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Behavioral Biases and Fear of Missing Out Impact Investment Decisions in Thailand during COVID-19 Pandemic

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Abstract

Purpose: This study aims to explore the Behavioral Biases and Fear of Missing Out on the Impact on Investment Decisions in Thailand during the COVID-19 Pandemic. In this research, the researcher will accentuate.

Design/Methodology/Approach: The researcher used numerous components to determine the impact of investment decisions on customer satisfaction, including research design, sampling plan, research instruments, the validity of the pilot test, methods of data gathering and procedures, and statistical treatment of data.

Findings: This study arranged determinants that influence Behavioral Biases and Fear of Missing out Impact Investment Decisions of people in Thailand's COVID-19

spread. Our research was about the relationship between employee involvement and motivation, which are the keys COVID-19 to job satisfaction and affect job performance. Moreover, job performance is also got affected by remote working and the job involvement of employees.

Research Limitations/Implications: There are several limitations to investigating the factors that affect job performance during work from home. The previous studies are used for specific purposes. Moreover, there is a small amount of previous research on the topic due to working from home not being standard practice before the COVID-19 pandemic.

Keywords: Behavioral Biases, Fear of Missing Out, COVID-19, Loss Aversion, Herd Behavior, Behavioral Heuristics, Overconfidence Bias, Investment Decision

1. Introduction

1.1 Background of the study

Nowadays, everything moves and changes rapidly. Everyone can access a lot of information quickly and simultaneously. It affects investors. They have lots of information for analyzing to invest or sell an asset or others. Everyone may access real-time data and information nowadays. If you're first and fastest enough, you can profit from trading by analyzing news or any data or information. Internet technology makes data and information widely, swiftly, and easily accessible. Information is a valuable resource and commodity. Hence the future is often called "the information age." LIS Encyclopedia (1977).

The introduction of COVID-19 also impacts our lifestyle, people's behavior worldwide, and investors. In 2019, Wuhan, Hubei Province, China, reported a pneumonia outbreak of unknown origin Ciotti *et al.* (2020) [9]. Many businesses were hurt. Some small-to-medium businesses must close, notably in the tourism industry. As nations make efforts to stem the spread of COVID-19, which affects financial management, global economic activity has halted. Despite the economic impact of strong fiscal and monetary policy responses and global containment efforts, liquidity is tight, and the earnings outlook is poor.

Behavioral biases are irrational beliefs or behaviors that can unconsciously impact decision-making. Investors are generally considered to be split into two types: emotional biases and cognitive biases. Emotional biases involve taking action based on our feelings rather than concrete facts or letting our emotions affect our judgment. Cognitive biases are errors in our thinking that arise while processing or interpreting information. Behavioral finance does not describe financial markets and market decision-making processes using mathematical models. Still, it is based on psychological observations and relies on the use of heuristics by Valaskova *et al.* (2019) [47].

Benjamin Graham is the investor's biggest problem and worst nemesis. As said. We all have biases, even if we say we don't. It

influences conscious and unconscious decisions. Behavior bias. Behavioral biases are irrational attitudes or acts that can impair decision-making. Emotional and cognitive biases are examples. Ben Seager-Scott Emotional prejudice involves reacting to feelings instead of facts, which affects judgment. Cognitive bias is a processing or interpretation

inaccuracy. Markets and humans aren't reasonable. Traditional economics assumes a reasonable man. Mankind doesn't always act sensibly, though. Behavioral economics acknowledges this. Investors often experience the "emotional roller coaster" below.



Fig 1: Investment Process - Roller Coaster of Emotion Suisse Group (2016)

Today's terms may convey racist contempt toward investors who make bad decisions or trend-followers, particularly if he loses money. Fear of missing out (FOMO) "Fear of missing out" was coined in 2004 by social networking sites. Mayank and Aditya (2021)^[34] define FOMO as the sense of missing out and the necessity to preserve social ties. "Fear of missing out" develops from believing that others have better, more meaningful lives. FOMO causes anxiety, depression, and stress. Social media has exacerbated FOMO in recent years. Brush (2019)^[29] said it is most common among millennials. All investors want a profit or return on investment. Not easy. Behavioral biases and FOMO are discussed above. It has six variables, the first is loss aversion, the second is herd behavior, the third is FOMO, the fourth is heuristics, the fifth is overconfidence bias, and the sixth is disposition effect. The information age is modern. Everyone can quickly obtain a lot of information. It immediately affects investment decision-making and can modify the trajectory of any financial or investment market, such as stocks, derivatives, cryptocurrency, gold, and others. COVID-19 affects business and investment negatively. That alters behavior and lifestyle. It shows that people will shift their decision-making style more than before. Some people can be millionaires in a day or week since they invest in the primary ones that value super-hyper increases. This study aims to examine how behavioral biases and FOMO affect Investment Decisions in Thailand, especially during COVID-19 (Brush, 2019)^[29].

1.2 Objectives of the study

The purpose of this research is to examine how the change

in nowadays of behavioral biases and fear of missing out impact investment decisions in Thailand during the COVID-19 pandemic. As shown in the list below.

1. To determine the impact of Loss Aversion and Fear of Missing Out
2. To determine the impact of Herd Behavior and Fear of Missing Out
3. To determine the impact of Fear of Missing Out and Investment Decision
4. To determine the impact of Behavioral Heuristics and Investment Decision
5. To determine the impact of Overconfidence Bias and Investment Decision

To determine the impact of Disposition Effect and Investment Decision

These objectives align with the research question detail below.

1. Does the Loss Aversion significantly impact the Fear of Missing Out?
2. Does Herd behavior significantly impact Fear of Missing Out?
3. Does Fear of Missing Out significantly impact Investment Decisions?
4. Does Behavioral Heuristics significantly impact Investment Decisions?
5. Does Overconfidence Bias significantly impact Investment Decisions?
6. Does Disposition Effect significantly impact Investment Decisions?

This research study to understand the investment decision at present by examining six factors based on the behavioral bias and fear of missing out (FOMO) which the independent variable is Loss Aversion, Herd behavior, Fear of Missing Out, Behavioral Heuristics, Overconfidence Bias, Overconfidence Bias, and Disposition Effect. The dependent variable is Investment Decision.

