



# Study of heuristic bias and herding financial behavior model on sharia-based investment decisions for millennial generation

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## ABSTRACT

Increasing investor interest in investing will certainly increase transaction activity in capital market, so that it will have an impact on the smooth running of company's operations. Business activities that run well and safely will increase the rate of economic growth. Relatively affordable investment capital as launched by Indonesia Stock Exchange since 2015 by holding the "Yuk Nabung Saham" campaign aimed at inviting investors to invest by buying stocks or other instruments on a regular basis at Capital Market. Throughout 2021, the growth in the number of investors has increased very significantly, especially for novice investors from millennial generation to invest in several sharia instruments. This study aims to examine heuristic bias (representativeness, overconfidence) and herding financial behavior models of sharia-based investment decisions for millennials in the West Java region. Quantitative research with a causal design was applied using a purposive sampling technique by collecting a questionnaire of 180 respondents. Meanwhile, the data analysis method uses the PLS software application. The results showed that financial variable representativeness behavior had a significant negative effect on investment decisions of millennial generation in West Java, while financial variables of overconfidence and herding behavior had a significant positive effect on investment decisions of millennial generation in the West Java region.

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## INTRODUCTION

Investment is an activity in investing in the present to gain profits in the future. Investment activity in Indonesia is always increasing, because more and more people are aware of the importance of the investment returns they get (Syifa&Nadia, 2021). Increasing investor interest in investing will certainly affect the increase in trading volume and the smooth running of the company's business activities. This will have an impact on increasing the company's revenue optimally and also

support national economic growth. Data obtained from the Indonesian Central Securities Depository (KSEI) shows that Indonesian capital market investors increased by 56.21%, namely 3,880,753 at the end of 2020 to 7,489,337 as of December 2021. 60.02% of this amount is dominated by investors with under 30 years old (KSEI, 2021).

SID demographic data, showing the number of capital market investors, including: Islamic mutual fund instruments, has increased since the existence of an online Islamic mutual fund investment platform. The growth of innovation and improvement in the capital market industry after the Covid-19 pandemic and the presence of fintech technology will make it easier for investors, especially the millennial generation, to open securities accounts digitally (Rahadi, 2021).

One of successful implementations of online sharia mutual fund investment in Indonesia is using the Seed Application. This application is owned by PT. Seed Grows together which was launched in 2019. Seed is one of the mutual fund applications in Indonesia with the fastest acceptance rate in Indonesian society. Even though Seeds was launched to the public in 2019, the number of users who have joined the application and its use in mutual fund transactions beat other competitors who have been around for a long time, such as: Bareksa, Tanamduit, Ajaib and so on (Capgemini Research Institute, 2020).

The Indonesian Capital Market Institute (TICMI) has recorded that 61.76% of 168 millennial respondents have implemented financial management with investments. This shows the high interest in investment for millennials. Meanwhile, the millennial generation who were born in the 1980s to 2000s are more proficient in using technology than previous generations because they grew up with technological advances (Budiati, 2018). Even though this generation has an interest in investing, they still tend to be aggressive. The aggressive nature of millennial investors is certainly quite risky, so they must be prepared to lose their invested funds in order to expect high returns (Paramita, 2018). In addition, the millennial generation's knowledge of investment is still low because the current generation thinks that they are still young, they still don't want to think about the future, especially those related to investment. Most of this generation are very deficient in buying important assets to support venture capital and tend to be overly confident in investing their knowledge and abilities without thinking about risks in making investment decisions (Isnaini&Fiona, 2021). Therefore, it is necessary to have a comprehensive basic understanding of investment decisions so as to gain scientific insight and behave logically. The distribution of millennial generation investors in Indonesia is quite varied and has its own characteristics. Several regions on the island of Java tend to have the second largest market share of investor distribution in Indonesia, namely 68.56%. Meanwhile, West Java Province has a total of 129,067 SID investors or 0.55% of West Java's total population of 39 million (KSEI, 2021). Data on regional distribution and the percentage of Single Investor Identification (SID) investors in West Java are in Bandung City with 55,626 SID, followed by Depok City with 25,498 SID, Bogor 14,768 SID, Cirebon 9,758 SID, Tasikmalaya 5,809 SID, Garut 4,502 SID, Sumedang 3,927 SID, Ciamis 3,589 SID, Bekasi 3,358 SID, Cimahi 2,932 SID, data as of September 2021. This indicates that public investment interest in Bandung City is the highest compared to other regions in West Java. The success of an investor in investing depends on how precisely the investor determines the investment decision in terms of the type of investment and time so that the profits will be optimal. Making investment decisions is not an easy thing because it contains risks, uncertainties and is associated with future success.

