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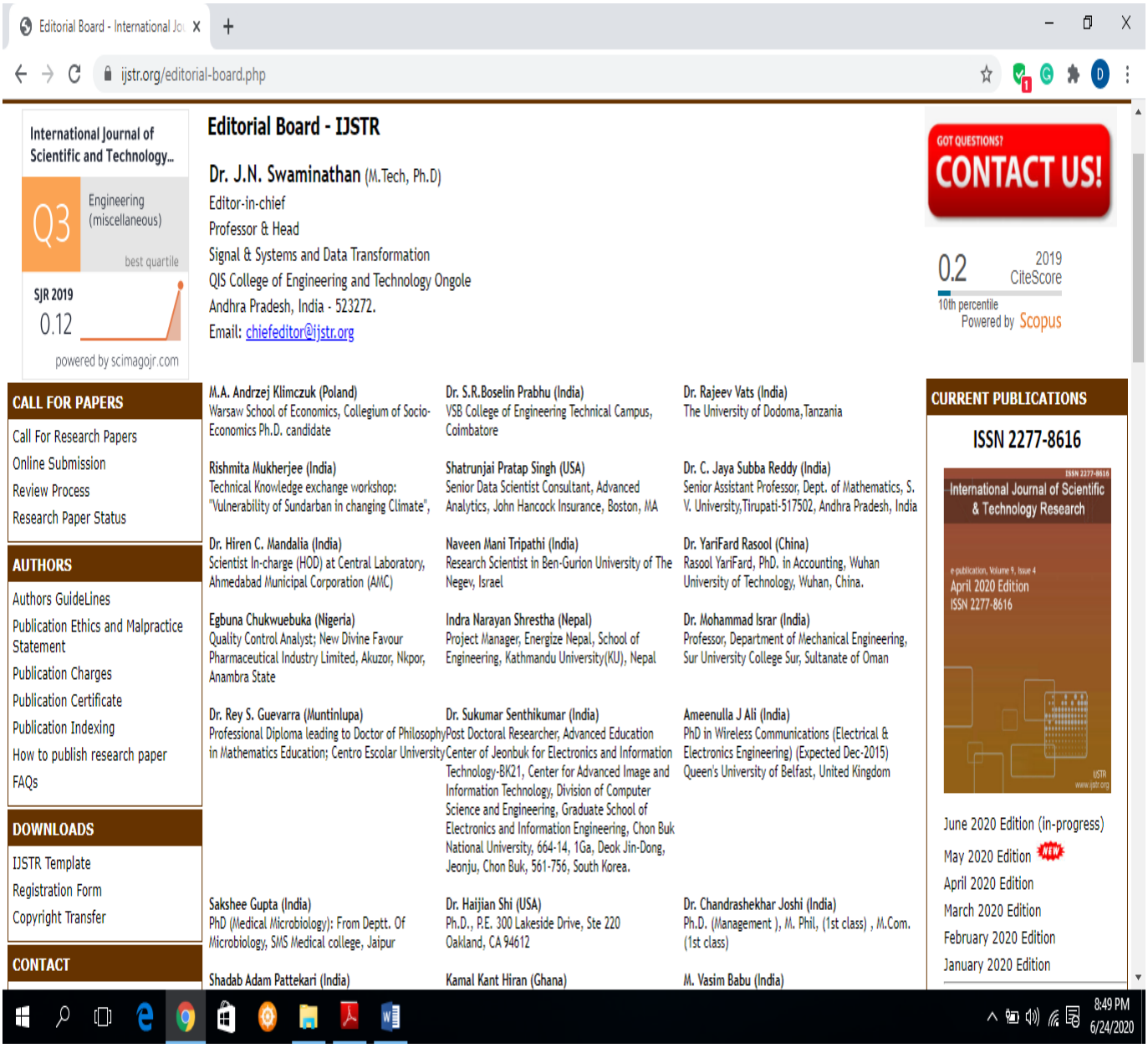

IJSTR Volume 9 - Issue 2, February 2020 Edition - ISSN 2277-8616

Publication for Volume 9 - Issue 2, February 2020 Edition is in-process. The publication process will complete on February 15, 2019; the full text will be available after the completion of publication process.

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Behavioral Factors Influencing Investment Decision-Making By College Student: An Empirical Study In Bali Province, Indonesia

Ni Made Dwi Ratnadi, Anak Agung Gde Putu Widanaputra, I Nyoman Wijana Asmara Putra

Abstract: The purpose of this research is to empirically examine the effect of behavioral factors in investment decision-making. This study examines behavioral factors (Heuristics, Prospects, Market, and Herding) that influence stock investment decisions by College students. This research was conducted in the province of Bali-Indonesia. Data were collected by survey method through questionnaires. The respondents were students who have invested in shares. Data were analyzed using multiple linear regression. The proxy of behavioral factors is determined by factor analysis. The analysis results show that the heuristic behavior factor carried out by students in investment decisions is availability bias. Prospect behavior factor is mental accounting, market behavior is past stock price trends, and the forming factor of herding behavior is the speed with which other investors react. The results of multiple linear regression analysis showed that heuristic, did not affect investment decisions, prospect factors influenced investment decisions, market behavior factors influenced investment decisions and herding had a negative effect on investment decisions.

