
The Effect of Behavioral Factors in Investor's Investment Decision

Samuel Noah¹, Margaretha Tiur Pasuria Lingga²

samuelpnoah200@gmail.com¹, margaretha.lingga@sgu.ac.id²

Swiss German University^{1,2}

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Abstract

Behavioral finance theories are based on psychology, it is an attempt to understand how emotions and cognitive errors influence individual investor's behaviors. This study investigated the role of behavioral finance towards investor psychology during their investment decision-making at the Indonesian Stock Exchange. To collect the data needed, a descriptive survey design was chosen. The questionnaires designed have both open-ended and closed-ended questions which use 5-point Likert measurements. Cronbach's Alpha Test was used to test the internal consistency and reliability. Factor analysis and descriptive analysis was used to analyze the data.

The study established that behavioral factors such as availability bias, overconfidence, loss aversion, mental accounting and market factors affected the decisions of the investors operating at the IDX. However, herding behavior shows moderately low results within the investors of IDX.

Keywords: Behavioral Finance, Heuristic Theory, Prospect Theory, Herding Behavior, Market factors, Investor Psychology.

I. INTRODUCTION

There are various ways in which investors choose to or make their portfolio based on the risk and the return they expect when they are investing in the stock market: portfolio allocation based on expected return and risk. Pricing of contingent claims, CAPM, and the Miller- Modigliani theorem and its augmentation by the theory of agency.

The theory stated above however only applies in which the market is efficient and that everyone in the market is a rational investor or in the situation that fits the Efficient Market Hypothesis (EMH). Efficient Market is a situation in which there are always plentiful buyers and sellers and the market prices will reflect all information available to the market. Many of the traditional finance models are based on the theory of EMH, which the market is always efficient, that the investors are all rational and they will always strive to maximize profit. This belief in the efficient market could affect the financial model's ability to make an accurate prediction.

When investing, there are a lot of things that could affect investor's investment decision making outside the historical and fundamental analysis. External factors such as economic crash, changes in government regulation, political instability, economic recession or slowing down could affect the stock market greatly.

Aside from the external factors listed above, there are internal factors, an investor's individual decision that could affect the investment decision of the investors. A lot of these internal factors are affected by cognitive illusion and human errors that could lead investors to make an illogical investment decision.

Explaining the anomalies in the stock market such as an unexpected bubble or burst in the stock market could be done by using one of the branches of Behavioral Economic, Behavioral Finance. "Behavioral finance is the study of the influence of psychology on the behavior of financial practitioners and the subsequent effect on markets" (Subrahmanyam, 2007).

Within behavioral finance, it is assumed that the characteristics of market participants and the information structure will affect investor's investment decisions. Behavioral finance attempts to fill the gap by combining scientific insights into individual's reasoning with traditional financial theory.

The Indonesian stock exchange (IDX) has been growing rapidly in the past few years. Based on the data provided by PT Kustodian Sentral Efek Indonesia (KSEI) on 19 November 2018, there was 628.491 Single Investor Identification (SID) in 2017. It grew by 31,97% to 829.426 single investors in 2018. By 2019, IDX claimed that on the 29th of August 2019 that there are over a million investors in the stock exchange market, rising

over 25% from the previous year and is projected to reach 1,25 million investors by the end of the year (CNN, 2019).

The trend of stock trading is an increasing trend in Indonesia. There are over 178.000 new investors and the trading frequency has increased by 32% compared to previous years (CNN, 2019).

Most behavioral finance studies have been carried out in developed markets. Only a few studies have been completed in Indonesia with the most being done on Herding Behavior. There is lack of research on the behavioral finance in Indonesia, emphasis on the biases or cognitive illusion effect on the investors of Indonesia Stock Exchange (IDX)

Behavioural finance specifically studies various psychological biases that humans possess. These biases often lead to irrational investment decisions. There are a lot of form of Behavioural Factors that could affect investment decision, however this paper focuses on the Anchoring, Overconfidence, Availability Bias, Loss Aversion, Regret Aversion, Mental Accounting, Herd Behaviour and Market Factors. The purpose of this paper is to show and analyse the Financial biases that affect the Indonesian Investor that is actively trading in the Indonesia Stock Exchange (IDX).

