Investment Decisions of Millennial Investors: Viewed From Herding Behavior, Investment Knowledge, Expected Return and Technological Advances

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Abstract: *The economies of South-east Asia get better progress amd more integrated. Indonesia is one of the ASEAN countries where economic development and growth in Indonesia is currently growing rapidly, one of which comes from investment in the capital market. Investment is currently increasing through domestic investors who are dominated by millennial investors with considering several factors in making investment decisions. Investors need information, skills and understanding of investment in making decisions. This study aims to determine the effects of herding behavior, investment knowledge, expected return and technological advances on millennial investor investment decisions. This research is conducted using quantitative methods. Sample in this study of 120 respondents use accidental sampling to collect responses. The collected data are tested with linear regression analysis. The results of this study are investment knowledge, expected return and technological advances affect investment decisions, while herding behavior do not affect investment decisions.*

Keywords: expected return, herding behavior, investment decisions, investment knowledge, technological advances

I.   INTRODUCTION

Today's economic growth has a huge impact on the development of a country's life. The South-east Asia Countrie (ASEAN), which comprises of Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam, has been identified as one of the fastest developing regions in the world, and with theestablishment of the ASEAN Economic Community (AEC), a regional economic integration has been strengthen and brought interests from foreign investors (Junlakarn and Wangjiraniran, 2016). Countries in ASEAN are dominated with developing countries therefore many countries are competing to improve themselves and attract investors to invest their capital.ASEAN has been steadily advancing economic integration while adapting to rapid changes in the world economic environment and despite various difficulties and centrifugal forces; it has become the most important economic integration in the world (Ishikawa, 2021).Investment is an important contributor to the economic growth of ASEAN countries from both domestic and foreign investors.The theory of savings and investment reaches the conclusion that economic growth is determined high savings and investment (Kurniawan, 2016). If savings and investment are low, it will affect the country's economic growth will also decline.

Indonesia is one of many developing countries that isalso competing for investment not only trying to attract foreign investors. Indonesia is also trying to improve the economy of domestic investors. Data available at the Central Statistics Agency(BPS) of Indonesia shows the economic growth in 2022 grew 5.44% from 2021. Followed with increasing public awareness in investing can have a good impact on investment activity in Indonesia that it has increased. PT KustodianSentralEfek Indonesia (KSEI) as institution in capital market and investment the provide securities transaction services in Indonesia. KSEI noted that the number of stock investors in the Indonesian capital market in 2022 the number of Single Investor Identification (SID) reached 4 million people with 99.79% being local individual investors.The growing capital market activities and the increasing desire of the business community to find alternative sources of business financing other than banks (Himmah*et al.*, 2020). Investor data in KSEI shows that investors aged less than 30 years reach 59.72% and 21.92% of investors aged 31-40 years. Therefore it can be seen that the number of investors who dominate is millennial investors.

Surakarta is one of the cities in Central Java Province, Indonesia. Surakarta is the birthplace of the President of Indonesia, Mr. JokoWidodo. Mr. Are the first started his career as the Regent of Surakarta City. Although it is only a city at the level of a regency, Surakarta City is included in the map of creative industry centers in Java, although it is not at the first level like Bandung and Yogyakarta (Paningrum, 2021). Surakarta City is one of the cities that contributes investment to Indonesia with the number of investors reaching 20,954. According to the RMOL JATENG news agency, the number of new local investors is 2.6% of the total population in Indonesia and 65% of the total 74,885 millennial investors in Indonesia in 2021.Therefore, this study examines the investment decisions of investors in Surakarta City.

Investor investment decision making is influenced from several factors that are considered in investing. In making decisions, investors are often influenced with individual psychological factors so that they are less rational in their decisions. Lack of understanding about investment millennial investors are easily influenced with other investors. Therefore, understanding finance is also one of the most important things for each individual, that each individual, especially students or potential investors as a young generation, can place their finances according to their needs (Sitinjak*et al*., 2021). In addition, return is also one of the factors that need to be considered in decision making. In maximizing investor wealth, investors need to know the level of return in the capital market because this is a guideline for their decision in choosing which capital market is optimal for producing the desired investment return.