Keywords: Behavior, Heuristics, Prospect, Market, Herding

1. INTRODUCTION

Today the Indonesian government is serious about developing the capital market industry. This is evidenced by the program organized by PT Indonesia Stock Exchange (IDX) in collaboration with PT. Indonesian Clearing and Guarantee Corporation (KPEI), PT Indonesian Central Securities Depository (KSEI), and other securities companies hold other educational programs such as the Capital Market School (SPM) to the public in order to attract public enthusiasm in knowing investment in the capital market, both in the sector stocks and mutual funds [11]. Various educational programs are also carried out by the government in collaboration with educational institutions aimed at making the public and students more aware of the capital market, understanding the importance of investing, recognizing stocks as an ideal investment tool, understanding obstacles as well as attracting the interest of the community as potential investors to invest in the market Indonesian capital. Students are expected to become one of the ideal young investor candidates and contribute actively to advance and increase investment in the Indonesian capital market. In order to increase student knowledge in terms of investment, especially in stock investments, PT Indonesia Stock Exchange (IDX) is actively opening investment galleries on various college campuses [9] [11]. This research is important to do because on average young people in Indonesia from those who are still students to those who are pioneering jobs are starting to grow interested in investing in shares [25]. The stock market is known for its volatility and uncertainty because various factors affect the market's prospects. Investor behavior can affect stock prices. Investors can behave rationally and irrationally in decision making [1],[2]. Therefore, it is very important to identify and understand what behavioral factors affect individual investment decisions, especially stock investment decisions. The decision making of investors in channeling funds causes the dynamics of stock prices in the market is irrational. Investor behavior in investment decisions has been observed by previous researchers, and their findings emphasize the influence of psychological, economic, and social environment on the decisions made. Financial behavior theory is based on psychology, trying to understand emotions and cognitive errors affect the behavior of individual investors. Financial behavior is an inseparable part of decisions and can affect investor performanceBehavior is based on psychology in the decision-making process, humans are subject to some cognitive illusions [23]. These illusions are grouped into two namely illusions caused by heuristic decision making processes and illusions rooted in the adoption of mental frameworks that are grouped in prospect theory [33],[4]. Based on this information the research objective empirically examines the influence of heuristic variables, prospects, market variables, herding variables on stock investment decisions by college student investors [5]. Investor decisions in the stock market play an important role in determining market trends, which can affect the economy. To understand and provide an appropriate explanation for investor decisions, it is important to explore which behavioral factors influence investor decisions. This will be useful for investors to understand general behavior, which justifies their reaction to better investment returns. The research results can provide information to capital market practitioners about the importance of behavioral factors in making investment decisions. As such, share prices will reflect the true value and the Indonesian Capital Market becomes a benchmark of economic wealth and helps companies increase capital for production and expansion. For universities, the results of research on knowledge about student behavior in investment decisions can be a guideline for the development of the Accounting Study Program curriculum.

2 LITERATURE REVIEW

2.1 Heuristic Theory

Heuristics are practical instructions to facilitate information processing in decision making. The existence of heuristics makes complex decisions easier and more efficient. Heuristics can help decision-makers to focus on important information and ignore information that is not important so that decisions can be taken quickly and accurately. However, heuristics also cause bias in decision making, if it is not appropriate to use them. Kahneman and Tversky stated that there are three factors in the heuristic that cause the occurrence of bias, namely: representativeness, availability bias, and anchoring

[10]. Kengathara & Kengathara tested five heuristic behavioral variables namely representativeness, availability bias, and anchoring, gambler's fallacy and overconfidence [13]. Each heuristic variable is described below

1) Representativeness heuristic

Representativeness is the subject's evaluation of the object, to what extent the object has similarity to its population. Representation bias causes sometimes the sample size to be ignored and this occurs when individuals refer to very few samples [16]. Representativeness is the level where the situation and examples are similar to the population [3]. Representativeness can cause bias in decision making because representativeness, individuals try to judge more recent events and ignore long-term events [23]. Uncertainty situations cause individuals to make decisions based on similarities in events that have similar characteristics. This leads investors to analyze the company based on various characteristics such as return, publicity, products and most of the management and investment is based largely on these characteristics if the value is good [18]

2) Availability heuristic

Availability heuristics are quick decision-making strategies based on information that is easy to remember in mind. When making a decision, many situation related situations immediately arise to our mind. This is based on the general tendency of humans to remember new and inspirational events very quickly. The process of evaluating events at the end of the month is easier to remember than those at the beginning of the month so that recent events influence perceptions more easily [24].

3) Anchoring heuristic

Anchoring heuristics is an individual's tendency when predicting a value based on the initial value (based on past data) or other available information and generally does not make sufficient adjustments to the base value when making a final decision. Anchoring bias occurs when individuals try to use initial values to make decisions in certain situations. Anchoring causes investors to go through historical trends and establish price ranges and corporate earnings that cause investors to react slowly when unexpected changes occur [16]. The anchoring bias is also connected to representation because it also shows that investors are trying to focus more on new experiences and they are more optimistic when there is an increase in the market and more pessimistic when the market falls [33]. Anchoring is defined as the tendency of investors to refer their decisions to irrelevant reference points regarding their investment.

4) Gambler’s fallacy

Gambler's fallacy is a behavioral bias that occurs when individuals believe that the sample resembles the parent population from which it was taken [33]. This bias arises in the stock market when investors inaccurately predict turning points and it is considered the end of a good or bad outcome. Investors try to predict the reversal of stock prices when they suffer from this bias because they think thus the trend will reverse [33]. According to the mistakes of gamblers, investors think that random events in the stock market are self-correcting

5) Overconfidence

Overconfidence refers to incorrect beliefs about individual judgment, reasoning, and cognitive abilities. This bias plays a major role in the stock market business today. Psychological studies include the impact of excessive trust on learned behavior [24]. Whenever an investor believes that he has more knowledge than he needs and tries to value more of his personal information, it means that the individual wants to overestimate his perceptions, predictions, and judgments [31]. Generally, most individuals are too confident about their abilities. Overconfidence gives exposure in many ways, such as very little diversification since the investor invests his money where he knows more information [5].

2.2 Prospect Theory

Expected utility theory (EUT) and prospect theory are considered as two approaches to decision making from various perspectives. Prospect theory focuses on subjective decision making that is influenced by the investor value system, whereas the EUT concentrates on the rational expectations of investors [7]. EUT is a normative model of rational choice and a descriptive model of economic behavior, which dominates the analysis of decision making under risk. However, this theory has been criticized for failing to explain why people are interested in insurance and gambling. People tend to underestimate possible outcomes compared to certain ones and people respond differently to the same situation depending on the context of the loss or gain they present [12]. Prospect theory explains several states of mind that influence individual decision-making processes including regret aversion, loss aversion, and mental accounting [33].

1) Regret aversion.