2. LITERATURE REVIEW

A. Behavioral Finance

Behavioral finance is an attempt to explain the reasoning patterns of investors, including how much it influences the investors and the emotional processes involved during the decision making process. Essentially, it tries to explain the 'what, why, and how' of investing from a human perspective. (Victor Ricciardi, 2000)

Described by Meir Statman, Behavioral finance has normal people in it. Standard finance, on the other hand, is finance that has rational people in it. He stated that normal people are not irrational, but sometimes they are affected by cognitive errors and emotions. (Statman, 2014)

B. Heuristic

Heuristics is a mental shortcut that ease the cognitive load of decision making. (Myers, 2010). It is a practical problem solving method that is not guaranteed to be optimal, perfect or rational but could speed up the process of finding a quick and easy solution. People usually use heuristics when facing a problem, finding an optimal solution is hard and time consuming.

Heuristics are rules of thumb that are used to make a decision when there is a complex situation and uncertainty. Decision making is not strictly rational because the information collected is objectively evaluated, the decision maker might take a mental shortcut. (Kahneman D, 1979). Examples of illusions resulting from the use of heuristics include: Anchoring, Overconfidence and Availability Bias

C. Anchoring

Anchoring bias is the tendency of people to use irrelevant or false information as a reference for evaluating an unknown value. "it is a mental process by which people give more importance to their previous views or predictions to the detriment of new information" (Edwards, 1968).

People generally begin by visualizing some initial value or an "anchor" which they then adjust to reflect subsequent information and analysis (Pompian, 2006). Investors are expecting that earning trend to be similar to the historical trend. (Kannadhasan, 2015)

D. Overconfidence

Overconfidence is the tendency to hold a misleading assessment of a person's ability, skills, intellect, or talent. Overconfidence tends to appear when the uncertainty is high and a correct judgement is hard to form (Hirshleifer D. , 2014).

In investment, the ability to recognize profitable investment is perhaps misunderstood by investors that has overconfidence bias (Javed, Bagh, & Razzaq, 2017)

E. Availability Bias

Availability bias is a heuristic that investors use to estimate the likelihood of an outcome based on how familiar they are to the situation. Investors that have this bias perceive the recurring as being more likely to happen again compared to other prospects that are harder to comprehend. (Pompian, 2006)

F. Prospect theory

Prospect theory states that people value losses and gains differently, and they in turn will make investment decisions based on what they perceive to be gains instead of losses. Given two choices, individuals will choose the one presented with potential gains over the term with possible losses.

“People overweight outcomes that are probable in comparison with those that are certain”. He also stated that “People also respond differently to equivalent situations depending on whether they are presented in the context of losses or gains” (Kahneman D, 1979).

The theory proposes that several states of mind could affect people's decision-making processes. Prospect theory also subjectively observes how investors mentally “frame” the predicted outcomes, (Pompian, 2006). The key concepts include: Loss aversion, mental accounting, and herd behavior.

G. Loss Aversion

Loss aversion refers to the situation in which investors prefer to avoid loss compared to gain. The emotional impact from a loss was shown to be 2,5 times the impact of a gaining profit. (Kamran Sairafi, 2008). It is the bias in which as described by Daniel Kahneman and Amos Tversky, the developer of the original prospect theory as in the situation in which “losses loom larger than gains” (Kahneman D, 1979).

H. Mental Accounting

According to the original developer Richard Thaler, “Mental Accounting is a set of cognitive operations used by individuals to organize, evaluate, and keep track of their financial activities.” (Thaler, 1999).

Regarding mental accounting, Robert Shiller said that “Investors tend to treat each element of their investment portfolio separately, which can lead to inefficiency, and inconsistency in making investment decisions” (Shiller R.J., 2000).

I. Regret Aversion

Regret aversion refers to the emotion investors experienced after knowing that the decision they took turns out to be bad or inferior. Investors who are influenced by this bias are most likely to take less risk because they are afraid of making bad decisions. (H. Kent Baker, 2014)

This theory could explain investor's reluctance to sell onto losing investments to avoid admitting errors or realizing losses. Investors that have this bias avoid taking decisive actions because they fear that whatever course of action they take will be less than optimal. (Pompian, 2006).

J. Herding Behavior

Herd behavior refers to the situation in which people follow the trend without any further thought regarding the situation. Herd effect refers to the phenomenon that individuals give up their own opinions, change their original attitude and adopt the behavior consistent with the majority under the pressure of social groups. (Liu Xiaqing, 2019).

