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Investor's behavior and stock investment decision in batam city

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Abstract

This study aims to analyze the influence of investor's behavior on investment decisions in stock investing in Batam City. The investor's behavior consists of heuristic theory, herding behavior, and prospect theory. The heuristic theory used in this study consists of representativeness, overconfidence, availability, and anchoring. Whereas prospect theory consists of loss aversion, regret aversion, and mental accounting. This study used a purposive sampling method, which is the sample is selected by the criteria that are the investor who has a stock investment in Batam. The total sample is 200 respondents. The research method is multiple regression with SPSS software. The results show that there are only three behaviors from the heuristic theory that have a significant effect on investment decisions, namely representativeness, availability, and anchoring. Meanwhile, overconfidence does not have a significant effect. Herding behavior does not have a significant effect. Meanwhile, prospect theory is only mental accounting behavior that has a significant effect and loss aversion and regret aversion have no significant effect.

Keywords: Investor behavior; investment decision; heuristic theory; herding behavior; prospect theory

INTRODUCTION

Currently, the growth of the capital market in Indonesia has increased compared to previous years. Between 2016 and 2019, the number of investors in the capital market is significantly increasing. The Indonesia Central Securities Depository (PT Kustodian Sentral Efek Indonesia/ KSEI) mentions that number of single investor identification (SID) increases from 894,116 to 2,409,075 (KSEI, 2019). Financial Service Authority (Otoritas Jasa Keuangan/ OJK) found 7,912 single investor identification number in Batam City.

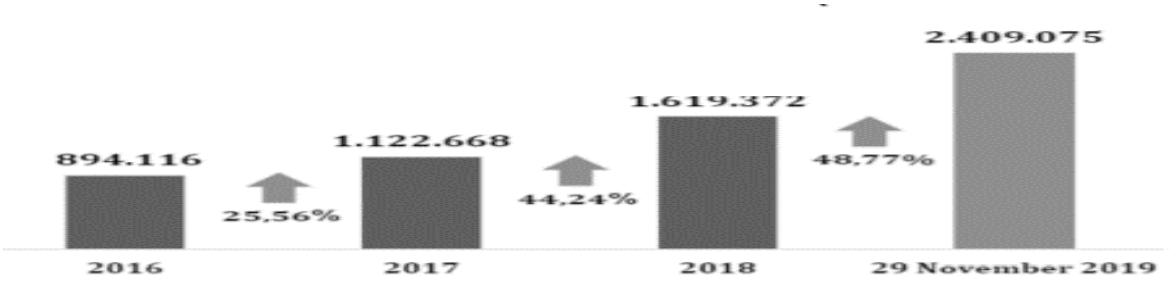

Figure 1. Total number of single investor identification (2016 – November 2019)

Many investors are starting to invest in the stock market. when making an investment decision in the stock market, investors need to analyze the stock performance and the expected return. However, many investors are likely to make an investment decision by their perspective or irrational behavior. Chen et al. (2007) argue that bias may cause the individual investors to tend to show their behaviors and sometimes the bias or mistakes occur when making investment decisions with the irrational behavior. Cohen & Kudryavtsev (2012) mention that knowledge, past performance, previous experience, and investors' expectations are affected by investment decisions. Arora & Kumari (2015) mention that investors used the theory and financial model to calculate the risk and the expected return. On the other hand, investors have become irrational when making an investment decision by following their previous experience. That is called psychology behavior and emotions of investors, namely investor's behavior.

The investor's behavior is an inseparable part of behavioral finance. The investor's behavior impacts the process of making an investment decision. Previous studies mention that heuristic theory, herding behavior, and prospect theory are included. First, a heuristic theory refers to a mental shortcut that makes a quick judgment and solves the problems. Investors likely to uses their past experiences to make a quick judgment into their investment decision. Second, a herding behavior refers to a decision that comes from the group decision, not from the individual investors. Because of the limited time and analysis from individual investors, one of the quick decisions is following the group decision. Third, a prospect theory refers to a different perspective that investors believe that perceived gains always higher than perceived losses. Investors only like to hear earn higher and high returns, not loss and low returns.