Psychological errors that come out of extra consideration or focus on emotions and feelings of remorse in situations where decisions must be taken are mostly bad because other results seem better for investors. The reason for the regret aversion bias is that most individuals don't admit their mistakes. In this situation, individuals try to avoid making decisions for fear that whatever decision they want to have will be suboptimal. Because most people are less willing to admit and correct their mistakes promptly, this causes them to lose their positions. Regret does not like to prevent investors from entering the market every time there is a downward trend that indicates that the signal is over [4]. Along with financial losses, regrets also arise for bad decisions, which result in losses. Investors are trying to maintain stocks that are performing poorly because of regret. Regret also influences decisions about new investments. Investors try to avoid the sectors that perform poorly in the present and because of the hope of regret they do not invest because they think if investing will suffer losses [26].

2) Loss aversion Avoidance of losses is the behavior of individuals who tend to avoid losses compared to gains. Whenever a problem is framed negatively, the rejection of a loss will be more intense, so the individual will make different decisions when he is confronted with a negative framework problem. In that situation, there will be less negotiation each time the exposure to losses is stronger and stronger because the individual is not aware of the loss [27]. Losing a loss is also defined as an individual's mental punishment placing the same amount of loss or profit [3]. Most people show more pressure about the prospect's loss than the pleasure they show at an equal profit [26]. Losses that occur after gains are considered less painful than losses that occur after previous losses [3].

3) Mental accounting

The process by which individuals analyze and evaluate transactions regarding their financial decisions is called mental accounting [22]. Mental accounting causes investors to manage and manage their investment portfolios in various accounts [23]. Mental accounting provides the basis for how decision-makers set reference points for accounts that determine profits and losses. The main idea is that decision-makers tend to separate different types of bets into different accounts, and then apply the theory of prospects to each account regardless of possible interactions. In essence, mental accounting is a condition where we place the allocation of money into several categories so that the value of the money we perceive is different from the truth.

2.3 Market Factors

Investor behavior is a major factor affecting financial markets. Various factors that influence investment decision making in the market are market information, past stock trends, price changes, consumer preferences, excessive reactions or reactions to changes in stock prices and stock fundamentals [33]. Generally, changes in stock fundamentals, market prices, and market information stimulate too many investor reactions to price changes. This fluctuation broadly influences individual decision-making behavior. Excessive reactions from investors or under investors' reactions lead to different strategies which in turn affect their decisions regarding investors. Decisions by investors are strongly influenced by market information because these investors try to focus on popular stocks and also focus on events that attract high attention in the stock market [33]. Various events that attract attention affect the decisions of investors, although investors do not realize whether it will produce better future performance or not [17]. Investors trade stocks that have experienced higher price fluctuations in recent years, so here price changes are considered as an interesting event in the market [8].

2.4 Herding effect

Herding behavior is irrational investor behavior because investors base their investment decisions not by looking at the economic fundamentals of a risky asset, but by seeing the actions of other investors under the same circumstances, as well as following market consensus. The herding effect on financial markets is identified as a tendency for investor behavior to follow the actions of others. Practitioners usually consider carefully the presence of investors who join in, because this model investor relies more on collective information than personal information. This can cause a deviation in the price of the security from the fundamental value. Therefore, many good opportunities for investment at this time can not be done. Herding behavior has an impact on changes in stock prices, so it also has an impact on the risk and returns model from the theory of asset pricing [6]. Herding behavior causes several emotional biases, including conformity, congruity and cognitive conflict.

2.5 Hypothesis Development

Research on investment decisions in the Capital Market has been relatively widely carried out including [30] stating that in the Indonesian Capital Market as whole investors are more likely to behave irrationally than rationally. Yuwono further explained that four factors significantly influenced the magnitude of a person's interest in investing in the stock market, namely gender, perceptions of stock investment risk, health and investment knowledge in the capital market [32], [21]. These findings indicate that to invest in the capital market requires sufficient knowledge, experience, and business sense. Investment knowledge is needed to avoid losses when investing and obtain the maximum return from the investment.

The irrational behavior of investors is driven by psychological factors. Lin suggests that there are four personality traits associated with financial behavior biases namely: Neurotocis, Extroversion, Openness, Conscientiousness, and Overconfidence [15]. Nidar and Bestari stated that investors who have high levels of overconfidence carry out more trading activities compared to investors with lower overconfidence levels [17]. There is an interaction effect between disposition effects, aspects of cognition and accounting information [24]. Investment decisions are influenced by the effect of disposition, aspects of cognition and accounting information. Herding has a positive and significant impact on investment decision making [8]. Bias behavior of investors and potential investors that can influence decision making, including herding, heuristics, and investor attitudes towards risk [13]. Heuristic bias behavior (anchoring, gambler's fallacy, representativeness, and availability) has a significant effect on investment decisions [3]. While overconfidence and herding have no significant effect on investment decisions [3] Behavioral perspective, herding can cause several emotional biases, including conformity, congruity and cognitive conflict. Investors may prefer herding if they believe that herding can help process and produce useful and reliable information. But according to Kallinterakis et al. (2010) for some conditions, herding can be useful in evaluating professional performance because it can produce better performance by following good behavior [12]. Sochi (2018) found the result that herding behavior had a positive and significant influence on investment decision making [27]. Kengathara and Kengathara (2014) have also found that herding behavior has a positive effect on investor decision making [13]. Grinblatta and Han (2005) see the application of mental accounting to investors after being sanctioned in Iran which affects the buying and selling of these shares [6]. Herding can contribute greatly to analyzing and evaluating professional performance because individuals who have low abilities try to imitate the behavior of individuals who have a high ability to develop their reputation [12]. Herding behavior had a positive effect on investor decision making [13]. Amum and Ameer (2017) examined the influence of behavioral factors in heuristic and herding bias on property investment decisions [3]. The results turned out to show that overconfidence and herding had no significant effect compared to heuristic factors (anchoring, gambler’s fallacy, representativeness, and availability). Anum and Ameer (2017) state that behavioral factors influence the decision of investors to make investment decisions in Pakistan [3]. Based on these explanations, the research hypotheses are as follows:

H1: Heuristic behavior factors influence stock investment decisions by students.

H2: Prospect behavior factors influence stock investment decisions by students.