In line with the development of information technology and the internet, capital market transactions are now increasingly favored with millennial investors with the online trading facilities provided from securities companies or brokers (Yusuf, 2019). Investors can find information that can be used for decision making in making investments through technology that is currently increasingly sophisticated therefore that it is more effective and efficient. Based on the background described above, research about the influence of herding behavior, investment knowledge, expected return and technological advaceson investment decisions are interesting field to explore.

II.   LITERATURE

2.1   Investment Decision

Investment decisions are various considerations that are determined in making decisions when finding various investment options (Agusta and Yanti, 2022). Investment decisions are determined based on logic, information and calculations related to investment regarding the benefits that will be obtained.For a good investment decision, the investor needs to understand completely and correctly the possible opportunities and these decisions should not be made in a rush (Virlics, 2013). Investors in making investment decisions are based on two processes, namely rational and irrational. Rational investment decision making means making decisions based on consideration of the information that has been obtained. Irrational investor behavior is subjective, which means that in making investment decisions, investors always depend on financial conditions, investors' perceptions of risk, and investors' ability to analyze their investment techniques (Anggini*et al*., 2020).

2.2   Behavioral Finance Theory

Behavioral Finance theory interprets that investors' psychological factors have an influence on financial decision making, one of which is related to investment (Agusta and Yanti, 2022). Behavioral finance tries to explain and improve understanding of investors' reasoning patterns, including the emotional processes involved and the extent to which they influence the decision-making process (Ricciardi and Simon, 2000).The nature and emotions within a person can influence investment decision-making.This emotion can be in the form of fear and anxiety if the decision taken is wrong which will result in decreased profits or even losses.

2.3   Expectancy Theory

Motivation is a mental process that inspires and empowers individuals to engage in goal-oriented actions (Shang *et al*., 2023). Expectancy theory, also known as the expectancy theory of motivation, which was proposed by Victor Vroom in 1964, emphasizes the outcomes factor, rather than the needs proposed by Maslow and Herzberg (Sari, 2021).Therefore, a person acts with the expectation that the action taken will get a certain result that the person wants.

2.4   Herding Behavior

Herding behavior means that investors imitate other people's investment decisions without reference to fundamentals (Hwang and Salmon, 2004). An investor lacks confidence in the decisions taken therefore that investors follow the decisions of others who think other investors are more expert in terms of investing.The higher the level of herding behavior, the higher the desire to invest (Fathmaningrum and Utami, 2022). This statement is supported in research conducted from Khalisa*et al*., (2020) with the results of herd behavior having an influence on investment decisions.

H_1 :Herding behavior affects the investment decisions of millennial investors.

2.5   Investment Knowledge

Investment knowledge is information about how to use some of the funds or resources owned to get benefits in the future (Darmawan*et al*., 2019). Investors with higher level of subjective knowledge may find it easier to process financial information regarding mutual funds (Wang, 2009). A deep level of understanding is very important for investors because it will affect one's thinking in making the right decisions. In previous research from Himmah*et al*., (2020) show the results of investment knowledge having a significant effect on investment decisions. These results are in line with research conducted from Nurfadilah*et al*., (2022) with the same results.

H_2 :Investmentknowledge affects the investment decisions of millennial investors.

2.6   Expected Return

Return is the level of profit from the placement of funds. This profit can be obtained with companies, groups or individuals from investment activities that have been carried out. One of the objects that may be the investment target of investors is of course profit, which in this case can mean gain or return (Tandio and Widanaputra, 2016). Investor's expectations are not meaningless noise but are rather reflections of widely shared beliefs about future market returns, which tend to be extrapolative in nature (Greenwood andShleifer, 2014).This is evidenced by research conducted from Romadona and Setiyono (2021) and Pratama*et al*., (2022) which obtained the results that there is a positive influence between expected return on stock investment decisions.

H_3 :Expected return affects the investment decisions of millennial investors.