2. Literature review

2.1 Theories of Each Variable

2.1.1 Loss Aversion

Psychologists Kahneman and Tversky (1979)^[26] discuss loss aversion for the first time. People experience double agony from loss and satisfaction from profit, according to their analysis (prospect theory). Investors who detest losses are more prone to defend against the risk of the capital loss and less concerned with investment growth (profit). The tendency for people to respond to a fall in capital rather than a rise in capital is known as loss avoidance (prospect theory). People might overestimate how quickly they will adapt to these changes if they pay too much attention to gains and losses (Koszegi & Rabin 2006)^[31]. Because they are concerned that the prices may drop once more and they risk losing money, Investors frequently sell shares of stock that have appreciated in value beyond their previous values (Massa & Simonov, 2005; Valaskova *et al.*, 2019)^[47].

2.1.2 Herd behavior

Herding is described as “*everyone doing what everybody else does, so although their private data indicates doing something quite different,*” as according Banerjee (1992)^[3]. Herding is a group of investors that ignore their own data and beliefs in favor of replicating the decisions of other investors according to Vieira and Pereira (2015)^[44]. Individuals who conceal their own beliefs and make investment decisions completely based on the market's collective behaviors or copy the actions or emotions of other investors, even if they disagree with the market's prediction, are exhibiting herding behavior according to Christie and Huang (1995)^[8].

2.1.3 Fear of Missing Out

Al-Menayes (2016)^[1] Fear of Missing Out is described as “*A pervasive concern that others may be having gratifying experiences from which one is absent*”. FOMO is defined as “*a pervasive apprehension that others might be having rewarding experiences from which one is absent*” by Przybylski *et al.* (2013)^[41].

2.1.4 Behavioral Heuristics

Heuristics are methods for making decisions more quickly, inexpensively, and/or precisely than more complex ones by ignoring some information according to Gigerenzer and Gaissmaier (2011)^[17].

2.1.5 Overconfidence Bias

An unwarranted confidence in one's cognitive abilities, judgment, and intuitive reasoning is referred to as a conceptual heuristic bias according to Pompain (2006). Overconfidence shows up when someone exaggerates their knowledge and abilities Bondt and Thaler (1995)^[6].

2.1.6 Disposition Effect

“The tendency to sell winners too soon and ride losers too

long,” according to the disposition effect Shefrin and Statman (1985)^[42]. This is done by investors in order to “prevent regret.” They also show “self-control” by hanging on to losing stocks. Prospect theory, mental accounting, regret aversion, and self-control are all used to answer these problems according to Prosad *et al.* (2015)^[40]. According to Gunathilaka and Fernando (2021)^[18] the study revealed that disposition effect makes an impact on the investment decisions of both individual investors and institutional investors.

2.1.7 Investment Decision

Investment is the purchase of an asset with the intention of later selling it for a greater price in order to create money. Investment decision makings entail a cash outlay to receive a return in investing, as well as future cash flow by Fabozzi (2015)^[16].

2.2 Related literature review

2.2.1 Loss Aversion and Fear of Missing Out

Loss aversion is a situation that investors are rather concerned or worried about downside risk than they are satisfied with their investment gains according to Dar and Hakeem (2015)^[11].

2.2.2 Herd behavior and Fear of Missing Out

According to Chen (2013)^[7], herding is often used to describe an investment strategy in which investors follow the market consensus or imitate the activities of financial gurus. Dewan and Dharni (2019)^[13] herding denote how individuals act together in a group without any centralized direction. According to previous research, investors do so to appear connected to people around them according to Banerji *et al.* (2020). In the context of investors, this phenomenon is referred regarded as herd behavior or the bandwagon effect. When they imitate the investing behavior of other investors or the general public, uninformed investors feel comfortable (Dar & Hakeem, 2015)^[11]. Previous research has suggested that investors act in this way to appear connected to those around them (Banerji *et al.*, 2020).

2.2.3 Fear of Missing Out and Investment Decision

When people observe, read, or learn about the actions of others, they each experience FOMO and feel as though they are missing out (Abel *et al.*, 2016)^[25]. Research on FOMO has also focused on consumer behavior and how it influences how consumers make decisions (Kang *et al.*, 2020)^[28]. The same could be said for investors who are driven to increase their profits and feel they will lose opportunities if they do not act quickly (Dennison, 2018; Kang *et al.*, 2020)^[46, 28]. Investors are recognized to disregard facts when acting out of fear, so these actions may be skewed.

2.2.4 Behavioral Heuristics and Investment Decision

The COVID-19 outbreak has had a detrimental effect on all facets of the global economy, but particularly the capital markets. It also affected investor confidence, which led to

stock price volatility and stock market meltdowns. Behavioral finance principles are a better way to explain the excessive instability of the financial markets (Bansal, 2020) ^[4]. Heuristics are principles and short cuts formed as a result of mistakes in data processing. They are very useful in reducing the cognitive demands on decision-making, which would otherwise take a lot of time and mental energy. Nevertheless, heuristics can occasionally result in biases that are unavoidable (Tversky & Kahneman, 1974; Hirshleifer, 2001 ^[12]; Montier, 2002 ^[24]). Researchers in cognitive psychology have determined that shortcuts are used rather than cognitive capacity because processing data becomes too difficult when there is an abundance of information present. Investors are also forced to use shortcuts due to a lack of information and time for a thorough evaluation (Aronson, 1999) ^[14]. Researchers in behavioral finance primarily concentrate on the following biases caused by heuristics because of their relevance with investor behavior, including salience, availability and cue competition, representativeness, and mental accounting. There are many classifications of heuristics in cognitive psychology (Oran, 2008) ^[37].

2.2.5 Overconfidence and Investment Decision

A study of Bakar and Yi (2016) ^[2] demonstrated that the decision-making of investors is significantly harmed by overconfidence bias. Overconfident investors tend to overestimate risk factors, exceed anticipated returns according to Baker and Nofsinger (2002) ^[20], overtrading and inadequate portfolio diversification lead to either record profits or returns that are below the market (Odean, 1998) ^[36]. Investors overestimate their ability to correctly predict the future, which results in inaccurate forecasts Shefrin and Statman (2000) ^[43].

2.2.6 Disposition Effect and Investment Decision

The disposition effect is a significant theory in behavioral finance that states that prior losses enhance risk taking,

whereas prior wins lower investors' investments in risky assets. Fear of regret and the need for pride lead investors to sell winners too soon and ride losers too long, according to Shefrin and Statman (1985) ^[42]. Odean's (1998) ^[36] fundamental work puts this occurrence to the test.