H3: Market behavior factors influence the stock investment decisions by students

H4: The herding effect factor influences students' stock investment decisions

3 RESEARCH METHOD

3.1 Research variable

This research is quantitative, associative with the causality approach. Before the analysis is carried out, first determine the factors that influence stock investment decisions. Behavioral factors are grouped into four groups each group consisting of several variables such as the following:

Heuristic Theory
- Representativeness
- Overconfidence
- Anchoring
- Gambler's fallacy
- Availability bias
- Shot Cut Mental

Prospect Theory
- Loss aversion
- Regret aversion
- Mental accounting

Market Factors
- Price changes
- Market information
- Past trends of stocks
- Fundamentals of underlying stocks
- Customer preference
- Over-reaction to price changes

Herding Effect
- Buying and selling decisions of other investors
- Choice of stock to the trade of others
- The volume of stocks to the trade of others
- Speed of herding
- Following the group

Source: Waweru et al., 2008 [33].

Investment Decision-Making Behavior (Y), is the process of selecting the best alternative from several alternatives available under the influence of complex situations, measured through indicators: investment motives; offer; the expected rate of return.

3.2 Research Population and Samples

The population of this research is students in the province of Bali who invest in investment galleries on campuses. The sample is determined by the nonprobability method with a convenience sampling technique. The number of samples taken is a minimum of 180 people. Convenience sampling is a sampling method that is done by selecting samples from elements of the population (people or events) whose data is easily obtained by researchers or researchers who have the freedom to choose the fastest and cheapest samples [22].

Sekaran (2006: 160) states that in multivariate research (including multiple regression analysis) the sample size should be several times the number of variables, at least 10 times or greater than the number of variables in the study[28]. As a general rule, sample sizes are recommended at a ratio of 10: 1 or 20-1 cases for each variable [8]. Because the total number of indicators in the study was 18, the number of sample parameters used was estimated at 180-360 respondents. But in this study, the number of questionnaires was distributed to as many as 200 respondents.

3.3 Data Types and Sources

The data used in this study is quantitative. Quantitative data is data on the results of respondents' answers, quantified using a 5 point Likert scale. The source of research data is primary data. Primary data is data that is directly obtained from its source, namely college student respondents who invest in shares in the Investment Gallery of an existing tertiary institution.

3.4 Data Collecting Method

The data collection method used is a survey that is collecting data by distributing questionnaires. Besides, interviews were conducted with college students to get the right answers and assess their behavior.

3.5 Data Analysis Techniques

The data analysis technique used in this study is the multiple linear regression. To determine one factor as a representative of each variable, factor analysis was performed. Variables in large numbers are grouped in some factors that have almost the same characteristics and characteristics making it easier to analyze. Grouping is done by measuring the correlation of a set of variables and then placing the variables that are highly correlated in one factor, while other variables that have relatively lower correlations are placed on other factors.

4 RESULTS AND DISCUSSION

The number of investment galleries established by the Indonesia Stock Exchange of Bali Representatives up to 2019 is 9 units in 9 universities in Bali Province, namely: Udayana University, Warmadewa University, Ganesa Educative University, Mahasaraswati University, Bali State Polytechnic, Dyana Pura University, National Education University, ITB STIKOM Bali, and STIE Triatma Mulya

4.1 Description of Respondents

Respondents were 200 college students who invested in shares. Consists of 55 percent women and 45 percent men. The average age of 21 years. The majority who answered were undergraduate students. Some respondents invested through Phillip Securitas, investing 1-3 years long

4.2 Test Research Instrument

Before being distributed, the questionnaire was tested on 33 college students who invested in stocks. The purpose of the instrument test is to find out whether the questions in the questionnaire are valid and reliable. So that the validity and reliability test is done. Testing the validity is done by calculating the correlation between the scores of each item of questions or statements with a score of the total. The analysis was carried out with the help of the SPSS program to obtain Pearson's correlation value. The coefficient value is positive and is greater than r-table, indicating that the indicator is valid. The results of the validity test are presented in Table 1

TABLE 1

RELIABILITY TEST RESULT

Variable	Instrument	*Pearson's Correlation*	Description
Heuristic Theory (X1)	X1.1	0.75	Valid
	X1.2	0.80	Valid
	X1.3	0.55	Valid
	X1.4	0.46	Valid
	X1.5	0.77	Valid
	X1.6	0.63	Valid
Prospect Theory (X2)	X2.1	0.72	Valid
	X2.2	0.66	Valid
	X2.3	0.42	Valid
	X2.4	0.38	Valid
	X2.5	0.62	Valid
Market Factors (X3)	X3.1	0.67	Valid
	X3.2	0.49	Valid
	X3.3	0.67	Valid
	X3.4	0.51	Valid
	X3.5	0.47	Valid
	X3.6	0.66	Valid
Herdings Effect (X4)	X4.1	0.43	Valid
	X4.2	0.79	Valid
	X4.3	0.88	Valid
	X4.4	0.89	Valid
	X4.5	0.91	Valid
Investment Decision-making (Y)	Y1	0.70	Valid
	Y2	0.85	Valid
	Y3	0.67	Valid

Based on the information in Table 1, all question items are declared valid because the Pearson correlation value is greater than r-table = 0.34 (n = 33 and a significance level of 5 percent) and is positive. Variables are said to be reliable if the value of Cronbach's alpha> r- table value. Table 2 presents the results of the reliability test

TABLE 2

RELIABILITY-TEST RESULTS

No	Variable	*Cronbach's Alpha*	Description
1	*Heuristic Theory*	0.735	Reliable
2	*Prospect Theory*	0.482	Reliable
3	*Market Factors*	0.591	Reliable
4	*Herdings Effect*	0.856	Reliable
5	Investment Decision-making	0.571	Reliable

Source: Data analyzed, 2019

Based on Table 2, it shows that the Cronbach's Alpha value of the study variable is greater than 0.34 (r-table value, at a significance level of 5 percent). Based on these values it can be concluded that the questionnaire can be trusted as a research data collection tool.

4.3 Research Variables Description

Descriptive statistical test results are presented in Table 3. The number of respondents tested was 200 people. Descriptive statistical testing aims to determine the minimum, maximum, average and standard deviation of each research variable.