The phenomenon of heuristic theory and the herding effect among millennials greatly influences investment decisions when prices decline during the COVID-19 pandemic. Investors who express themselves both cognitively and intuitively often ignore the limits of risk taken. The behavior of many people in financial markets is usually identified with behavior that imitates other investors when an investor makes an investment decision (Luong, 2011). The herding effect occurs because there is something that allows investors to follow other investors in making decisions (Gozalie&Anastasia, 2015). Representativeness bias is a decision taken based on certain

assumptions made by investors themselves. This will have the potential to cause wrong and irrational decisions (Ramdani, 2018). Investors with representativeness bias tend to consider the past performance of a stock before investing. This indicates that representativeness bias can influence an investor's investment decisions. It is supported by research by Putri & Halmawati (S.Putri&Halmawati, 2020), (Budiman&Ervin, 2020), and (Subash, 2012) that representativeness bias has a significant influence on investment decisions. Overconfidence bias is excessive confidence in investors related to ability and understanding (Pompian, 2011). Making investment decisions with excessive confidence can cause investment decisions to become irrational (Novianggie&Asandimitra, 2019). Research conducted by Madaan & Singh states that overconfidence bias has a significant influence on investment decision making (Madaan&Singh, 2019). Meanwhile, the herding effect is a behavioral bias in imitating other investors' judgments when making investment decisions, which initially behave rationally then begin to act irrationally (Khalid, 2018). The herding effect is caused by a lack of self-confidence in one's abilities and personal experience. Investors usually react quickly to the assessment of other investors' investment decisions (Ramdani, 2018). This is supported by research (Madaan&Singh, 2019), and (Mahmood, 2020), stating that the herding effect has a significant effect on investment decisions. Based on the phenomenon of millennial generation investor behavior and the discussion in the discussion of previous research reviews, this research focuses on the main objective, namely estimating the influence of heuristic bias and herding financial behavior on sharia-based investment decisions, especially in the West Java region during the 2021 period. This research is to help investors, especially the millennial generation, to reconsider rationality in every investment decision making.

According to Nofsinger, behavioral finance is a study of cognitive and emotional effects on the process of making financial decisions which can lead to errors in the decision to invest (Nofsinger, 2016). Investors realize that there is still a person's psychological factors in providing a stimulus to his decision. According to Shefrin et.al, there are 3 estimates of behavioral finance that describe the field of finance psychologically (Shefrin, 2017), namely: (1) the assumption that financial actors continue to act wrongly in making decisions so far, known as the rules of thumb, (2) estimates that the consideration of a case involves the perception of financial actors on risk & return; (3) the assumption that there is a price bias that is formed broadly and fundamentally, as a result of which an inefficient market is formed. Behavioral finance is crucial for practitioners & market participants because it will help reduce repeated mistakes and increase alertness or remember mistakes so they don't happen again (Shefrin, 2017). In the research conducted by Rahadi and Dewi, mutual funds are an instrument for investors who have financial goals in the process of collecting savings and then investing in capital market products (Rahadi&Dewi, 2020), such as: securities and bonds. Meanwhile, the sharia-based application on the seed platform itself is one of the most popular mutual fund applications in Indonesia issued by PT Seeds Growing Together. This platform is a kind of transformation from Bibitnomic; an investment savings account acquired by Stockbit, in October 2018 and launched under the name Bibit to the public in January 2019. Bibit users are spread across various parts of Indonesia from 518 cities and provinces in Indonesia, with a demographic of more than 90% aged under 35 years (Jasmine&Jarot, 2022).