This study investigates the effect of investor's behavior on investment decisions. The independent variables are heuristic theory, herding behavior, and prospect theory and the dependent variable is an investment decision. The total sample is 200 respondents that have a stock investment in Batam City. The result shows that four behaviors that have a positive and significant effect on investment decisions, namely representativeness, availability, and anchoring (heuristic theory), and mental accounting (prospect theory). First, investors usually only pay attention to one factor such as firm future development when investing. For investors, firm future development is representativeness to making-decision (Irshad et al., 2016). Second, investors also likely to investing familiar stocks because they have more knowledge and information about the stocks. Investors are also likely to take higher investments for familiar investment (Bakar & Yi, 2016; Ikram, 2016). Third, investors also likely to estimate the initial values and use the historical trend to make an investment decision. Investors believe that information is important to make a decision (Keswani et al., 2019). Fourth, investors also likely to create a portfolio that can help when making an investment decision. Investors are easier to make an investment decision from the portfolio (Rekik & Boujelbene, 2013; Wali & Rehman, 2019).

This study contributes in two ways. First, the contribution in behavior finance literature. The finding complements previous studies that related to behavior finance topics. The representativeness, availability, anchoring, and mental accounting are affecting investment decisions especially for investors in Batam City. Second, investment advisors and investors should consider those behaviors when making an investment decision.

Literature review

Representativeness and investment decision

Representativeness is a behavior in which investors use a stereotype to take their investment decision. Irshad et al. (2016) mention that investors are likely to focus on one factor when making an investment decision. Previous studies from Ikram (2016), Parveen & Siddiqui (2017), Subramaniam & Velnampy (2017), Pandey & Jessica (2018), Rasheed et al. (2018), Raut & Kumar (2018), Sashikala & Chitramani (2018), Keswani et al. (2019), and Siraji (2019) also mention that representativeness is positive and significant on investment decision. However, Xue et al. (2015) and Shah et al. (2018) argue that representativeness is negative and significant. Representativeness causes the investor to become irrational and make a wrong investment decision. Furthermore, Jahanzeb & Rehman (2012), Ngoc (2014), and Abdin et al. (2017) argue that representativeness is insignificant on investment decisions. Based on the previous studies, our first hypothesis as follows:

H1: Representativeness is significant in the investment decision.

Overconfidence and investment decision

Overconfidence is a behavior in which investors have excessive confidence in their investment decision. Investors who have this behavior will make an investment decision based on the risk analysis carried out. Previous studies that related to this study are (Trinugroho & Sembel, 2011), (Ngoc, 2014), (Toma, 2015), (Xue et al., 2015), (Mahmood et al., 2016), (Subramaniam & Velnampy, 2017), (Boda & Sunitha, 2018), (Chakravarty & Rutherford, 2017), (Rajeshwaran, 2020), (Raut & Kumar, 2018), (Sashikala & Chitramani, 2018), (Areiqat et al., 2019), (Metawa et al., 2019), (Keswani et al., 2019), (Pertiwi et al., 2019), (Qasim et al., 2019), and (Wali & Rehman, 2019). The positive and significance between overconfidence and investment decision are because investors are belief that their ability and knowledge when making an investment decision. However, Kafayat (2014), Kengatharan & Kengatharan (2014), Ton & Dao (2014), Shah et al. (2018), and Siraji (2019) argue that overconfidence is negative and significant. Overconfidence causes the investor to take an investment without considering the risk. Furthermore, Jahanzeb & Rehman (2012), Abdin et al. (2017), Parveen & Siddiqui (2017), and Pandey & Jessica (2018) argue that overconfidence is insignificant on investment decisions.

H2: Overconfidence is significant in the investment decision.