2.3 Conceptual framework and Hypotheses

The first theoretical framework from Herding and loss aversion in stock markets: the mediating role of fear of missing out (FOMO) in retail investors by Gupta *et al.* (2021) ^[19]. The goal of the study is to comprehend how loss aversion and herd behavior affect retail investors' investment choices. The study also assesses how fear of missing out (FOMO) affects these relationships among retail investors. The study's findings showed that loss aversion, herd behavior, and FOMO all have a significant impact on the investment choices made by retail investors. Examining how herd behavior and loss aversion affect investment choices in the presence and absence of FOMO revealed that FOMO mediates these relationships to some extent. The mediation was complementary in that FOMO increased the impact of loss aversion and herd behavior on the investment choices of retail investors. The second theoretical framework is from Parveen *et al.* (2021) ^[38]. This study examines how the COVID-19 outbreak has affected investors' perceptions, cognitive biases, and investment choices on the Pakistan Stock Exchange (PSX). According to the findings of structural equation modeling, the COVID-19 pandemic had an impact on investor behavior, investment choices, and trade volume. Participants in the market experienced fear and uncertainty as a result. Evidence suggests that investors' decisions at the PSX were influenced negatively by behavioral heuristics and biases, such as the disposition effect, overconfidence bias, anchoring heuristic, and representative heuristic. The third theoretical framework is from Impact of Behavioral Biases on Investment Decision; Moderating Role of Financial Literacy by Anwar (2016). This study examines the impact of behavioral biases on investment decision-making in Pakistan through the use of financial literacy as a moderator. Therefore, in this study, the conceptual framework has been developed based on three theoretical frameworks as mentioned above, fig 2 presents the conceptual framework in this study.

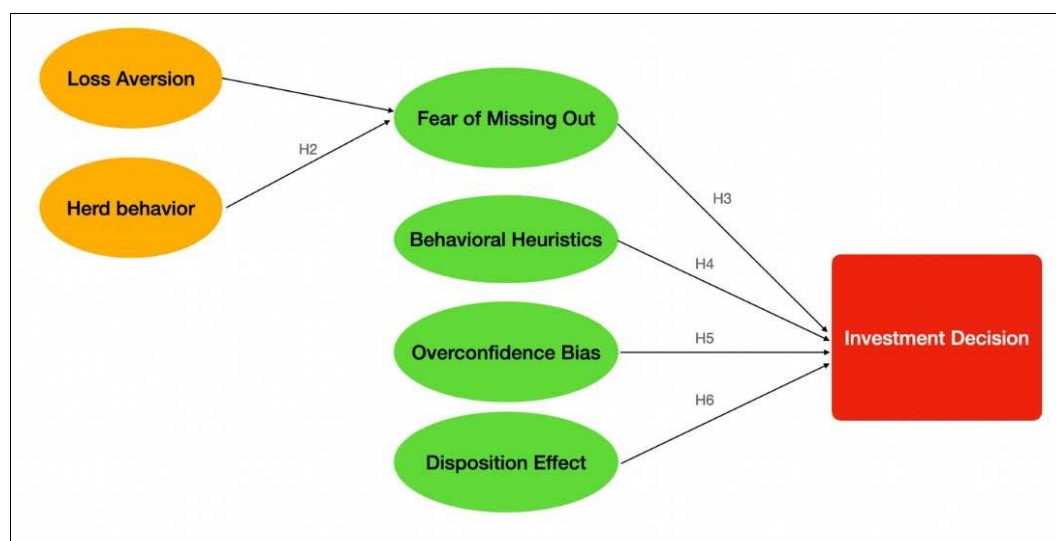


Fig 2: The Conceptual Framework of the Behavioral Biases and Fear of Missing Out on investment decision making in Thailand

Therefore, the hypotheses in this study have been formulated as presented below.

Hypothesis 1 (H1): Loss aversion has a significant effect on fear of missing out

Hypothesis 2 (H2): Herd behavior has a significant effect on fear of missing out

Hypothesis 3 (H3): Fear of missing out has a significant effect on investment decision

Hypothesis 4 (H4): Behavioral heuristics has a significant effect on investment decision

Hypothesis 5 (H5): Overconfidence bias has a significant effect on investment decision

Hypothesis 6 (H6): Disposition effect has a significant effect on investment decision

3. Research methodology

This study aims to determine how behavioral biases and FOMO affected investment decisions during the COVID-19 outbreak in Thailand. As a quantitative study, this one uses Cronbach's Alpha, linear regression, and descriptive data analysis. The questionnaire has three parts: one item for screening, one item for measuring variables, and four items for demographic information. This study defined target respondents as around 400 participants by Cochran's (1977) equation, using convenience and snowball sampling techniques. First, the researcher utilizes the IOC index to check each questionnaire question's quality. The IOC questionnaire survey was scored and suggested by three specialists. According to specialists, researchers deleted unsuitable questionnaire items and kept significant ones. Cronbach's Alpha was used to evaluate questionnaire reliability and ambiguity in measuring items. A pilot test with 100 respondents was conducted to verify the questionnaire's validity and any measuring item ambiguity. This study uses a five-point Likert Scale to analyze respondent attitudes and agreement levels. 1 = "Strongly Disagree"; 5 = "Strongly Agree" The researcher employed multiple linear regression (MLR) to investigate Thailand's investor investment decisions during COVID-19. Content validity with the index of item-objective congruence; for the questionnaire, the researcher uses the Item Objective Congruence (IOC) Index for screening the item quality of each question in the questionnaire. The researcher solicited the opinions of three experts and asked them to rate each questionnaire question to determine the content validity score. The IOC index results for each item obtained values greater than 0.5. Then, the author decided to conduct a pilot test of 38 respondents to find any inconsistencies or errors of variables in the questionnaire using Cronbach's Alpha test. Referring to Peter (1979) [23], the famous indicator to measure and test the reliability of research is Cronbach's Alpha. The minimum accepted value of Cronbach's Alpha is 0.6. The result of this research's analysis indicated the level of Cronbach's Alpha had been obtained greater than 0.6, which applies to the questionnaire.

Table 1 illustrates that the researcher utilizes Cronbach's Alpha to test reliability in SPSS to discover how closely connected a set of items is. The results showed that the overall determinants affecting investment decisions in Thailand during the COVID-19 Pandemic are 7 items ($\alpha = 0.71$). Cronbach's alpha for Loss Aversion of 3 items is 0.74, Herd Behavior of 4 pieces is 0.63, Fear of Missing Out of 4 items is 0.66, Behavioral Heuristics of 4 items is 0.72, Overconfidence Bias of 3 items is 0.65, Disposition Effect

of 3 items is 0.62, and Investment Decision of 4 items is 0.69. All investment-related indicators are over 0.6. They're trustworthy.