TABLE 3

DESCRIPTION OF RESEARCH VARIABLE

Variable	N	Minimum	Maximum	Mean	Standard-deviation
1. Heuristic (X1)	200	2.00	5.00	3.9975	0.37751
2. Prospect (X2)	200	2.40	5.00	3.9040	0.77679
3. Market Factor (X3)	200	2.00	5.00	4.1800	0.59011
4. Herdings Effect (X4)	200	1.60	5.00	3.7280	0.54396
5. Investment Decision-making (Y)	200	2.33	5.00	3.8400	0.59022

Source: Data analyzed, 2019

4.4 Factor Analysis Test Results

Factor analysis is a statistical analysis that aims to identify, classify, and summarize the factors that are the dimensions of a variable, definition and a certain phenomenon. Another function is to summarize the variables to be smaller in number. Factor analysis in this study aims to summarize the variables which will later be a proxy or heuristic, prospect, market, and herdings effect variables. The stages of factor analysis are presented below.

1) Factor Analysis for Heuristic Behavior Factors

Factor analysis for heuristic variables aims to determine the proxy for heuristic behavior factors. The factors tested are representativeness, overconfidence, anchoring, gambler's fallacy, availability bias dan shot cut mental.

Stage 1 Testing

Kaiser Meyer Olkin (KMO) Test

The Kaiser Meyer Olkin (KMO) test was used to determine the adequacy of the sample. Factor analysis is considered feasible if the amount of KMO has a minimum value of 0.5. KMO test results showed that the KMO measure of sampling adequacy (MSA) of 0.69> 0.5 and the value of Bartlett's Test of Sphericity (Sig.) 0,000 <0.05. These results indicate that the sample is sufficient to carry out a factor analysis.

Measuring of Sampling Adequacy

The feasibility of the factor test model for heuristic factor variables can be seen from the value of the Measuring of Sampling Adequacy (MSA). MSA values obtained from six heuristic behavior factors are presented in Table 4

TABLE 4

MSA VALUE OF THE HEURISTIC FACTOR

Heuristic Factors	MSA Value	Description
1. Representativeness (X1.1)	0.611	Valid
2. Overconfidence (X1.2)	0.740	Valid
3. Anchoring (X1.3)	0.489	InValid
4. Gambler' fallacy (X1.4)	0.682	Valid
5. Availability bias (X1.5)	0.757	Valid
6. Shot Cut Mental (X1.6)	0.756	Valid

Source: Data analyzed, 2019

Based on Table 4 shows that the anchoring factor MSA value is 0.489 <0.5, which means the variable is invalid because it has an MSA value of less than 0.5.

Stage 2 Testing

(1) Kaiser Meyer Olkin Test (KMO)

The Kaiser Meyer Olkin (KMO) test was used to determine the adequacy of the sample. Factor analysis is considered feasible if the amount of KMO has a minimum value of 0.5. KMO test results show that the KMO measure of sampling adequacy (MSA) is 0.742> 0.5 and the value of Bartlett's Test of Sphericity (Sig.) Is 0,000 <0.05. These results indicate that the sample is sufficient to carry out a factor analysis

(2) Measuring of Sampling Adequacy

The feasibility of the factor test model for heuristic factor variables can be seen from the value of the Measuring of Sampling Adequacy (MSA). MSA values obtained from five heuristic behavioral factors are presented in Table 5

TABLE 5

MSA VALUE OF THE HEURISTIC FACTOR

Heuristic Factor	MSA-Value	Description
1. Representativeness (X1.1)	0.754	Valid
2. Overconfidence (X1.2)	0.736	Valid
3. Gambler' fallacy (X1.4)	0.731	Valid
4. Availability bias (X1.5)	0.747	Valid
5. Shot Cut Mental (X1.6)	0.750	Valid

Source: Data analyzed, 2019

Table 5 shows that there are no variables that have an MSA value <0.5. Then the factor analysis in this study can proceed because it meets the requirements.

(3) Factor Grouping

The next step is to determine whether heuristic factor indicators can be grouped into one or several factors. The goal is how much the factor formed will be able to explain the heuristic variable. The results of the commonalities test are presented in Table 6

TABLE 6

COMMUNALITIES TEST RESULTS

Factor	*Initial*	*Extraction*
1. Representativeness (X1.1)	1.000	0.117
2. Overconfidence (X1.2)	1.000	0.533
3. Gambler' fallacy (X1.4)	1.000	0.568
4. Availability bias (X1.5)	1.000	0.623
5. Shot Cut Mental (X1.6)	1.000	0.521

Source: Data analyzed, 2019

Table 6 shows that the factors were able to explain the representativeness variable of 11.7 percent, overconfidence of 53.3 percent, gambler's fallacy of 56.8 percent, availability bias 62.3 percent and mental shot cut 52.1 percent.

(4) Possible Factors Formed

To determine how many factors that might be formed can be seen in Table 7

TABLE 7

TOTAL VARIANCED EXPLAINED

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.362	47.232	47.232	2.362	47.232	47.232
2	0.972	19.440	66.672			
3	0.705	14.099	80.771			
4	0.507	10.139	90.910			
5	0.455	9.090	100.000			

Source: Data analyzed, 2019

Table 7 shows only one factor was formed because one eigenvalue number factor was above 1, but with two factors the eigenvalue number was below 1. Variance factor 1 was 47.232 percent, so this factor could explain 47.232 percent of the variations of the five variables analyzed. The loading factor showing the correlation of one variable with the formed factor is presented in Table 8

TABLE 8

COMPONENT MATRIX TEST RESULTS

Factor	*Component*
1. Representativeness (X1.1)	0.342
2. Overconfidence (X1.2)	0.730
3. Gambler' fallacy (X1.4)	0.754
4. Availability bias (X1.5)	0.789
5. Shot Cut Mental (X1.6)	0.722

Source: Data analyzed, 2019

Table 8 shows that representativeness correlates with the factors formed by 0.34 percent. While the availability bias variable has the greatest correlation value, which is 0.789.

2) Factor Analysis for Prospect Behavior Factors

(1) Kaiser Meyer Olkin Test (KMO)

The KMO test results showed that the KMO measure of sampling adequacy (MSA) was 0.653> 0.5 and Bartlett's Test of Sphericity (Sig.) Value was 0,000 <0.05. These results indicate that the sample is sufficient to carry out a factor analysis.