Availability and investment decision

Bakar & Yi (2016) and Ikram (2016) mention that availability is a behavior in which investors take a decision based on what is remembered in their minds. Availability can cause investors to only invest in types of investments that they know or invest in familiar firms. Previous studies from Sheraz et al. (2014), Xue et al. (2015), Parveen & Siddiqui (2017), Subramaniam & Velnampy (2017), Boda & Sunitha (2018), Pandey & Jessica (2018), Rajeshwaran (2020), Rasheed et al. (2018), Raut & Kumar (2018), Sashikala & Chitramani (2018), and Keswani et al. (2019) also mention that availability is positive and significant on investment decision. Because investors received the information and already familiar with those firms. Thus, the investor does not need to pay an extra fee for that information. Furthermore, Jahanzeb & Rehman (2012), Kengatharan & Kengatharan (2014), Ikram (2016), and Abdin et al. (2017) argue that availability is insignificant on investment decisions.

H3: Availability is significant in the investment decision.

Anchoring and investment decision

Anchoring is a behavior in which investors take a decision based on the initial purchase price and determine the stock price based on historical trends. Previous studies from Rekik & Boujelbene (2013), Kengatharan & Kengatharan (2014), Matsumoto et al. (2013), Ngoc (2014), Lowies et al. (2016), Mahmood et al. (2016), Parveen & Siddiqui (2017), Subramaniam & Velnampy (2017), Boda & Sunitha (2018), Pandey & Jessica (2018), Raut & Kumar (2018), Sashikala & Chitramani (2018), Keswani et al. (2019), and Siraji (2019) also mention that investors when making investments rely on the information

obtained initially and tend not to sell when the price is drop. However, Shah et al. (2018) argue that anchoring causes investors to focus on the initial information and cannot make a rational decision. Furthermore, Jahanzeb & Rehman (2012), Xue et al. (2015), Abdin et al. (2017), and Wali & Rehman (2019) argue that anchoring is insignificant on investment decisions.
H4: Anchoring is significant in the investment decision.

Herding behavior and investment decision

Herding behavior is a behavior in which investors take a decision based on the majority decision because the decision is always right (Bakar & Yi, 2016). Areiqat et al. (2019) argue that individual investors are limited to find a piece of information and better to follow the majority decision because they have more information, and their decision is more accurate. Previous studies also agreed that investors are likely to decide on majority because it can maximize the profit and reduce the risk (Rekik & Boujelbene, 2013; Ton & Dao, 2014; Lowies et al., 2016; Mahmood et al., 2016; Subramaniam & Velnampy, 2017; Boda & Sunitha, 2018; Sashikala & Chitramani, 2018; Areiqat et al., 2019; Keswani et al., 2019; Metawa et al., 2019; Qasim et al., 2019; Wali & Rehman, 2019). However, Kengatharan & Kengatharan (2014), Raut & Kumar (2018), and Dewan & Dharni (2019) argue that investors who have experience in investment would not have a herding behavior. Furthermore, Jahanzeb & Rehman (2012), Bakar & Yi (2016), and Rajeshwaran (2020) argue that herding behavior is insignificant on investment decisions.
H5: Herding behavior is significant in the investment decision.

Loss aversion and investment decision

Loss aversion is a behavior in which investors take a decision based on comparing and reasoning. Prior studies from Rekik & Boujelbene (2013), Ngoc (2014), Mahmood et al. (2016), Subramaniam & Velnampy (2017), Sashikala & Chitramani (2018), Areiqat et al. (2019), Keswani et al. (2019), Wali & Rehman (2019), and Addinpujoartanto & Darmawan (2020) mention that loss aversion allows investors to hold losses rather than gains. However, Jahanzeb & Rehman (2012) and Pandey & Jessica (2018) argue that loss aversion is insignificant on investment decisions.
H6: Loss aversion is significant in the investment decision.

Regret aversion and investment decision

Regret aversion is a behavior that investors regret because take a wrong decision in investment. To avoid regret decisions, investors prefer to follow the trend rather than decide by themselves. Previous studies from Ngoc (2014), Mahmood et al. (2016), Boda & Sunitha (2018), Pandey & Jessica (2018), Sashikala & Chitramani (2018), Keswani et al. (2019), Wali & Rehman (2019), and Addinpujoartanto & Darmawan (2020) also find that regret aversion is significant on investment decision. However, Jahanzeb & Rehman (2012) and Kengatharan & Kengatharan (2014) argue that regret aversion is insignificant on investment decisions.
H7: Regret aversion is significant in the investment decision.