Table 1: Result from Pilot Test - Cronbach's Alpha (n=37)

Variables	Cronbach's Alpha	Number of Items	Strength of Association
Loss Aversion	0.77	3	Acceptable
Herd Behavior	0.70	4	Acceptable
Fear of Missing Out	0.70	5	Acceptable
Behavioral Heuristics	0.77	4	Acceptable
Overconfidence Bias	0.72	3	Acceptable
Disposition Effect	0.67	3	Questionable
Investment Decision	0.71	4	Acceptable

4. Results

The researcher made the decision to recheck the questionnaire with all 411 respondents to look for any discrepancies or inaccuracies in the variables. To assess and examine a questionnaire's reliability, utilize Cronbach's Alpha test of Reliability as shown in table 2. Table 2 shows that the author uses Cronbach's Alpha to measure the scale of reliability using the statistical program to establish a group's overall degree of similarity among a set of objects. The findings indicated that there are seven characteristics altogether that have an impact on investment decisions during the COVID-19 pandemic ($\alpha = .82$). The result shows that all variables are reliable and valid since the value is greater than 0.7 indicating that the reliability of all factors is acceptable. The highest reliability is overconfidence bias of 4 items is 0.82, followed by loss aversion of 3 items is 0.79, the 4 items of herd behavior are 0.79, the 5 items of fear of missing out is 0.81, the 4 items of behavioral heuristics is 0.79, the 4 items of disposition effect is 0.80, and the last by investment decision of 4 items is 0.79.

Table 2: Cronbach's Alpha (n= 411)

Variable	Cronbach's Alpha	Number of Items	Result
Loss Aversion	0.79	3	Reliable
Herd Behavior	0.79	4	Reliable
Fear of Missing Out	0.81	5	Reliable
Behavioral Heuristics	0.79	4	Reliable
Overconfidence Bias	0.82	4	Reliable
Disposition Effect	0.80	4	Reliable
Investment Decision	0.79	4	Reliable

4.2 Descriptive Analysis of Demographic Data

The authors used descriptive analysis in the statistic program to analyze demographic information of the respondents who have experience with investing during the COVID-19 pandemic and live in Thailand. The authors could explain the respondent's characteristics by using descriptive analysis using demographic information such as gender, age, level of education, income per month, current career, and marital status. Gender in table 3; the distribution of the 411 responses showed that men made up 67.6 percent of the total, which is more than the 32.4 percent of women.

Male responses totaled 278, and female respondents 113, respectively. Age in table 3; with 198 respondents, 48.2 percent of the respondents in this study are between the ages of 18 and 26. Thirty-eight respondents who are between the ages of 36 and 55 have a proportion of 9.2 percent, followed by 155 respondents who are between the ages of 27 and 35 with a response rate of 37.7 percent, and 20 respondents who are over the age of 55 with a proportion of 4.9 percent. Education level in table 3; the majority of responders, 315 out of 411, had earned a bachelor's degree. The master's degree came in second with 85 responses and 20.7 percent. The lowest respondent group, with 11 respondents and a proportion of 2.7%, is high school or equivalent. Finally, there are no respondents for education levels lower than high school, a diploma or an equivalent, or a Ph.D. Job in table 3; Among all 411 respondents, the highest job in this study is company employee with 161 respondents with a proportion of 39.2%, followed by 82 respondents of a student with a proportion of 20%, followed by 60 respondents of freelance with a proportion of 14.6%, followed by 44 respondents of self-employed with the percentage of 10.7%, followed by 28 respondent of government servant with the percentage of 6.8%, followed by 21 respondents of state enterprise employee with the percentage of 5.1%, and lastly, the lowest respondents' career is a full-time trader with 15 respondents with the proportion of 3.6%. The income per month in table 3; most respondents participating in this survey have earned income between 25,001 – 50,000 Baht per month with 172 respondents with the proportion of 41.8%, followed by 102 respondents with 24.8% having income per month between 15,000 - 25,000 Baht, 48 respondents with 11.7% have income per month less than 15,000 Baht, 46 respondents with 11.2% have 50,001 – 100,000 Bath. Lastly, the lowest respondents, with 43 respondents with a proportion of 10.5%, have an income per month of over 100,000 Baht. Marital Status in table 3; the majority of respondents, 279 of 411, are single with a percentage of 67.9%, and there are 118 and 14 respondents, with 28.7% and 3.4% being married and divorced, respectively.

Table 3: The analysis of demographic factors using the frequency distribution and percentage (n = 411)

Demographic Factors	Frequency	Percent
Gender		
Male	278	67.6
Female	133	32.4
Total	411	100
Age (Years)		
Under 18 years old	0	0
18-26 years old	198	48.2
27-35 years old	155	37.7
36-55 years old	38	9.2
Over 55 years old	20	4.9
Total	411	100
Education Level		
Lower than high school	0	0
High school or equivalent	11	2.7
Diploma or equivalent	0	0
Bachelor's Degree	315	76.6
Master's Degree	85	20.7
Ph.D. or higher	0	0
Total	411	100
Job		
Student	82	20

Company Employee	161	39.2
Government Servant	28	6.8
State Enterprise Employee	21	5.1
Self-employ	44	10.7
Freelance	60	14.6
Full-Time Trader	15	3.6
Total	411	100
Income per month		
Less than 15,000 Baht	48	11.7
15,000 - 25,000 Baht	102	24.8
25,001 – 50,000 Baht	172	41.8
50,001 – 100,000 Bath	46	11.2
Over 100,000 Bath	43	10.5
Total	411	100
Marital Statue		
Single	279	67.9
Married	118	28.7
Divorced	14	3.4
Total	411	100

4.3 Descriptive Analysis with Mean and Standard Deviation

This part shows the summary of the Mean and Standard Deviation of each group variable, consisting of Loss Aversion, Herd Behavior, Fear of Missing Out, Behavioral Heuristics, Overconfidence Bias, Disposition Effect, and Investment decisions will be analyzed as follows in table 4.