(2) Measuring of Sampling Adequacy

The feasibility of the factor test model for prospect factor variables can be seen from the measuring value of Sampling Adequacy (MSA). MSA values obtained from five prospect behavior factors are presented in Table 9

TABLE 9

MSA VALUE OF PROPECT FACTOR

Prospect Factor	*MSA Value*	Description
1. Loss Aversion (X2.1)	0.576	Valid
2. Loss Aversion (X2.2)	0.724	Valid
3. Regret aversion (X2.3)	0.656	Valid
4. Mental Accounting (X2.4)	0.685	Valid
5. Mental Accounting (X2.5)	0.541	Valid

Source: Data analyzed, 2019

Based on Table 9, it can be seen that all variables have an MSA value <0.5. Then the factor analysis in this study can proceed because it meets the requirements.

(3) Factor Grouping

The next step is to determine whether prospect factor indicators can be grouped into one or several factors. The goal is how much the factor that will be formed can explain the prospect variable. The results of the commonalities test are presented in Table 10

TABLE 10

Factor	Initial	Extraction
1. Loss Aversion (X2.1)	1.000	0.833
2. Loss Aversion (X2.2)	1.000	0,833
3. Regret aversion (X2.3)	1.000	0.906
4. Mental Accounting (X2.4)	1.000	0.865
5. Mental Accounting (X2.5)	1.000	0.808

Source: Data analyzed, 2019

COMMUNALITIES TEST RESULTS

Table 10 shows that the factor can explain the Loss Loss variable of 83.3 percent, Regression aversion 90.6 percent, and Mental Accounting 86.5 percent.

(4) Possible Factors Formed

To determine how many factors that might be formed can be seen in Table 11.

TABLE 11

TOTAL VARIANCE EXPLAINED

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.746	54.915	54.915	2.746	54.915	54.915
2	1.500	29.992	84.907	1.500	29.992	84.907
3	0.411	8.215	93.121			
4	0.215	4.294	97.415			
5	0.129	2.585	100.000			

Table 11 shows there are two factors formed, because one eigenvalue number factor is above 1, with two eigenvalue number factors still above 1, but with three eigenvalue number factors already below 1. Variance factor 1 is 54.915 percent and factor 2 is 29.992, so each of these factors can explain the five variables analyzed.

TABLE 12

	Component Matrix		Rotatted Component Matrix	
	1	2	1	2
1. Loss Aversion (X2.1)	0.621	0.668	0.272	0.871
2. Loss Aversion (X2.2)	0.913	-0.008	0.827	0.387
3. Regret aversion (X2.3)	0.898	-0.317	0.946	0.101
4. Mental Accounting (X2.4)	0.788	-0.494	0.924	-0.106
5. Mental Accounting (X2.5)	0.316	0.842	-0.078	0.895

COMPONENT MATRIX

The loading factor shows the correlation between a variable with factor 1 or factor 2 that is formed. The rotation process clarifies the entry of a variable into one of the factors. Loss Aversion (X2.1) correlates with a factor of 1 which is formed at 0.621 and the correlation variable Loss Aversion (X2.1) with a factor of 2 is 0.668. Thus the Loss Aversion variable (X2.1) can be included as a component of factor 2. So that the variables included in the factor 1 component are Loss Aversion (X2.2), Regression aversion (X2.3), and Mental Accounting (X2.4) and the variables included in the factor 2 component are Loss Aversion (X2.1) and Mental Accounting (X2.5). The researcher uses factor 1 as the result of factor X2 variable analysis because factor 1 has a higher percentage value than factor 2 in explaining the variation of the five variables analyzed in factor X2 variable analysis (54,915> and 29.992 percent). Besides, that factor 1 has more components, by 3 components than factor 2 which only has 2 components.

3) Factor Analysis for Market Behavior Factors

Stage 1 Testing

1) Kaiser Meyer Olkin (KMO) Testing

KMO test results show that the KMO measure of adequacy (MSA) value is 0.803> 0.5 and the value of Bartlett's Test of Sphericity (Sig.) is 0,000 <0.05. These results indicate that the sample is sufficient to conduct factor analysis.

2) Measuring of Sampling Adequacy

The feasibility of the factor test model for Market Behavior factor variables can be seen from the Measuring of Sampling Adequacy (MSA) value. MSA values obtained from six heuristic behavior factors are presented in Table.13

TABLE 13

MSA VALUE OF MARKET BEHAVIOR FACTOR

Market Factors	MSA Value	Description
1. Price changes (X3.1)	0.887	Valid
2. Market Information (X3.2)	0.912	Valid
3. Past stock trends (X3.3)	0.801	Valid
4. Fundamental Factors (X3.4)	0.731	Valid
5. Customer Preferences (X3.5)	0.862	Valid
6. Overreaction on price changes (X3.6)	0.537	Valid

Source: data analysis, 2019

Table 13 shows that there are no variables that have an MSA value <0.5. Then the factor analysis in this study can proceed because it meets the requirements

3) Factor Grouping

The next step is to determine whether market factors can be grouped into one or several factors. The aim is to consider the major factors needed to explain market behavior variables. The results of the communality test are presented in Table 14

TABLE 14

COMMUNALITIES RESULTS

Market Factors	Initial	Extraction
1. Price changes (X3.1)	1.000	0.688
2. Market Information (X3.2)	1.000	0.366
3. Past stock trends (X3.3)	1.000	0.816
4. Fundamental Factors (X3.4)	1.000	0.642
5. Customer Preferences (X3.5)	1.000	0.765
6. Overreaction on price changes (X3.6)	1.000	0.183

Source: Data analyzed, 2019

Table 14 shows that the factors were able to explain the Variable Price Change of 68.8 percent, Market Information 36.6 percent, past stock trends 81.6 percent, Fundamental Factors 64.2 percent, Customer Preferences 76.5 percent, and Overreaction for 18.3 percent price changes.

4) Possible Factors Formed

To determine how many factors that might be formed can be seen in Table 15.