It also refers to the fact that investors are struggling to make accurate forecasts on the market due to insufficient information. In this case, the investor's information is often observed from the behavior of the crowd, and the information will be strengthened continuously, finally resulting in a herd behavior. In the herd effect, the individual behavior may be rational, but it may lead to collective irrational behavior (Zhou, 2012).

K. Market Factors

Market Factors refer to the situation in which financial markets are affected by investors' behaviors. Thus by looking at the price changes, the market information and other market factors, it could be said that investor's decision making is influenced by market factors. (De Bondt & Thaler, 1995).

II.METHOD

A. Introduction

This chapter explains the procedures that were used to collect data. The study will involve various individual investors that have been involved in the Indonesian Stock Exchange (IDX). The research focuses on how behavioral finance affects investor's decisions regarding their investment in IDX.

B. Research Design

This study is categorized as exploratory study. To achieve the studies' exploratory nature of research, descriptive survey design was used for data collection. This method is suitable due to its ability to show how the investor's decision making and behavior in reality is consistent with the existing theories.

C. Population and Sample planning

- Population

The study involved surveying individual investors who trade at the Indonesian Stock Exchange so as to understand their decision making processes. There are 1.567.869 active investors in IDX (PT BURSA EFEK INDONESIA, 2018).

- Sample

Out of the investors trading at the Indonesian Stock Exchange, a sample of 36 individual investors was chosen using a random sampling method. This was due to the limitations of time, number of investors trading, financial constraints and limited human resource in undertaking the study.

C. Data Collection

Primary data was collected using survey; questionnaires were made using both closed and open ended questions to capture the important information about the population.

In general, works treating behavioral finances are based on questionnaires because by doing so researchers are able to interpret the psychology beliefs of the investors (Mustapha Chaffai, 2014).

The questionnaire incorporated into three sections with the first section focusing on the respondent's background information, the second section focusing on the investor's financial background, while the third part consisted of the economic scenarios related to the studies. This research was based on the theories of behavioral finance: Heuristic theory. Prospect theory, and Herding theories factors on investors' decision making.

A 5-point Likert rating scale was used to ask the individual investors to evaluate the degrees of their agreement with the impacts of behavioral factors on their investment decision. The 5 points in the scale are respectively from 1 to 5: extremely disagree, highly disagree, neutral, highly agree, and extremely agree.

D. Data Analysis and Validity

The data was analyzed using SPSS and the content analysis was used in summarizing the finding. Descriptive statistics was used to summarize the data using tables and graphs to present the data. Factor analysis was used to test the reliability of the items in the multi-item scales. Cronbach's Alpha Test was used to test the internal consistency reliability of measurements.

To ensure the reliability and validity, the score of Cronbach's alpha test should be at least 0.7 (Nunnally, 1975). However, many statisticians believe that it can be acceptable if Cronbach's alpha is over 0.6 (Nelson Waweru, 2008).

III. RESULTS

The Cronbach's alpha was used to measure reliability random errors. The reliability coefficient of all indicators of industrial performance was 0.74 which indicated the high reliability. The demographic and individual investor choices summary is shown on table 4.1. The sample consisted of 36 respondents.

Table 4.1 Demographic and Individual Choice Summary

Table 4.1 Demographic and Individual Choice Summary

<u>Title</u>	<u>Category</u>	<u>%</u>
Gender	Male	86.11%
	<u>Female</u>	<u>13.89%</u>
Age	26-35	50.00%
	36-45	11.11%
	<u>>45</u>	<u>38.89%</u>
Educational	Highschool	5.56%
Qualification	Diploma	13.89%
	Bachelor	50.00%
	Master	25.00%
	<u>PhD</u>	<u>5.56%</u>
Monthly	Rp. 7,000,000 - Rp. 12,000,000	19.14%

Income	Rp. 12,000,000 - Rp. 17,000,000	11.11%
	Rp. 17,000,000 - Rp. 22,000,000	16.67%
	<u>>Rp. 22,000,000</u>	<u>52.78%</u>
Employment	Formal Employment	72.22%
	<u>Self-Employment</u>	<u>27.78%</u>
<u>Title</u>	<u>Category</u>	<u>%</u>
Trading	<1 year	5.56%
Duration	1-3 years	52.78%
	3-5 years	16.67%
	<u>>5 years</u>	<u>25.00%</u>
Purchasing	Financial Knowledge and Experience	55.56%
Motivation	Friends	30.56%
	<u>Others</u>	<u>13.89%</u>
Type of Investors	Short Term	25.00%
	Long Term	22.22%
	<u>Both</u>	<u>52.78%</u>
Sell part or all of the Portfolio	Yes	86.11%
	No	13.89%