2.7   Technological Advances

Technological advances is a situation where there is a change in a technology with various new information and innovations that require people to adjust to these developments in order to provide many conveniences in human life (Nurfadilah*et al*., 2022). Technological innovation can also provide great benefits to innovative businesses, consumers and society as a whole (Bujari and Martinez, 2016). Investors can take advantage of technology with accessing, collecting and analyzing the information needed for consideration in investing through information technology. The easier it is to find investment information, the level of investment decisions will also increase. In research conducted by Fathmaningrum and Utami (2022) and Nurfadilah*et al*., (2022) that technological advances has a positive and significant effect on investment decisions.

H_4 :Technological advances affects the investment decisions of millennial investors.

III.   INDENTATIONS AND EQUATIONS

3.1   Population and Sample

The population in this study are millennial investors in Surakarta City, Central Java, Indonesia. The sample in this study is a millennial generation domiciled in Surakarta City who invests in capital market with a total of 120 respondents. The sampling technique used in this research is non probability sampling with distributing questionnaires in the form of Google Forms on social media such as WhatsApp, Telegram, and Instagram.

3.2   Measurement of Operational Variables

In this study, variable measurements used a Likert scale. With a Likert scale, the variables to be measured will be described into variable indicators which can be questions. The answers of the respondents in each indicator have gradations from very positive to very negative, namely 1 means strongly disagree (STS) to 5 means strongly agree (SS).

Table 1. Measurements Variable operational

Variable	Code	Indicator
Herding Behavior (HB)	HB.1	Investment decisions are influenced by others
	HB.2	Investment decisions follow on the decisions of others
	HB.3	React quickly to changes in the decisions of other investors
	HB.4	Prefer to buy shares if the shares are in demand in the first place
	HB.5	If the volume of shares is higher in the market in the last month, it will increase the number of market holdings of shares
Investment Knowledge (PI)	PI.1	Knowing investment objectives

	PI.2	Knowing about investment risks
	PI.3	Knowing about investment returns
	PI.4	Knowing capital market investment instruments and general knowledge about other capital market investments
Expected Return (ER)	ER.1	Attractive returns
	ER.2	Risk and return
	ER.3	Profit considerations
	ER.4	Dividends and capital gains
Technological Advances (KT)	KT.1	Using technology to get information quickly and accurately
	KT.2	Various types of mass media provide more information
	KT.3	Can help transact at any time
	KT.4	Online tradingapplications provide convenience
	KT.5	Facilitate consumer and company communication
	KT.6	Fast and accurate service
Investment Decision (KI)	KI.1	Have knowledge about investment
	KI.2	Feel safe to invest in the capital market because it is under the supervision of the Capital Market and Financial Institutions Supervisory Agency (Bapepam-LK)
	KI.3	Feel safe investing in the capital market because there is a capital market implementing regulator,
	KI.4	Feel safe investing in the capital market because it is protected by law

3.3 Data Analysis Techniques

The analysis technique used in this research is multiple linear regression analysis technique. This analysis is used to test the hypothesis used in this study. This analysis is carried out with the following formula:

$$KI = a + b1\ HB + b2\ PI + b3\ ER + b4\ KT + e$$

This study uses data quality tests in the form of validity tests and reliability tests. Classical assumption tests are carried out in the form of normality tests, multicollinearity tests and heteroscedasticity tests and then hypothesis testing is carried out.

IV.   DATA ANALYSIS AND DISCUSSION

4.1 Descriptive Statistical Analysis

The following are the results of the research data that has been processed:

Table 2. Respondents by Age and Gender

Gender	Total	Percent	Age	Total	Percent
Men	37	30.8%	< 25 years	115	95.8%
Female	83	69.2%	> 25 years	5	4.2%
Total	120	100%	Total	120	100%

Source: Data processing, 2023

The total number of respondents obtained in this study was 120 respondents.Based on the table, it can be seen that there are 37 male respondents and 83 female respondents with 95.8% of respondents aged under 25 years and 4.2% of respondents aged over 25 years.