Table 4 indicated that the highest mean of Loss Aversion was “I usually tend to avoid selling shares or any asset that has attained a lower value,” which equals 3.76. Despite that, the lowest mean was “I refrain from making risky investment decisions when the yield on my investment is positive.” which equals 3.34. According to the standard deviation, the highest was the same as the lowest mean, equal to 1.13. Nonetheless, the lowest was “I typically steer clear of selling stocks or any other asset that has depreciated,” which equals 1.05.

Table 4 indicated that the highest mean of Herd Behavior was “When buying or selling stocks or any other asset, I keep track of market movements,” which equals 4.07, while the lowest mean was “I prefer to invest in stocks or any other type of asset that my friends, colleagues, or family have done” Which equals to 2.93. For the standard deviation, the highest was “I prefer to invest in stocks or any other type of asset that my friends, colleagues, or family have done,” which equals 1.30. On the other hand, the lowest was “When buying or selling stocks or any other asset, I keep track of market movements,” which is equal to 0.86.

Table 4 indicated that the highest mean of Fear of Missing Out was “I get worried when I am not able to check in on my portfolio,” which equals 3.79. However, the lowest mean was “It bothers me when I do not hear news about my investments,” which equals 3.13. According to the standard deviation, the highest was “It bothers me when I do not hear news about my investments” which equals 1.25. The lowest was “I become anxious if I don't know what the businesses, I invest in are planning” and “Missing out on investment opportunities bothers me,” which are equal to 1.13.

Table 4 indicated that the highest mean of behavioral heuristics was “Before making an investment, I take the asset's historical performance into consideration,” which equals 4.00. Nonetheless, the lowest was “Any asset with a track record of low earnings is one I stay away from investing in,” which equals 3.66. According to the standard

deviation, the highest was “I think it is possible to predict the future value of any asset by carefully examining past performance” and “Any asset with a track record of low earnings is one I stay away from investing in” which both are equal to 0.97. On the other hand, the lowest was “Before investing, I take the asset's historical performance into consideration,” which is equal to 0.75.

Table 4 indicated that the highest mean of Overconfidence Bias was “I feel more confident in my own investment opinions over the opinions of my colleagues or friends.” which is equal to 3.45, while the lowest mean was “I am an experienced investor” which is equal to 2.79. For the standard deviation, the highest was “I am confident that I can handle the upcoming trend for my investment,” which equals 1.13. On the other hand, the lowest was “I am confident in my ability to choose the best investment strategy,” which equals 0.87.

Table 4 indicated that the highest mean of the Disposition Effect was “If an asset's current market value exceeds its

purchase price, I prefer to keep holding onto it,” which is equal to 3.63, while the lowest mean is “As soon as an asset's price starts to rise, I prefer to sell the assets or any other holdings” which is equal to 3.15. According to the standard deviation, the highest was “As soon as an asset's price starts to rise, I prefer to sell the assets or any other holdings,” which equals 1.12. However, the lowest was “If an asset's current market value exceeds its purchase price, I prefer to keep holding onto it,” which equals 0.81.

Table 4 indicated that the highest mean of Investment Decision was “I am content with the investment portfolio I have made.” which is equal to 3.67, while the lowest was “I favor making investments in any assets that are frequently promoted or mentioned in the news” which equal to 2.81. According to the standard deviation, the highest was “I favor making investments in any assets frequently promoted or mentioned in the news,” which equals 1.15. However, the lowest was “I am content with the investment portfolio I have made,” which equals 0.76.

Table 4: The result of Mean and Standard Deviation'

Loss Aversion	N	Mean	Std. Deviation
LA1: My ability to take risks is significantly impacted by my past loss experience.	411	3.58	1.10
LA2: I typically steer clear of selling stocks or any other asset that has depreciated in value.	411	3.76	1.05
LA3: I refrain from making risky investment decisions when the yield on my investment is positive.	411	3.34	1.13
Herd Behavior	N	Mean	Std. Deviation
HB1: I prefer to invest in stocks or any other type of asset that my friends, colleagues, or family have done.	411	2.93	1.30
HB2: Before I invest in the company's stocks or any other asset, I research the company's customer preferences.	411	3.78	1.04
HB3: When buying or selling stocks or any other asset, I keep track of market movements.	411	4.07	0.86
HB4: My asset purchases are impacted by the investment advice of other investors.	411	3.41	1.04
Fear of Missing Out	N	Mean	Std. Deviation
FM1: When I don't hear anything new about my investment, it bothers me.	411	3.13	1.25
FM2: I become anxious if I don't know what the businesses, I invest in are planning,	411	3.58	1.13
FM3: I start to get worried when I cannot check on my portfolio.	411	3.79	1.19
FM4: Missing out on investment opportunities bothers me.	411	3.41	1.13
FM5: I worry that I'll be the last to acquire about news that is important to my portfolio.	411	3.32	1.19
Behavioral Heuristics	N	Mean	Std. Deviation
BH1: Before making an investment, I take the asset's historical performance into consideration.	411	4.00	0.75
BH2: I think it is possible to predict the future value of any asset by carefully examining past performance.	411	3.82	0.97
BH3: I depend my investment strategies on trend analysis.	411	3.89	0.89
BH4: Any asset with a track record of low earnings is one I stay away from investing in.	411	3.66	0.97
Overconfidence Bias	N	Mean	Std. Deviation
OB1: I am an experienced investor.	411	2.79	1.09
OB2: I feel more confident in my own investment opinions over the opinions of my colleagues or friends.	411	3.45	0.99
OB3: I am confident that I can handle the upcoming trend for my investment.	411	3.28	1.13
OB4: I feel confident in my ability to choose the best investment strategy.	411	3.34	0.87
Disposition Effect	N	Mean	Std. Deviation
DE1: As soon as an asset's price starts to rise, I prefer to sell the assets or any other holdings.	411	3.15	1.12
DE2: If an asset's current market value exceeds its purchase price, I prefer to keep holding onto it.	411	3.63	0.89
DE3: Even if a stock or other asset has a poor track record, I would rather keep holding onto it.	411	3.32	0.91
DE4: I steer clear of selling a stock or other asset whose value has dropped.	411	3.34	1.03
Investment Decision	N	Mean	Std. Deviation
ID1: I am content with the investment portfolio I have made.	411	3.67	0.76
ID2: My recent portfolio has generated returns in line with my expectations.	411	3.13	1.00
ID3 Because I anticipate it to recover in the future, I would invest in the asset that has recently underperformed.	411	3.11	1.06
ID4: I favor making investments in any assets that are frequently promoted or mentioned in the news.	411	2.81	1.15

4.4 Hypothesis Testing Results

4.4.1 Multiple Linear Regression Summary of H1 and H2

H1_o: Loss aversion has no significant effect on fear of missing out.

