previous studies have shown a significant positive relationship between herding and investment decision variables, including [17], [2], [38], [16], and [1]. Additionally, there is also research that concludes that herding behavior has a significant negative relationship with investment decision variables [15].

H1: Herding has a positive impact on investment decision-making in the capital market among Gen Z in the city of Surabaya

2.9. *Anchoring on Investment Decisions*

Anchoring refers to the phenomenon where individuals use a specific reference point to make subsequent decisions [23]. [11] concluded that investors tend to quickly sell their stocks when the selling price exceeds the buying price. In addition to the buying price, the highest price reached during a certain period also serves as an anchor. Investors also make buying decisions based on the past performance of stocks, indicating an overestimation of their own opinions and expertise. [35] revealed a significant positive relationship between heuristic bias and the three components of anchoring, overconfidence, and representativeness in individual stock investment decisions. [38] found that anchoring has a moderate impact on investment decision-making.

H2: Anchoring has a positive impact on investment decision-making in the capital market among Gen Z in the city of Surabaya

2.10. *Disposition on Investment Decisions*

[26] investigated the influence of disposition in the Indonesian Capital Market and found that disposition effect affects decision-making. In the study by [33], they also found that the higher the disposition effect, the more significant its impact on investment decisions among investors in Surabaya. [19] demonstrated that individual investors exhibit a significant preference for selling winners and holding losers. [37] examined the disposition effect in investment team decision-making and highlighted its significant influence on team investors. [30] concluded that disposition, as one of the heuristic theories in financial behavior, has an impact on investors when making investment decisions.

H3: Disposition has a positive impact on investment decision-making in the capital market among Gen Z in the city of Surabaya.

2.11. *Personal Income on Investment Decisions*

[27] concluded in their research that income has a positive influence on investment decisions among permanent faculty members at FEB UPN Veteran Jakarta. [29] stated that the income earned by the majority of residents in Mayang Village during the Covid-19 period significantly impacts investment decision-making. In the study by Rahadjeng (2011), it was also shown that income and education are key factors influencing investor decisions. Income can increase the interest of FEB students at Universitas Muria Kudus in making investment decisions [7]. Income has an impact on investment decisions. Low or high income affects an individual's interest and understanding of savings or investment for the future [5].

H4: Personal Income has a positive impact on investment decision-making in the capital market among Gen Z in the city of Surabaya.

2.12. *Financial Literacy on Investment Decisions*

[27] concluded in their study that financial literacy has a positive influence on investment decisions. [6] demonstrated that individuals with good financial literacy are more likely to make informed decisions and show a greater interest in risky assets as they understand the basic principles of financial risk. [2] detected that financial literacy is a statistically significant positive predictor of investment decisions among both male and female investors. [29] mentioned that individuals with higher levels of financial literacy tend to make higher investment decisions. Conversely, a decrease in financial literacy leads to a decrease in

investment decisions, as stated by [35] and [8]. Additionally, research by [5] and [7] also states that financial literacy has a significant positive impact on individuals' interest in making investment decisions.

H5: Financial Literacy has a positive impact on investment decision-making in the capital market among Gen Z in the city of Surabaya.

### 3. Research Methods

The type of research used belongs to conclusive research with a causal approach. The data used is quantitative data obtained from primary data collected through an online questionnaire. The population in this study consists of Gen Z individuals in Surabaya city. The sampling technique used in the study is purposive sampling. The sample criteria selected are individuals who have invested in the capital market at least three times, reside in Surabaya, and belong to the Gen Z generation aged 10-27 years. The total number of collected data is 232 respondents out of the total number of respondents. Respondents' answers are measured using a likert scale. The analysis technique used is the three-box method for descriptive analysis and the Structural Equation Model (SEM) using AMOS version 24 software.

### 4. Result

The descriptive responses from the respondents will be presented for each research variable based on the Three-box Method criteria, which include three interpretations: high, medium, and low. The results of the descriptive analysis show that the investment decision variable falls into the high category, the herding variable falls into the medium category, the anchoring variable falls into the high category, the disposition variable falls into the medium category, the financial literacy variable falls into the medium category, and the personal income variable falls into the high category. In Table 1, a validity test is conducted by eliminating research indicator items that do not meet the criteria of loading factor  $> 0.5$ , variance extracted  $> 0.50$ , and discriminant validity. Then, a reliability test is performed using the selected items with all validity criteria, resulting in a Construct Reliability (CR) value of  $\geq 0.70$ .