Mental accounting and investment decision

Mental accounting is a behavior that investors make a portfolio in their investment. Investors likely divided their investment into several choices to avoid negative returns. Previous studies from Rekik & Boujelbene (2013), Ngoc (2014), Mahmood et al. (2016), Sashikala & Chitramani (2018), Keswani et al. (2019), and Wali & Rehman (2019) also mention that investors prefer invest in the portfolio because it can decrease the risk and earn higher profit. However, (Jahanzeb & Rehman, 2012) and (Pandey & Jessica, 2018) argue that mental accounting is insignificant on investment decisions.
H8: Mental accounting is significant in the investment decision.

METHODS

In this study, the population is an investor in Batam City and our sample is investors who invest in stock in Batam City. We use the purposive sampling technique to distribute the questionnaires. The criteria include: (1) residents in Batam City, and (2) have a stock investment. Following Hair et al. (2010), the minimum sample size is five times the total number of indicators multiple estimated parameters (21 indicators x 5 = 105 respondents. Furthermore, to avoid error or invalid, we distribute it to 200 respondents.

The dependent variable is an investment decision. Shah et al. (2018) mention that investment decision is a process to decide in investment. The indicators for investment decisions are followed Rasheed et al. (2018). The independent variables are representativeness, overconfidence, availability, anchoring, herding behavior, loss aversion, regret aversion, and mental accounting.

Representativeness is a behavior that investors are likely to focus on one factor when making an investment decision (Irshad et al., 2016). The indicators for representativeness are followed Mahmood et al. (2016). Overconfidence is s behavior in which investors have excessive confidence in their investment decision and the indicators are followed by (Mahmood et al., 2016). Availability is a behavior in which investors take a decision based on what is remembered in their minds (Bakar & Yi, 2016; Ikram, 2016). The indicators for availability are followed Mahmood et al. (2016). Anchoring is a behavior in which investors take a decision based on the initial purchase price and determine the stock price based on historical trends and the indicators is followed Mahmood et al. (2016).

Herding behavior is a behavior in which investors take a decision based on the majority decision because the decision is always right (Bakar & Yi, 2016). The indicators for herding behavior are followed Mahmood et al. (2016). Loss aversion is a behavior in which investors take a decision based on comparing and reasoning and the indicators are followed Mahmood et al. (2016). Regret aversion is a behavior that investors regret because take a wrong decision in investment and the indicators are followed Mahmood et al. (2016). Mental accounting is a behavior that investors make a portfolio in their investment. Investors likely divided their investment into several choices to avoid negative return and the indicators are followed Mahmood et al. (2016).

This study uses multiple regression with SPSS to process the data. The questionnaire is using the Likert scale. The analysis includes demographic respondents, quality tests, and classic assumption tests. After passing those tests, the main test is hypotheses tests that include F-test, t-test, and coefficient determination test.

RESULTS AND DISCUSSION

Demographic respondents

Table 1 shows the demographic respondents. The respondents are mostly male with the range of age between 18 – 25. Based on the marriage and education statute, most are single and earn bachelor's degrees. The respondents are mostly private employees with an average income is Rp 5,000,000 and investment experience between 1 – 3 years.

Table 1. Demographic respondents

Characteristics		Total	%
Gender	Male	108	54%
	Female	92	46%
Age	18 – 25 years	96	48%
	26 – 33 years	58	29%
	34 – 41 years	17	8,5%
	42 – 49 years	13	6,5%
	50 – 47 years	8	4%
	> 58 years	8	4%
Marriage statute	Married	62	31%
	Single	138	69%
Education	Junior High School	3	1,5%
	Senior High School	42	21%
	Diploma	13	6,5%
	Bachelor Degree	118	59%
	Master Degree	21	10,5%
	Doctoral Degree	3	1,5%
Job	Private employee	93	46,5%
	Public employee	13	6,5%
	Enterprenuer	48	24%
	Student	45	22,5%