TABLE 15

TOTAL VARIANCE EXPLAINED

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.460	57.672	57.672	3.460	57.672	57.672
2	0.987	16.443	74.115			
3	0.725	12.090	86.205			
4	0.360	5.999	92.205			
5	0.273	4.550	96.755			
6	0.195	3.245	100.000			

Source: Data analyzed, 2019

In Table 15 only one factor was formed because one eigenvalue number factor was above 1, but with two factors the eigenvalue number was below 1. Variance factor 1 was 57.672 percent, so this factor could explain 57.672 percent of the variation of the six variables analyzed. The loading factor showing the correlation of one variable with the formed factor is presented in Table 16

TABLE 16

COMPONENT MATRIX TEST RESULT

Factor	*Component*
1. Price changes (X3.1)	0.830
2. Market Information (X3.2)	0.605
3. Past stock trends (X3.3)	0.904
4. Fundamental Factors (X3.4)	0.801
5. Customer Preferences (X3.5)	0.875
6. Overreaction on price changes (X3.6)	0.427

Source: Data analyzed, 2019

Table 16 shows that the price change correlates with the factor formed by 83.0 percent. While the past stock trend variable has the greatest correlation value, which is 90.4 percent.

5) Factor Analysis for Herding Effect Behavior Factors

Stage 1 Testing

(1) Kaiser Meyer Olkin (KMO) Test

The Kaiser Meyer Olkin (KMO) test was used to determine the adequacy of the sample. Factor analysis is considered feasible if the amount of KMO has a minimum value of 0.5. The KMO test results showed that the KMO measure of

adequacy (MSA) was 0.56> 0.5 and Bartlett's Test of Sphericity (Sig.) 0,000 <0.05 (Appendix 4). These results indicate that the sample is sufficient to carry out a factor analysis.

(2) Measuring of Sampling Adequacy

The feasibility of the factor test model for the Herding Effect variable can be seen from the Measuring of Sampling Adequacy (MSA) value. MSA values obtained from six heuristic behavior factors are presented in Table 17.

TABLE 17

MSA VALUE OF THE HERDING EFFECT FACTOR

Herding Effect Factor	MSA value	Description
1. The decision to sell or buy another investor (X4.1)	0.470	Invalid
2. Buy shares that other investors buy (X4.2)	0.661	Valid
3. The volume of shares traded by other investors (X4.3)	0.508	Valid
4. Speed follows (X4.4)	0.587	Valid
5. Following the group (X4.5)	0.521	Valid

Source: Data analyzed, 2019

Based on Table 17, it shows that the MSA value of the deciding factor of selling or buying other investors is 0.470 <0.5, which means the variable is invalid because it has an MSA value of less than 0.5.

Stage 2 Testing

(1) Kaiser Meyer Olkin (KMO) Test

The Kaiser Meyer Olkin (KMO) test was used to determine the adequacy of the sample. Factor analysis is considered feasible if the amount of KMO has a minimum value of 0.5. The KMO test results show that the KMO measure of adequacy (MSA) is 0.573> 0.5 and the value of Bartlett's Test of Sphericity (Sig.) Is 0,000 <0.05 (Appendix 4). These results indicate that the sample is sufficient to carry out a factor analysis.

(2) Measuring of Sampling Adequacy

The feasibility of the factor test model for the Herding Effect variable can be seen from the Measuring of Sampling Adequacy (MSA) value. MSA values obtained from five heuristic behavioral factors are presented in Table 18.

TABLE 18

MSA VALUE OF THE HERDING EFFECT FACTOR

Herding Effect Factors	MSA Value	Description
1. Buy shares that other investors buy (X4.2)	0.711	Valid
2. The volume of shares traded by other investors (X4.3)	0.513	Valid
3. Speed follows (X4.4)	0.576	Valid
4. Following the group (X4.5)	0.526	Valid

Source: Data analyzed, 2019

Table 18 shows that no variable has an MSA value <0.5. Then the factor analysis in this study can proceed because it meets the requirements.

(1) Factor Grouping

The next step is to determine whether the Market Behavior factor indicator can be grouped into one or several factors. The goal is how much the factor formed will be able to explain the market behavior variable. The results of the commonalities test are presented in Table 19

Herding Effect Factors	Initial	Extraction
1. Buy shares that other investors buy (X4.2)	1.000	0.615
2. The volume of shares traded by other investors (X4.3)	1.000	0.508
3. Speed follows (X4.4)	1.000	0.800
4. Following the group (X4.5)	1.000	0.661

Source: Data analyzed, 2019

TABLE 19

COMMUNALITIES TEST RESULT

Table 19 shows that the factor can explain the variable Buying shares purchased by other investors by 61.5 percent, Volume of shares traded by other investors 50.8 percent, Speed following 80.0 percent, and Following Group 66.1 percent.

(3) Possible Factors Formed

To determine how many factors that might be formed can be seen in Table 20.

TABLE 20

TOTAL VARIANCE EXPLAINED

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.585	64.623	64.623	2.585	64.623	64.623
2	0.781	19.534	84.157			
3	0.486	12.151	96.308			
4	0.148	3.692	100.000			

Source: Data analyzed, 2019

In Table 20 only one factor was formed because one eigenvalue number factor was above 1, but with two eigenvalue factor factors below 1. Variance factor 1 was 64.662 percent, so this factor could explain 64.662 percent of the variations of the four variables analyzed. The loading factor showing the correlation of one variable with the formed factor is presented in Table 21.

TABLE 21

COMPONENT MATRIX RESULTS

Herding Effect Factors	*Component*
1. Buy shares that other investors buy (X4.2)	0.784
2. The volume of shares traded by other investors (X4.3)	0.713
3. Speed follows (X4.4)	0.894
4. Following the group (X4.5)	0.813

Source: Data analyzed, 2019

Table 21 shows that buying shares bought by other investors have a correlation with 78.4 percent of the factors formed. While the variable Speed follows has the greatest correlation value which is 89.4 percent.

4.5 Multiple Linear Regression Analysis

This study uses multiple linear regression equations to determine the effect of behavioral factors on stock investment decisions. Summary of the results of multiple linear regression analysis is presented in Table 23

TABLE 22

RECAPITULATION OF MULTIPLE LINEAR REGRESSION RESULTS

Model	Unstandardized Coefficients β	Std. Error	Standardized Coefficients Beta	t	Sig.
(Constant)	-1.162	0.063		0.000	1.000
X1	0.044	0.065	0.044	0.673	0.502
X2	0.438	0.069	0.438	6.329	0.000*
X3	0.310	0.083	0.310	3.743	0.000*
X4	-0.445	0.088	-0.445	-5.044	0.000*
R^2			0.465		
Sig.-F test			0.000		0.000

*significance at level 1%

Source: Data analyzed, 2019

1) Determination Test (R)

The coefficient of determination in this study is seen from R square. The value of R square in this study amounted to 0.465. This means that 46.5 percent of the variation in Y changes can be explained by variables X1, X2, X3, and X4. While the remaining 53.5 percent of the Y variable is influenced by other variables outside the regression model used.