**Table 1.** Varians Extraced & Construct Reliability

Variable	Item	Loading Factor	Measurement Error	Sum Loading Factor	Sum Measurement Error	Construct Reliability	Average Variance Extracted	Discriminant Validity
Invesment Decision	KI1	0,750	0,438	8,579	1,855	0,822	0,536	0,732
	KI2	0,732	0,464					
	KI3	0,716	0,487					
	KI4	0,731	0,466					
Anchoring	AR18	0,707	0,500	8,821	1,790	0,831	0,553	0,743
	AR15	0,741	0,451					
	AR14	0,799	0,362					
	AR13	0,723	0,477					
Disposition	DP24	0,764	0,416	8,970	1,755	0,836	0,561	0,749
	DP22	0,778	0,395					
	DP21	0,740	0,452					
	DP20	0,713	0,492					
Financial Literacy	FL34	0,736	0,458	13,264	2,346	0,850	0,531	0,729
	FL33	0,747	0,442					

	FL32	0,712	0,493					
	FL30	0,741	0,451					
	FL28	0,706	0,502					
Personal Income	PI42	0,720	0,482					
	PI40	0,715	0,489	8,180	1,955	0,807	0,511	0,715
	PI39	0,712	0,493					
	PI37	0,713	0,492					
Herding	HD10	0,736	0,458					
	HD9	0,735	0,460	9,126	1,717	0,842	0,571	0,756
	HD8	0,769	0,409					
	HD7	0,781	0,390					

The data in this variable does not have outliers, but it exhibits non-normal characteristics due to a multivariate critical ratio (c.r) of 18.484, which is higher than 2.58. Therefore, an alternative hypothesis testing method, specifically the bootstrap method, was employed to address the non-normal data. The Bollen-Stine bootstrap yielded a p-value of 0.617.

#### 4.1. Goodness of Fit test result

The purpose of the Goodness of Fit test is to evaluate the adequacy of the research model. Several criteria from the Goodness of Fit test can be observed in table 2.

**Table 2.** Goodness of Fit Index Results

Goodness of fit	Cut-off Value	Value	Conclusion
<i>Chi-square</i>	Expected small value	285,654	Good Fit
<i>Significance Probability</i>	≥ 0.05	0,060	Good Fit
CMIN/DF	≤ 2.00	1,143	Good Fit
GFI	≥ 0.90	0,912	Good Fit
AGFI	≥ 0.90	0,886	Marginal Fit
CFI	≥ 0.95	0,989	Good Fit
TLI	≥ 0.95	0,987	Good Fit
RMSEA	≤ 0.08	0,025	Good Fit

The modified Goodness of Fit test results can be seen in Table 1, and it can be stated overall that the research model meets eight criteria and has good results. This indicates that the model is in a good condition and can proceed to hypothesis testing.

#### 4.2. Hypothesis Test Result

**Table 3.** Maximum Likelihood Hypothesis Test

			Estimate	S.E.	C.R.	P
KI	<---	HD	0,713	0,242	2,944	<b>0,003</b>
KI	<---	AR	0,39	0,276	1,417	0,157
KI	<---	DP	0,301	0,128	2,357	<b>0,018</b>
KI	<---	FL	0,103	0,473	0,218	0,828
KI	<---	PI	0,316	0,721	0,439	0,661

**Tabel 4.** Bootstrap Hypothesis Test

			Estimate	Lower	Upper	P
KI	<---	HD	0,713	0,030	2,292	<b>0,046</b>
KI	<---	AR	0,390	-1,221	1,260	0,269
KI	<---	DP	0,301	0,028	1,091	<b>0,039</b>
KI	<---	FL	0,103	-0,790	3,959	0,634
KI	<---	PI	0,316	-0,828	7,040	0,458

The criteria for hypothesis testing are as follows: if the influence between variables has a calculated critical ratio (CR)  $\geq 2.00$ , it can be considered statistically significant. If the p-value is  $\leq 0.05$ , it can be considered statistically significant, indicating a significant influence between the exogenous and endogenous variables. Based on Table 3 and Table 4, it can be observed that H1 is accepted because the CR value of 2.944 is greater than 2.00, and the p-value of 0.003 and the bootstrap p-value of 0.046 are less than 0.05. H2 is rejected because the CR value of 1.417 is less than 2.00, and the p-value of 0.157 and the bootstrap p-value of 0.269 are greater than 0.05. H3 is accepted because the CR value of 2.357 is greater than 2.00, and the p-value of 0.018 and the bootstrap p-value of 0.039 are less than 0.05. H4 is rejected because the CR value of 0.218 is less than 2.00, and the p-value of 0.828 and the bootstrap p-value of 0.634 are greater than 0.05. H5 is rejected because the CR value of 0.439 is less than 2.00, and the p-value of 0.661 and the bootstrap p-value of 0.458 are greater than 0.05.

#### 4.3. Determination Test

The R-squared value for the investment decision variable is obtained as 0.944 in the Squared Multiple Correlation. In this study, the investment decision is influenced by herding, anchoring, disposition, financial literacy, and personal income. From the analysis of determination, it can be concluded that the influence of herding, anchoring, disposition, financial literacy, and personal income on investment decisions is 94%, while 6% is explained by variables outside the observed variables in this study.