Source: Author

A. Impact Levels of Behavioral Factors on the Individual Investment Choices

The impact levels of behavioral factors on the individual investment decision are identified by calculating the values of sample mean of each variable. Using mean of likert scale is recommended when researchers are attempting to measure less concrete concepts (Sullivan & Artino, 2013). The mean values of these variables can decide their impact levels on the investment decision making (Nelson Waweru, 2008).

Because 5-point scales with 1 to 5 score of: extremely disagree, highly disagree, neutral, highly agree, and extremely agree. The grading system will be the following:

1. Range formula: highest score minus the lowest score = (5-1=4)
2. Length of the cell formula: Range ÷ number of levels = length of the cell (4÷5 = 0.8)
3. Add the value of the length of the cell (0.8) to the beginning of the scale to determine the upper limit for the first cell Meaning that:
 - Mean values from 1 to 1.8 shows that the variables have very low impacts
 - Mean values from 1.81 to 2.6 shows that the variables have low impacts
 - Mean values from 2.61 to 3.2 shows that the variables have moderate impacts
 - Mean values from 3.21 to 4 shows that the variables have high impacts
 - Mean values from 4,1 to 5 shows that the variables have very high impacts

Source: Areiqat, Abu-Rumman, Al-Alani, & Alhorani, 2019, Modified by Author

B. Impact of Heuristics Factors

The heuristic factors that might affect investor individual decisions are anchoring, overconfidence and availability bias. The impact of the mentioned behavior factors is shown in table 4.2

Table 4.2 Impact of Heuristics Factors

Factors	Q u e s t i o n s	Mean	Median	Mo de	Std. Dev iation
Anchoring	I buy 'hot' stocks and avoid stocks that have performed poorly in the recent past	3.31	3	3	1.167
	I forecast the changes in stock prices in the future based on the recent stock prices.	3.11	3	3	1.116
Overconfidence	I believe that my skills and knowledge of the stock market can help me to outperform the market.	3.81	4	4	0.856
Availability Bias	I prefer to buy local stocks than international stocks because the information of local stocks is more available.	3.56	4	4	1.275

Source: Author

Based on the results above, it could be said that within the heuristics factors, overconfidence (with 3.81 mean) has the highest impact towards the investment decision of the investors. Most respondents do agree that to some degree, their ability could outperform the market which indicates their confidence in their skill. These results are in line with Chen & Rui (2011) and Javed (2017).

Anchoring has a high impact towards the investment decision of investors. Most people are neutral on both the questions regarding the anchoring bias. On the variable A1 it has slightly higher impact (3.31) compared to A2 (3.11). The results of mental accounting are consistent with Waweru (2008), Hadbaa (2019).

Availability bias has a mean of 3.56 which shows relatively high impact towards the investment decision compared to the anchoring bias. Most respondents do agree that they prefer stock with more available information. This is constant with Waweru (2008) and Javed (2017).

As such, among the heuristic factors, overconfidence has the strongest impact on investors when they do stock trading. This means that the respondents rely on their analysis and knowledge of the stock market.

C. Impact of Prospect Variables

The prospect factors that might affect investor individual decisions are regret aversion, loss aversion and mental accounting. The impact of these behavior factors is shown in table 4.3

Table 4.3 Impact of Prospect Factors

Factor	Questions	Mean	Media	Mo	Std.
s			n	de	Deviation
Loss Aversi on	After a prior loss, I become more risk averse.	3.17	3	4	1.183
Regret Aversi on	I avoid selling shares that have decreased in value and readily sell shares that have increased in value.	2.81	2.5	2	1.215
Mental Accou	I tend to treat each element of my investment portfolio separately.	3.61	4	4	0.964

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I ignore the connection between different investment possibilities	2.39	2	2	0.803
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Source: Author

Based on the results above, loss aversion shows moderate impact and has a mean of 3.17. Most investors agree that to some degree loss aversion affects their investment decision. The result for loss aversion is in line with Chaffai & Medhioub (2014), Hadbaa (2019).