Characteristics		Total	%
	Unemployment	1	0,5%
Income	< Rp 5.000.000	86	43%
	Rp 5.000.001 – Rp 10.000.000	68	34%
	Rp 10.000.001 – Rp 15.000.000	22	11%
	Rp 15.000.001 – Rp 20.000.000	17	8,5%
	> Rp 20.000.000	7	3,5%
Investment experience	< 1 year	72	36%
	1 – 3 years	74	37%
	3 – 4 years	21	10,5%
	4 – 5 years	17	8,5%
	> 5 years	16	8%

Quality tests

Quality tests include validity tests and reliability tests. Table 2a and 2b show the results. All the indicators are valid, and the loading factor is higher than 0.6. The Cronbach's Alpha is also higher than 0.6. Both tests are passes.

Table 2a. Validity test

Variables	Indicators	Loading Factor
Representativeness	RP1	0.839
	RP2	0.839
Overconfidence	OC1	0.818
	OC2	0.818
Availability	AV1	0.855
	AV2	0.855
Anchoring	AN1	0.891
	AN1	0.891
Herding Behavior	HB1	0.726
	HB2	0.822
	HB3	0.778
	HB4	0.765
Loss Aversion	LA1	0.850
	LA2	0.850
Regret Aversion	RA1	0.844
	RA2	0.844
Mental Accounting	MA1	0.819
	MA2	0.819
Investment Decision	ID1	0.788
	ID2	0.815
	ID3	0.795

Table 2b. Reliability test

Variables	Cronbach's Alpha
Representativeness	0.679
Overconfidence	0.605
Availability	0.631
Anchoring	0.740
Herding Behavior	0.774
Loss Aversion	0.615
Regret Aversion	0.689
Mental Accounting	0.609
Investment Decision	0.717

Classic assumption tests

The first test is the normality and the criteria are the asymptotic significantly > 0.05. Second, the multicollinearity test and the criteria are VIF below 10 or tolerance score >0.1. Third, the

heteroskedasticity test and the criteria are >0.05. The result in Table 3a, 3b, and 3c show all the variables are meet those criteria.

Table 3a. Normality test

One-sample kolmogorov-smirnov test		
Unstandardized Residual	N	200
	Asymp. Sig. (2-tailed)	0.200

Table 3b. Multicollinearity test

Variables	Tolerance	VIF
Representativeness	0.533	1.876
Overconfidence	0.467	2.140
Availability	0.521	1.918
Anchoring	0.673	1.486
Herding Behavior	0.710	1.409
Loss Aversion	0.423	2.364
Regret Aversion	0.397	2.517
Mental Accounting	0.413	2.423

Table 3c. Heteroskedasticity test

Glejser test	
Variables	Sig.
Representativeness	0.859
Overconfidence	0.521
Availability	0.317
Anchoring	0.865
Herding Behavior	0.350
Loss Aversion	0.054
Regret Aversion	0.477
Mental Accounting	0.099

Hypotheses tests

Table 4a shows the results of the influence of heuristic theory, herding behavior, and prospect theory are significant on investment decision. Table 4b shows the results for partial significant. Further, Table 4c shows the coefficient determination.

Table 4a. F-test

Dependent variable	F	Sig
Investment Decision	31,260	0.000

Table 4b. t-test

Variable	Standardized Coefficients Beta	t	Sig.
Representativeness	0.140	2.151	0.033
Overconfidence	0.112	1.613	0.108
Availability	0.181	2.738	0.007
Anchoring	0.153	2.643	0.009
Herding Behavior	0.075	1.325	0.187
Loss Aversion	0.011	0.153	0.879
Regret Aversion	0.116	1.531	0.127
Mental Accounting	0.321	4.333	0.000

Hypothesis 1

The coefficient of representativeness is 0.140 with a t-value of 2.151 shows a positive and significant effect on investment decisions. Investors likely to uses their experience or stereotype when making an investment decision. These results also support the prior studies from Ikram (2016), Parveen & Siddiqui (2017), Subramaniam & Velnampy (2017), Pandey & Jessica (2018), Rasheed et al. (2018), Raut & Kumar (2018), Sashikala & Chitramani (2018), Keswani et al. (2019), and Siraji (2019).