#### 4.4. The Influence of Herding Towards the Investment Decisions

The hypothesis testing results indicate a positive relationship between herding behavior and investment decisions among Generation Z investors in Surabaya City. This suggests that investors tend to follow the actions of the majority without rational consideration. Descriptive analysis shows a moderate level of herding behavior, but a high level of investment decision-making, indicating that investors still rely on majority information when making decisions. The results of this study align with previous research conducted by [41], [29], [17], [2], [38], [16], and [1], which concluded that herding has a significant positive impact on investment decisions. However, these findings differ from the research conducted by Vitmiasih et al. (2021) and [15], which found a significant negative impact.

#### 4.5. The Influence of Anchoring Towards the Investment Decisions

The hypothesis testing results show no significant relationship between the anchoring variable and investment decisions. This contradicts the heuristic theory that suggests investors rely on initial purchase prices and past investment experiences. Descriptive analysis reveals a high level of anchoring among respondents, indicating that they still use historical trends to determine stock prices or investment values. However, Generation Z investors in Surabaya lack confidence in their own analysis of historical trends and rely more on the analysis of other investors. This finding is in line with research conducted by Madaan & Singh (2019), but differ

from other studies that found a significant positive relationship between anchoring and investment decisions, such as those conducted by [11], [35], and [38].

#### 4.6. *The Influence of Disposition Towards the Investment Decisions*

The hypothesis testing results indicate a positive correlation between disposition and investment decisions. This finding aligns with the heuristic theory, where investors often experience disposition when making investment decisions in the capital market. Descriptive analysis shows that the overall level of disposition is moderate. This suggests that Generation Z investors in Surabaya tend to be hasty in selling when their investment positions are profitable and are more likely to hold onto their investments longer until their value increases. These results are consistent with the findings of [26] and [33], who concluded that disposition has a significant positive impact on investment decisions. However, these conclusions differ from the findings of [2] and Madaan & Singh (2019), which state that disposition does not have a significant influence on investment decisions.

#### 4.7. *The Influence of Personal Income Towards the Investment Decisions*

The hypothesis testing results indicate that there is no significant relationship between personal income and investment decisions. Although the respondents' personal income is generally at a high level, the majority of them still have moderate income levels and rely mostly on pocket money. This suggests that personal income does not directly influence the investment decisions of Generation Z investors in Surabaya. These findings align with a study conducted by Al-Aziz & Rinofah (2021), which concluded that personal income behavior does not have significance in the investment decisions of students at Universitas Sarjanawiyata Tamansiswa. However, these results differ from the findings of Rahadjeng (2011) and [29], who stated that personal income has a significant impact on investment decisions.

#### 4.8. *The Influence of Financial Literacy Towards the Investment Decisions*

The results of the hypothesis test indicate that there is no significant relationship between financial literacy and investment decisions. The overall financial literacy level of the respondents falls into the moderate category, while the level of investment decisions is high. This suggests that an individual's level of financial literacy, including knowledge and understanding of personal finance, does not directly influence the perspectives or investment decisions of Generation Z investors in Surabaya. This finding is consistent with the studies conducted by [1] and [16], which also concluded that financial literacy does not have a significant impact on investment decisions. However, it differs from the findings of [2], Al-Aziz & Rinofah (2021), [6], [8], and [35], which suggest that financial literacy does have a significant influence on investment decisions.

### 5. **Conclusions**

Based on the research findings and discussions, we can draw some conclusions from this study. First, the herding factor has a significant positive effect on investment decisions among Generation Z in Surabaya City. This means that Generation Z investors are less cautious and tend to trust investment experts. They follow the crowd and make speculative decisions by looking at what other investors are doing. The disposition factors also have a significant positive impact on investment decisions among Generation Z. This means that Generation Z investors tend to hold their investments longer until they become profitable. They have a patient approach and wait for the right opportunity.

However, the anchoring factor does not have a significant influence on investment decisions among Generation Z in Surabaya City. Even though Generation Z investors have a tendency to rely on past trends or experiences, it doesn't strongly impact their investment choices. They make decisions based on their own analysis rather than blindly following the

crowd. This study also found that financial literacy and personal income do not significantly affect the investment decisions of Generation Z in Surabaya City. It doesn't matter if someone has a high or low level of financial knowledge, it doesn't always determine their investment decisions. Similarly, personal income doesn't have a strong influence on their investment choices, even though most respondents have a moderate income level.

The behavior of herding and disposition has a significant influence on investment decision-making among Generation Z investors in Surabaya City. Generation Z investors need to be cautious in making investment decisions as these behaviors can lead to irrational decisions. Thorough analysis is required, considering risks and seeking diverse information to enhance understanding. The government or OJK (Financial Services Authority) are advised to provide financial literacy, up-to-date information, and investment considerations as valuable sources of information for Generation Z investors. Future researchers are recommended to consider other variables such as risk perception, risk propensity, risk tolerance, risk aversion, overconfidence, representativeness bias, salience, anger, fear, positive mood, stress, prospect, framing effect, loss aversion, optimism bias, and financial knowledge. These variables have been included in previous studies and have proven their ability to explain investment decision variables.

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