H1_a: Loss aversion has a significant effect on fear of missing out.

Table 5 shows the significant level was at .000, which was less than 0.05. The null hypothesis was rejected. As a result,

it can be concluded that investment decision has been affected by loss aversion. In addition, loss aversion is the strong variable that has an effect on fear of missing out with its standardized coefficient of .34. It can be implied that if loss aversion increases by 1%, the fear of missing out can be raised by 22.1%.

H2_o: Herd behavior has no significant effect on fear of missing out.

H2a: Herd behavior has a significant effect on fear of missing out.

Table 5 shows the significant level was at .000, less than 0.05. The null hypothesis was rejected, and it can be concluded that herd behavior significantly impacts the fear of missing out. Besides, herd behavior impacts the fear of missing out with its standardized coefficient of .25. It can be implied that if herd behavior increases by 1%, the fear of missing out can be raised by 25%.

Table 5 shows a multiple linear regression to determine if loss aversion and herd behavior significantly predicted investment decisions. The result from hypotheses 1 and 2 showed that all independent variables used to determine the effects of fear of missing out are not overlapping. It had no problem with multicollinearity due to the VIF being less than 5. The result of the VIF value of both loss aversion and herd behavior is 1.24. Moreover, R-square was 0.30 at a 95% of confidence level. The independent variables (loss aversion and herd behavior) can justify dependent variables (fear of missing out) by approximately 30%. Results show that 30% of the variance in investment decisions can be accounted for by two predictors, collectively $F(2408) = 89.44$, $p < .05$. By looking at the individual contributions of each predictor, the result shows that loss aversion ($\beta = .53$, $p < .05$), and herd behavior ($\beta = .05$, $p < .05$) positively significant to the investment decision.

Table 5: Summary of Multiple Linear Regression Analysis for Hypotheses 1 and 2

Variables	B	SE B	β	t	Sig.	VIF
(Constant)	1.21	.22	.00	5.48	0.000*	
Loss Aversion	.56	.05	.53	11.54	0.000*	1.24
Herd Behavior	.06	.06	.05	1.02	0.308	1.24

Note. $R^2 = .30$, Adjusted $R^2 = .30$, * $p < .05$. Dependent Variable = Fear of Missing Out

4.4.2 Multiple Linear Regression Summary of H3, H4, H5, and H6

In the second part, the researcher used multiple linear regression to predict the level of influence between fear of missing out, behavioral heuristics, overconfidence bias, and disposition effect toward investment decisions. The result is shown in table 6 below.

H3o: Fear of missing out has no significant effect on investment decision.

H3a: Fear of missing out has a significant effect on investment decision.

Table 6 shows the significant level was at .0417, which was more than 0.05. The null hypothesis was accepted, and it can be concluded that fear of missing out has no significant effect on investment decisions.

H4o: Behavioral heuristics has no significant effect on investment decision.

H4a: Behavioral heuristics has a significant effect on investment decision.

Table 6 shows the significant level was at .000, less than 0.05. The null hypothesis was rejected. As a result, it can be concluded that investment decision is affected by behavioral heuristics. Moreover, behavioral heuristics has a standardized coefficient of .19. It can be implied that if

motivation increase by 1%, the investment decision can be raised by 19%.

H5o: Overconfidence bias has no significant effect on investment decision.

H5a: Overconfidence bias a significant effect on investment decision.

Table 6 shows the significant level was at .000, less than 0.05. The null hypothesis was rejected, and it can be concluded that overconfidence bias significantly affects investment decisions. Besides, overconfidence is the strong variable that has a significant effect on investment decisions as its standardized coefficient was the highest with a value of .38. It can be implied that if employee commitment increases by 1%, the investment decision can be raised by 38%.

H6o: Disposition effect has no significant effect on investment decision.

H6a: Disposition effect bias a significant effect on investment decision.

Table 6 shows the significant level was at .000, less than 0.05. The null hypothesis was rejected. As a result, it can be concluded that investment decision is affected by the disposition effect. Additionally, the disposition effect has a standardized coefficient of .28. It can be implied that if motivation increases by 1%, the investment decision can be raised by 28%.

Table 6 shows a multiple linear regression to determine if employee commitment and motivation significantly predicted investment decisions. The results from hypotheses 3, 4, 5, and 6 showed that all independent variables used to determine effects on investment decisions do not overlap. It had no problem with multicollinearity due to the VIF being less than 5. The VIF value of fear of missing out, behavioral heuristics, overconfidence bias, and disposition effect is 1.37, 1.19, 1.17, and 1.42, respectively. Furthermore, the R square was .41 at a 95% confidence level. The independent variables (fear of missing out, behavioral heuristics, overconfidence bias, and disposition effect) can justify the dependent variables (investment decision) by approximately 41%. Results show that four predictors can account for 41% of the variance in investment decisions, collectively $F(4406) = 71.22$, $p < .05$. By looking at the individual contributions of each predictor, the result shows that fear of missing out ($\beta = .04$, $p < .05$), behavioral heuristics ($\beta = .19$, $p < .05$), overconfidence bias ($\beta = .38$, $p < .05$), and disposition effect ($\beta = .28$, $p < .05$) positively significant to the investment decision.

Table 6: Summary of Multiple Linear Regression Analysis for Hypotheses 3, 4, 5, and 6

Variables	B	SE B	β	t	Sig.	VIF
(Constant)	.43	.18	.00	2.43	0.016	
Fear of Missing Out	.03	.03	.04	.81	0.417	1.37
Behavioral Heuristics	.18	.04	.19	4.57	0.000*	1.19
Overconfidence Bias	.32	.03	.38	9.16	0.000*	1.17
Disposition Effect	.28	.05	.28	6.10	0.000*	1.42

Note. $R^2 = .41$, Adjusted $R^2 = .41$, * $p < .05$. Dependent Variable = Investment Decision