Hypothesis 2

The coefficient of overconfidence is 0.112 with a t-value of 1.613 shows the insignificant effect on investment decisions. Investors prefer to decide by considering factors rather than their own opinion. These results also support the prior studies from Jahanzeb & Rehman (2012), Abdin et al. (2017), Parveen & Siddiqui (2017), and Pandey & Jessica (2018).

Hypothesis 3

The coefficient of availability is 0.181 with a t-value of 2.738 shows a positive and significant effect on investment decision. Investors are likely to invest in the instrument that investors are familiar with because they received more information. These results also support the prior studies from Sheraz et al. (2014), Xue et al. (2015), Parveen & Siddiqui (2017), Subramaniam & Velnampy (2017), Boda & Sunitha (2018), Pandey & Jessica (2018), Rajeshwaran (2020), Rasheed et al. (2018), Raut & Kumar (2018), Sashikala & Chitramani (2018), and Keswani et al. (2019).

Hypothesis 4

The coefficient of anchoring is 0.153 with a t-value of 2.643 shows a positive and significant effect on investment decision. Investors decide based on the initial purchase price and determine the stock price based on historical trends. These results also support the prior studies from Rekik & Boujelbene (2013), Kengatharan & Kengatharan (2014), Matsumoto et al. (2013), Ngoc (2014), Lowies et al. (2016), Mahmood et al. (2016), Parveen & Siddiqui (2017), Subramaniam & Velnampy (2017), Boda & Sunitha (2018), Pandey & Jessica (2018), Raut & Kumar (2018), Sashikala & Chitramani (2018), Keswani et al. (2019), and Siraji (2019).

Hypothesis 5

The coefficient of herding behavior is 0.075 with a t-value of 1.325 shows an insignificant effect on investment decisions. Investors are likely to make a rational analysis before taking an investment decision rather than following other investor's opinions. These results also support the prior studies from Jahanzeb & Rehman (2012), Bakar & Yi (2016), and Rajeshwaran (2020).

Hypothesis 6

The coefficient of loss aversion is 0.011 with a t-value of 0.153 shows the insignificant effect on investment decisions. Investors have a rational mindset that investment always has the risk and return. These results also support the prior studies from Jahanzeb & Rehman (2012) and Pandey & Jessica (2018).

Hypothesis 7

The coefficient of regret aversion is 0.116 with a t-value of 1.531 shows the insignificant effect on investment decisions. Investors are knowing the risk and return on investment and are not disappointed with their decision. These results also support the prior studies from Jahanzeb & Rehman (2012) and Kengatharan & Kengatharan (2014).

Hypothesis 8

The coefficient of mental accounting is 0.321 with a t-value of 4.333 shows a positive and significant effect on investment decisions. Investors make a portfolio in their investment. Investors likely divided their investment into several choices to avoid negative returns. These results also support the prior studies from Rekik & Boujelbene (2013), Ngoc (2014), Mahmood et al. (2016), Sashikala & Chitramani (2018), Keswani et al. (2019), and Wali & Rehman (2019).

Table 4c. Coefficient determination

Variable	R Square	Adjust R Square	Std. Error of the Estimate
Investment Decision	0.567	0.549	1.427

Table 4c shows the coefficient determination is 0.549 means 54.90% of independent variables can explain those factors' influence on investment decisions. The rest of 45.10% are explained by other factors that do not include in this study.

CONCLUSION

The study aims to analyze the influence of heuristic theory, herding behavior, and prospect theory on investment decisions. The heuristic theory used in this study consists of representativeness, overconfidence, availability, and anchoring. Whereas prospect theory consists of loss aversion, regret aversion, and mental accounting. Results show that representativeness, availability, anchoring, and mental accounting are significant on investment decisions.

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