2) F-Test

The model feasibility test (Test F) aims to test whether the model used in this study is feasible or not to be used as an analysis tool in testing the effect of independent variables on the dependent variable. The results of the feasibility test of the model showed that the p-value (Sig. F) of 0,000 was smaller than the value of α = 0.05 (Table 4.23). This shows that the equation model in this study is feasible to use.

3) Research Hypothesis Test Results

The analysis showed that the heuristic behavior (X1) did not affect investment decisions, with a value of t = 0.675 with a significance level of 0.502> 0.05, until hypothesis 1 was rejected. Behavior towards prospects (X2) has a significant positive effect on investment decisions, with a value of t = 6.329 with a significance level of 0.000 <0.05, thus H2 is accepted. Market Behavior (X3) has a positive effect on investment decisions, with a value of t = 3.743 with a significance level of 0.000. Herdings' effect has a negative effect on investment decisions with a value of t = 5,044 with a significance level of 0,000.

4.6 Effects of Heuristic Behavior on Stock Investment Decisions

Hypothesis 1 (H1) states that heuristic behavior factors influence student investment decisions. The analysis showed that heuristics did not affect stock investment decisions by students. The results showed that the heuristic behavior did not affect stock investment decision making by students in the Indonesian capital market. This result is not in line with the statement of Quershi et al (2012) [21], which states that good insight and understanding are needed to make investment decisions. This theory is strengthened by the results of research found by Quershi [21] that heuristics have a significant influence on investment decision making investment managers (funding) and retail investors in Pakistan and the results of research conducted by Gozalie & Anastasia [6] that heuristics behavior which is described by the behavior of representativeness, anchoring, gambler's fallacy, and availability bias has a significant effect on residential property investment decisions in Indonesia [19],[20]. The results of this study prove that stock investors in Indonesia do not have sufficient insight to invest, especially in the Indonesian Capital Market. Based on the profile of respondents with a span of 1 to 3 years can cause the results of this study are not in line with the theory. Gozalie & Anastasia which states that heuristics is decision-making based on information held [6]. Thus, it can be stated that student stock investors who are respondents do not have enough information, but have decided to invest.

4.7 Effect of Prospect Behavior on Stock Investment Decisions

Hypothesis 2 (H2) states that the prospect's behavior factor (future opportunities) influences the stock investment decisions by students. The analysis shows that the prospect factor influences the stock investment decisions by students. Investment objectives are expressed both in return and risk. Thus risk preferences need to be considered in the investment process. The amount of funds to be invested affects the expected return and the risk borne. Stock decision making depends on the attitude of risk acceptance and risk preferences. Investors who have risk seeker preferences tend to easily accept large risks in decision making but must be balanced with the expectation of a large return. This happens because investors as proxies of investors want a large compensation when they will suffer losses in the future. This applies vice versa for investors who have a risk-averse or risk-neutral preference that is making choices with low risk or high certainty of yield. The effect of risk perception on investment intentions in this study proved significant

4.8 Effect of Market Behavior on Stock Investment Decisions

Hypothesis 3 (H3) states that market behavior factors influence stock investment decisions by students. The analysis shows that market behavior factors influence investment decisions. This means that student investors still consider market information factors in making investment decisions. Investment is essentially the placement of several funds at this time in the hope that it can generate profits in the future [34]. So in making investment decisions, investors need information that is an important factor as a basis for determining investment choices. From the available information, then form a decision-making model in the form of investment valuation criteria to enable investors to choose the best investment among the available investment alternatives. Investors have a response to financial statement information but have limited cognitive abilities in interpreting the information they receive. So that investors act in a naive, irrational, and unsophisticated manner [19],[20]

4.9 Effect of the Herding effect on Stock Investment Decisions

Hypothesis 4 (H4) states that the herdings effect factor influences investment decisions. The results of the analysis show that the herdings effect negatively affects stock investment decisions by students. Herding behavior is irrational investor behavior because investors base their investment decisions not by looking at the economic fundamentals of a risky asset, but by seeing the actions of other investors under the same circumstances, as well as following market consensus. This research can prove that young investors (students) in the province of Bali are affected by deviations in herding investment behavior. Herding behavior is a common mistake that the decision-making is taken from the majority decision so that investors only rely on collective information from other investors than personal information [31],[32]. From the decisions of others, student investors do not react quickly to changes in other people's decisions in investing because they prefer other people's investment choices rather than their desires. The most striking difference from investors who are affected by herding behavior is on the basis that affects investment decision making. While investors who are affected by herding behavior are emotional biases where investors do not care about the companies they invest but they only follow the decisions of the majority of other investors.

5 CONCLUSION AND SUGESSTION

The results of the analysis show that the heuristic behavioral factor carried out by students investing in the Availability heuristic. The shaping factor for prospect behavior is mental accounting. What formed the market behavior factor was past stock price trends. The forming factor of herdings behavior is the speed with which other investors reactBased on the results of heuristic multiple linear regression analysis, no effect on stock investment decisions by students. This is likely due to students who invest in shares do not have much experience, so they cannot use their knowledge to make investment decisions quickly. Prospect factors influence investment decisions. This is caused by students as a young generation who always want to get big profits and are ready to face risks. Market behavior factors influence investment decisions. Students certainly can assess the company's fundamentals and analyze the company's stock price to make decisions. Herding has a negative effect on investment decisions. This means that student investors do not react quickly to changes in the decisions of others in investing because they prefer other people's investment choices rather than their desiresThis study has limitations only examining individual behavior factors for stock investment decisions. The next researcher is expected to develop research to examine investment decisions in the real sector. Based on the R2 test results of 46.5 percent, it is open for further researchers to add research variables with non-behavioral variables, such as socio-economic and demographic factors such as age, occupation. The environment in which an investor's live and financial literacy. For students, it is expected to use the investment gallery more often to discuss stock issues, so that the investment pattern is more rational.

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