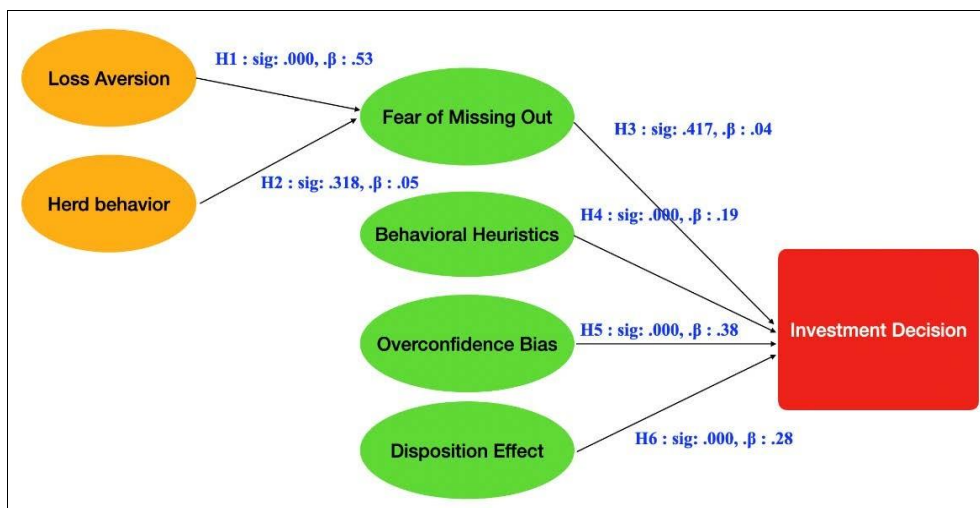


Fig 3: The Results of the Structure Model of the Behavioral Biases and Fear of Missing Out on investment decision making in Thailand

5. Conclusion and discussion

5.1 Summary of the study

The summary of the study is based on a research objective which is to precisely examine those relations influencing variables of investment decisions. The related factors in the research are Loss Aversion, Herd Behavior, Fear of Missing Out, Behavioral Heuristics, Overconfidence Bias, and Disposition Effect. The research questions that guided the study were: Does loss aversion significantly impact fear of missing out? Does herd behavior have a significant impact on the fear of missing out? Does fear of missing have a significant impact on investment decisions? Does behavioral heuristics have a significant impact on investment decisions? Does overconfidence bias have a significant impact on investment decisions? Does the disposition effect have a significant impact on investment decisions? This study used a descriptive research design. The study focused on people who currently live in Thailand and have experience in investing in any asset. The population for the study was unknown. Accordingly, the author used the formula by Cochran (1997) ^[10] to calculate the sample size. A non-probability sampling method by using convenience sampling and snowball sampling methods was used to select a sample size of 385 respondents. Nevertheless, of the 385 targeted, 411 responded to the questionnaires used for data collection.

A closed-ended question was used in a structured questionnaire for consistency and reliability. Collected data was transformed into raw data that was analyzed using the

statistic software and presented using figures and tables. Descriptive statistics of frequencies, mean, and standard deviations were used to analyze the data. An in-depth analysis using inferential analysis of correlations and regressions was also used in the study for the variable examination. The researcher uses Multiple Linear Regression for hypotheses testing. It is used to determine the level of influence of fear of missing out (two variables which are loss aversion and herd behavior) and investment decision (four variables which are fear of missing out, behavioral heuristics, overconfidence bias, and disposition effect). The hypotheses testing results show that four independent variables were rejected with statistically significant values. The hypotheses testing results are shown in table 7 below. The results in table 7 of using Multiple Linear Regression for the hypotheses testing show the strengths of factors that affect variables to fear of missing out and investment decisions. It shows that the most significant factor affecting fear of missing out is loss aversion, and overconfidence bias is the most important factor influencing investment decisions. The results of hypothesis testing show that the null hypothesis of independent variables (loss aversion, Behavior heuristics, overconfidence bias, disposition effect.) was rejected with a statistically significant value. (0.00). on the other hand, the alternative hypothesis of the independent variable (Herd behavior, fear of missing out) was not rejected, which means there is no statistically significant with the dependent variable (or has no impact to the dependent variable).

Table 7: Summary results from the hypotheses testing

Hypotheses	Significant Value	Standardized Coefficient	Result
H1 _o : Loss aversion has no significant effect on fear of missing out	0.000*	0.53	Rejected
H2 _o : Herd behavior has no significant effect on fear of missing out.	0.318	0.05	Failed to Reject
H3 _o : Fear of missing out has no significant effect on investment decision.	0.417	0.04	Failed to Reject
H4 _o : Behavioral heuristics has no significant effect on investment decision.	0.000*	0.19	Rejected
H5 _o : Overconfidence bias has no significant effect on investment decision.	0.000*	0.38	Rejected
H6 _o : Disposition effect has no significant effect on investment decision.	0.000*	0.28	Rejected

Note: * P-value<0.05

Table 8 indicates the ranking from the most significant influence to least significant of independent 488 variables that affect fear of missing out. The beta measures the relationship between independent variable 489 and the dependent variable. The results show that the strongest

independent relationship with the fear of 490 missing out is loss aversion 0.53. This means that for each 1 unit increase of loss aversion, the fear of missing out will increase by 0.53. The ranking results of hypothesis testing are summarized in table 8 below.

Table 8: Strengths of factor influence of variable to fear of missing out

Rank	Independent Variable	Beta
1st	Loss Aversion	0.53

Table 9 indicates the ranking from the most significant influence on least significant of overconfidence bias, disposition effect, behavioral heuristics, and fear of missing out that affect investment decision. The beta is used to measure the relationship between independent variable and dependent variable. The results show that the independent that has the strongest relationship with investment decision is overconfidence bias 0.38, this means that for each 1 unit increase of overconfidence bias, the investment decision will increase by 3.8, followed by disposition effect 0.28, behavioral heuristics 0.19.

Table 9: Strengths of factor influence of variable to investment decision

Rank	Independent Variable	Beta
1st	Overconfidence Bias	0.38
2nd	Disposition effect	0.28
3rd	Behavioral heuristics	0.19

5.2 Discussion and conclusion

The hypothesis testing shows that there is one variable which is loss aversion that affect fear of missing out. However, there is one variable which is herd behavior that has no relationship fear of missing out. There are three variable which are overconfidence bias, disposition effect, behavioral heuristics that influence investment decision. Nevertheless, there are one variable which is fear of missing out that has no relationship with investment decision.