Regret aversion has a moderate impact with a mean of 2.81. most of them disagree about the regret aversion affecting them. The result of the regret aversion is in line with Kengatharan (2014), and

Mental Accounting (MA) shows a high impact towards investment decisions (3.61) on (MA1). MA1 have 3.61 mean and have a high impact towards their decision, this could be interpreted that the respondent chooses to sacrifice efficiency to ensure that they could perform better in the market. Most people do agree that they treat each element of their portfolio separately. MA2 has a 2.39 mean and has a moderate impact on the investments decision, this shows that investors are not avoiding other possibilities of investment in case one of their investments is not in a good situation. These results are in line with Waweru (2008), Hadbaa (2019) that found mental accounting to have a positive and significant impact on investment decisions. As such, amongst the prospect factors, mental accounting has the most significant impact on investment decisions. The answer indicates that the investors take more time and consideration when making their portfolio.

D. Impact of Herding Behavior

The herding behaviour that will be identified in this aspect including the type of stocks, volume of stocks and buying-selling decision of other investors and the respondent speed to react to the market. The impact of herding behavior will be shown in table 4.4

Table 4.4 Impact of Herding Factors

Factors	Questions	Mean	Median	Mode
Herding Behavior	Other investors' decisions of choosing stock types have an impact on my investment decisions.	2.89	3	4
	Other investors' decisions of the stock volume have an impact on my investment decisions.	2.92	3	4
	Other investors' decisions of buying and selling stocks have an impact on my investment decisions.	2.81	3	4
	I usually react quickly to the changes of other investors' decisions and follow their reactions to the stock market.	2.47	2	2

Source: Author

Based on the results above, it could be said that herding behavior has a moderate impact towards the investment decision of the respondent. The stock type (2.89), volume (2.92) and transaction (2.81) shows a moderate impact while the market trend (2.47) has the lowest impact towards the investment decision. Most people are neutral towards the other investor's investment decision but they disagree that they will react fast to the trend. As such, it could be said that herding behavior has relatively moderate to low impact towards the investment decision of investors. These results are in line with Kengatharan (2014).

E. The Impact of Market Factors

The market factors that will be identified in this aspect including price changes, market information and past trends of stock. The impact of market factors could be seen in table 4.5

Table 4.5 Impact of Market Factors

Factors	Questions	Mean	Median	Mode
Market Factors	I consider carefully the price changes of stocks that I intend to invest in.	3.92	4	4
	Market information is important for my stock investment.	4.22	4	4
	I put the past trends of stocks under my consideration for my investment.	3.69	4	4

Source: Author

Based on the result above it shows that the market factors have a really high impact towards the investment decisions of the investors. The market information specifically has a very high impact towards the investment decision (4.22), followed by the change of stock price (3.92) and past trends (3.69) which have a high impact. Based on the trend most people do agree that the market factors affect their investment decision. It could be concluded that the market information has the most significant impact within the market factors. This is in line with (Nelson Waweru, 2008) and (Kengatharan & Kengatharan, 2014)

IV. CONCLUSION

These studies examine the effect of behavioral factors on investment decisions. The study was conducted by spreading questionnaires to investors that are actively trading in IDX. Based on the findings, this study points out several conclusions:

Behavioral factors significantly affect an investor's decision making process. Market Factors, Heuristic Factors and Prospect Factors highly affect the investor's investment decision, however the investors also show that they are not prone to herding behavior.

Market Factors, Overconfidence, Availability Bias and Mental Accounting are the behavioral factors that affect the investment decision the most.

Heuristics factors are divided into 3, Anchoring, Overconfidence and Availability Bias. Both Overconfidence and Availability bias shows a high impact and Anchoring has a lower but still high impact to investment decisions.

Prospect factors are divided into 3, Regret Aversion, Loss Aversion and Mental Accounting. Mental accounting and Loss Aversion, while lower shows high impact. Regret aversion shows moderate impact towards investment decisions.

Herding behaviors that are investigated in this include: type of stock, trade volume, buy and sell of other investors and reaction time to the market. All of the herding variables that were researched shows a moderate result.

Market factors that are investigated including: price change, market information, and past trend of stock. Market information shows a very high impact to the market, while both price changes of stock and past trends shows a high impact to the market.

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