1. Validity and Reliability Test Result

Questions from the questionnaire that have been tested using validity and reliability testing obtained the following results:

Table 3. Validity Test Results

Variables	Number of Items	r value	Sig.	Results
Herding Behavior (HB)	5	0.521 – 0.722*	0.05	All items are valid
Investment Knowledge (PI)	4	0.718 – 0.845*	0.05	All items are valid
Expected Return (ER)	4	0.721 – 0.815*	0.05	All items are valid

Technological Advances (KT)	6	0.673 – 0.763*	0.05	All items are valid
Investment Decision (KI)	4	0.793 – 0.846*	0.05	All items are valid

Source: Data processing, 2023

* significance at 0.05

The validity test is carried out using the Pearson Bivariate correlation testing technique to correlate each question item score with the total items of each variable. The results obtained from this test that each item on the Herding Behavior (HB), Investment Knowledge (PI), Expected Return (ER), Technological Advances (KT) and Investment Decisions (KI) variables are all said to be valid which can be proven at a significance value above 5% or 0.05. In table 4 there are results of reliability testing used to measure the consistency of the questionnaire over time. Based on the questionnaire test, the results show that all variables have a Cronbach's Alpha coefficient value greater than 0.6 which meansthat the questionnaire is declared reliable.

Table 4. Reliability Test Results

Variable	Cronbach's Alpha	Number of Items	Result
Herding Behavior (HB)	0.690	5	Reliable
Investment Knowledge (PI)	0.787	4	Reliable
Expected Return (ER)	0.767	4	Reliable
Technological Advances (KT)	0.812	6	Reliable
Investment Decision (KI)	0.822	4	Reliable

Source: Data process, 2023

2. **Classical Assumption Test**

The classical assumption test is a statistical test that needs to be done before testing multiple linear regression analysis. Based on the results of the normality test with the Kolmogorov-Smirnov approach, it shows that the Asymp.Sig (2-tailed)value is 0.073> 0.05, therefore it can be concluded that the data used is normally distributed. The multicollinearity test results of the regression model show a tolerance value between 0.485 and 0.867 therefore that the value is not less than the accuracy value of 0.1 and the VIF value ranges between 1.154 and 2.063 that it is not more than the accuracy value of 10, that means the data in the test is not affected withmulticollinearity and the regression model is considered good enough. The results of the heteroscedasticity test with the Glejser test obtained the sig value of each independent variable has a value greater than the level of significant0.05 therefore it can be concluded that the model is not exposed to heteroscedasticity. The results of the heteroscedasticity test can be seen in the following table 5:

Table 5.Heteroscedasticity Test Results

Variables	Significance	Results
Herding Behavior (HB)	0.197	No heterosedasticity
Investment Knowledge (PI)	0.758	No heterosedasticity
Expected Return (ER)	0.267	No heterosedasticity
Technological Advances (KT)	0.052	No heterosedasticity
Investment Decision (KI)	0.239	No heterosedasticity

Source: Data processing, 2023

3. **Hypothesis Test**

The regression equation in this study shows the calculated F value of 36.618 with a sig value of 0.000 where the value is smaller than the level of significant 5%, that means that the model test in this study is feasible to use. The magnitude of the coefficient of determination can be seen in the Adjusted R Square, which is 0.545 or 54.5%, which means that the dependent variable, namely Investment Decisions, can be explained by the five independent variables, namely Herding Behavior, Investment Knowledge, Expected Return, and Technological Advances, while the remaining 45.5% of Investment Decisions are explained by other variables outside this study. Based on the results of multiple regression processing, the following multiple regression equation is obtained:

$$KI = 0.076 + 0.038HB + 0.229\ PI + 0.560ER + 0.101KT + e$$

The results of partial hypothesis testing can be seen in the following table:

Table 6.Hypothesis Test Results

Variable	Regression Coefficient	Sig.	Information
Herding Behavior (HB)	0.038	0.423	H_1 is rejected
Investment Knowledge (PI)	0.229	0.020	H_2 accepted
Expected Return (ER)	0.560	0.000	H_3 accepted
Technological Advances (KT)	0.101	0.082	H_4 accepted

Source: Data processing, 2023

* significance at 0.10

Based on table 6, the herding behavior variable do not affecton investment decision making therefore that H_1 is rejected. This can be seen in the significance level, which is 0.423, which is greater than the predetermined significance level of 10% or 0.10. The results of this study do not support behavioral finance theory regarding investment decision making can be influenced with psychological factors. These results are in line with research conducted withFatmaningrum and Utami (2022) which found that herding behavior does not affect investment decisions.Based on the majority of respondents' answers that respondents seek information in advance about stock developments that will affect the future and consider it in making investment decisions.This is because millennial investors are more careful in considering decision making with several other factors in mind.Investors who make investment decisions tend to seek information and analyze this information with carefully calculated considerations in order to achieve the desired goals therefore that they are not affected with the environment.

The results of hypothesis testing show that the investment knowledge variable affects investment decisions, that meansH_2 is accepted. It can be seen at the significance level of the investment knowledge variable of 0.020 less than the predetermined significance level of 10% or 0.10. This result is supported with research conducted fromHimmah*et al*., (2020) and research from Nurfadilah*et al*. (2022)found that investment knowledge affects investment decisions in the capital market. Investors realize the importance of knowledge and understanding in making investment decisions in order to achieve the expected goals in the future. Knowledge is useful for managing their investments, usually investors who have high investment knowledge will be interested in investing.

The statistical test results show that the expected return variable affects investment decision making, which means that $H_3$is accepted. This can be seen with looking at the significance value of 0.000. This value is less than the predetermined significance level of 10% or 0.10. The results of this study support the expectation theory where the actions a person takes with the expectation of certain desired results or returns. These results are in line with research by Romadona and Setiyono (2021) and also research by Pratama*et al*., (2022) which found that there is a significant positive effect of return expectations on investment decisions. Investors when deciding to invest definitely expect a large return on the capital deposited therefore that return is an influencing factor in decision making.With predicting the level of return investors can know the level of profit that will be obtained in the future. This is carried out with investors in order to achieve their goals in placing funds.

The results of hypothesis testing show that the technological advances variable affects investment decisions, which means that H_4 is accepted. This can be seen in the significance level, which is 0.082 less than the predetermined significance level of 10% or 0.10. These results are supported with research conducted from Nurfadilah*et al*., (2022) and research from Fathmaningrum and Utami (2022) with the result that technological advancess has a positive and significant effect on investment decisions. With technology that is increasingly sophisticated, fast and easy, it will be attractive for investors to find information used for decision making in investing in the capital market. The company also utilizes technological advances to provide space for investors to easily analyze investment information through online trading provided to enable investors to make investment decisions.

V.   CONCLUSION

Based on the results of the research, it can be concluded that herding behavior do not affectsthe investment decisions of millennial investors in Surakarta City. Respondents make investments based on information that has been

obtained and has been analyzed without being influenced by others. The investment decisions of millennial investors in Surakarta City are influenced with the investment knowledge possessed from an investor. Respondents know the importance of knowledge about investment instruments and goals in investing in making investment decisions. The level of expected return offered also affects the consideration of an investor therefore that the greater the return that will be received, the greater the investment decision making. In addition, technological advances can also affect investment decisions. Easy access to information and online trading facilities provided from the company will attract investors to make investment decisions. Governments and companies can improve services with utilizing technology in investing and setting appropriate return rates to encourage more people to invest. In addition, the government, institutions or investment communities can provide education and training for the public through various activities that may be provided to increase understanding and awareness of the importance of investing. This research focuses on millennial investors who currently dominate the number of investors in Surakarta City. Therefore, for further research, it can be examined in cities in Indonesia with a population as large as Surakarta City or other small cities in Indonesia.Future research can also increase the scope of investors to be studied and add interview techniques to support the research results to be more accurate.

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