5.2.1 Loss Aversion and Fear of Missing Out

This study represented that Loss Aversion has a positive significant affect with fear of missing out. The significant value of Loss Aversion and Fear of Missing Out is 0.000. This suggests that a key factor in loss aversion which is a phenomenon where a real or potential loss is perceived by individuals as psychologically or emotionally more severe than an equivalent gain impact to fear of missing out. By observing attentively in depth of a descriptive analysis of loss aversion which conducted from three questions in the questionnaire that the research has collected, the statistical data shows the means of Loss Aversion is 3.56 from three questions. The lowest mean among three question is "I avoid making risky investment decisions when the return on my investment is positive." Which is equal to 3.34 that lower than average mean. Although, this question has a highest standard deviation which is equal to 1.13. As a results, it shows that the respondents rate the score quite in the same way, so loss aversion is one of the key factors that impact fear of missing out for investors.

5.2.2 Herd Behavior and Fear of Missing Out

This study shows that Herd behavior had no relationship to fear of missing out because the significant value of herd behavior and fear of missing out is 0.308. This suggests that a key variable in herd behavior from any investors in Thailand during COVID-19 pandemic has no impact to their fear of missing out.

5.2.3 Fear of Missing Out and investment decision

This study shows that Fear of Missing Out has no relationship with Investment Decision. The significant value of fear of missing out and investment decision is 0.417. This suggests that a key variable in fear of missing out of the investors had no influence on their investment decision. By observing attentively in depth of a descriptive analysis of fear of missing out which conducted from five questions in the questionnaire that the research has collected, the statistical data shows the mean of fear of missing out is 3.44 from five questions. The lowest mean among five question is "It bothers me when I do not hear news about my investments" Which is equal to 3.13 that lower than average mean.

5.2.4 Behavioral Heuristics and Investment Decision

This study shows that Behavioral has a positive and significant impact with Investment Decision. The significant value of behavioral heuristics and investment decision is 0.000. This suggests that a key variable in a behavioral heuristics of the investors had a direct impact to their investment decision. By observing attentively in depth of a descriptive analysis of behavioral heuristics which conducted from four questions in the questionnaire that the research has collected, the statistical data shows the mean of Behavioral heuristics is 3.84 from four questions. The lowest mean among four questions is "I avoid investments in any asset that have a history of poor earnings." Which is equal to 3.66 that lower than average mean. Therefore, its questions have the highest standard deviation which are equal to 0.97. As a results that the respondents rate the score, behavioral heuristics is significantly impact to their investment decision. Heuristics are methods for solving problems in a quick way that delivers a result that is sufficient enough to be useful given time constraints. It shows that people trend to use a heuristic approach to speed up analysis and investment decisions.

5.2.5 Overconfidence Bias and Investment Decision

This study illustrates that overconfidence bias had a significantly affect with investment decision. The significant value of Overconfidence Bias and Investment Decision is 0.000. This implies that a key variable in overconfidence bias of the people had a directly impact to their investment decision making. The result of descriptive analysis of overconfidence bias which the researcher collected from respondent. From four questions that related to this variable, the statistical data shows the mean of overconfidence bias is 3.21 from four questions. The lowest mean among four questions is "I am an experienced investor." Which is equal to 2.79 which lower than average mean. In addition, "I feel more confident in my own investment opinions over the opinions of my colleagues or friends. I believe I can master the future trend for my investment." Has the highest standard deviation which equal to 1.13. As a result, it shows that respondents give the scores in several range. Thus, the tendency for a person to overestimate their abilities. It may lead a person to think they're a better than average driver or an expert investor.

5.2.6 Disposition effect and Investment Decision

This research shows that disposition effect had an effect and significantly a relationship with investment decision. The

significant value of disposition effect and investment decision is 0.000. This implies that disposition effect has a significant impact on investment decision. As a result, this research agreed with Shefrin and Statman (1985)^[42], fear of regret and the need for pride lead investors to sell winners too soon and ride losers too long. The result of a descriptive analysis of disposition effect which conducted from four questions in the questionnaire that the research has collected, the statistical data shows the mean of disposition effect is 3.36 from four questions. The lowest mean among four questions is "I prefer to sell stocks or any asset as soon as their price starts increasing." Which is equal to 3.15 which lower than an average mean. Therefore, the highest standard deviation is also the same which is equal to 1.12. It shows that the respondents give the score spread out, investors often sell assets that have increased in value, while keeping assets that have dropped in value.

5.3 Recommendations

Regarding the conclusion, the result of this study illustrates that there is a relationship among variables that had direct and indirect impacts on investment decisions to the research's variables, which are loss aversion, herd behavior, fear of missing out, behavioral heuristics, overconfidence bias, and the disposition effect. On the other hand, loss aversion strongly influences the fear of missing out, while herd behavior has no relationship with the fear of missing out. The results show that fear of missing out has no relationship with the investment decision. The most significant investment decision is overconfident bias. Therefore, hypotheses testing 1, 4, 5, 6, and 7 represented that the null hypotheses were rejected because there are significant impacts on investment decisions: loss aversion, behavioral heuristics, overconfidence bias, and the disposition effect. Nevertheless, hypotheses testing 2 and 3 that were not rejected are herd behavior and fear of missing out. According to this research, the fear of missing out does not impact investment decisions. It means that the people in Thailand mostly not much be convinced by the media to lend them invest in something. Nevertheless, Behavioral Biases are still the base factor influencing them to invest. Firstly, overconfidence Bias is the most significant influence on investment decision-making that they should concern about, know themselves, and realize the investment psychology. Too much confidence can always cause an unexpected accident. Secondly, the Disposition effect refers to the tendency to prematurely sell assets that have made financial gains while holding on to assets that are losing money. It shows that investors must learn money management to reduce the risk of loss and learn how to cut the loss properly. Including practicing emotional control to gain more profit from assets that the value rises. Lastly, Behavioral heuristics also affect the investment decision. People use the easy way, with less calculation, less critical thinking, or less analyzing the data and information to make decisions. The same can be pros and cons because too much analysis with unnecessary data can cause loss. Too little analysis also makes the high risk and worst unexpected return.

5.4 Further study

The research's findings indicate that only four out of five factors—loss aversion, behavioral heuristics, overconfidence bias, and disposition effect—have an impact

on how investors make decisions. Additionally, there are two independent variables—herd behavior and fear of missing out—that are unrelated to the dependent variable (investment decision). Owing to the complexity in gathering respondents, the goal can only be accomplished in a short period of time. By finding more related articles to use in further study, it would be possible to apply more variables that relate to the topic. To improve the generalizability and reliability of the results, additional research should be conducted using a larger sample size and population. Finally, this study would be use for relating further research and be evidence for analyze the investor behavior.

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