Heuristics are rules of thumb that make an investment decision in terms of uncertainty and complexity easier to implement (Syifa&Nadia, 2021). In a heuristic, decision making can be faster and more thorough when decision making focuses more on important information and ignores information that is less useful (Ratnadi, 2020). However, when the heuristic is not implemented properly, it will result in bias in decision making. Lingesiya&Kengatharan stated that there are several variables in heuristic theory, (Lingesiya&Kengatharan, 2014) including: representativeness and overconfidence. These two independent variables will be the focus of research in influencing investment decisions. Herding is an investor's behavioral tendency to follow the decisions of the

majority investors (Afriani&Halmawati, 2019). An investor with herding behavior lacks confidence in information and abilities so that he prefers to imitate the decisions of other investors in order to minimize risk. Herding behavior occurs when investors follow the crowded atmosphere of the market or follow the steps of other investors in making investment decisions. Measurement of herding refers to Luong et.al with indicators including following reviews of other investors in selected investment decisions (Luong, 2011), such as: determining the sale or purchase of stock trading volume and others.

Millennials or referred to as generation Y are a group of people born in the range of 1980 to 2000. According to the Central Securities Depository (KSEI, 2021) more than half of investors in Indonesia are dominated by millennials and Gen Z, but this number is insignificant compared to the entire population. Indonesia. Strengthened by a survey from the Indonesia Millennial Report (IDN, 2020) only 2% of Indonesian millennials, or around 8.5 million people, set aside their income to invest. Even though it is designated as the majority generation in the demographic structure in Indonesia, this generation is known for its consumptive behavior (Jasmine&Jarot, 2022). Investment decisions are policies to allocate funds or investment in the form of investments in order to obtain future profits in one or more assets (Wulandari&Iramani, 2014). Meanwhile, according to Kishori and Kumar, investment decisions are formed in order to obtain better returns in the future, either directly at the expense of current profits (Kishori&Kumar, 2016). This means that investment decisions are something that takes time to brainstorm as a result of an investor being able to reduce mistakes before investing.

Representativeness is interpreted as investors making investment decisions based on the past performance and phenomena of the company, type of management, popularity and others to generate profits. Investors who tend to be representativeness can make biased decisions such as placing too much burden on new experiences and ignoring long-term average levels (Rasheed, 2018). This indicates that representativeness bias can influence an investor's investment decisions, supported by research (S.Putri&Halmawati, 2020), and (Budiman&Ervina, 2020), that representativeness has a significant influence on investment decisions.

*H1: Representativeness influences the investment decisions of the millennial generation*

Overconfidence is defined as people who are more confident in their abilities, such as: exaggerating their skills, knowledge and strengths in several situations (Theng, 2019). This condition is a reflection of person's level of confidence in achieving or getting something. It cannot be denied that humans have high self-confidence, including in investing.

*H2: Overconfidence influences the investment decisions of the millennial generation*

Herding is a follow-up motive for investors regarding investment decisions when there is no confidence factor and a lack of mastery of knowledge regarding the instrument they wish to invest (Khalid, 2018). Herding behavior causes investors to act irrationally and react quickly to changes in other investors' decisions regardless of the risks that arise (Madaan&Singh, 2019). Herding has influence on investment decisions when the herding level is high, so the investment decisions made are increasingly irrational. These results are in line with research from (Afriani&Halmawati, 2019), (Akinkoye&Bankole, 2020), and (Madaan&Singh, 2019), that herding behavior has a significant effect on investment decisions.

*H3: Herding influences the investment decisions of the millennial generation*

## RESEARCH METHOD

This research uses a quantitative type based on primary data obtained through distributing questionnaires in the form of a Google form to users of sharia-based seed applications in carrying out investment activities. The preparation uses a Likert scale of various questions that have been prepared. The objects of this research are investors who use sharia-based seed applications aged 25–40 years who live in the West Java Region. The sampling method is convenience sampling

through online distribution. For the minimum number of samples, researchers used a ratio of indicators per number of questions in the questionnaire items or a calculation of 5:1 (Hair, 2010). Sampling was obtained with the following criteria: (a). People born in 1982-2000 (Millennial Generation), (b). People domiciled in West Java, Indonesia, (c). People who use the Seeds application in carrying out investment activities.

The technique used to determine sample size uses the calculation method from Hair; represents the population of Seed application users in the West Java region (Hair, 2010). There are 36 indicators of question items in this study, so the sample size for this study is:  $5 \times 36 = 180$  respondents. Thus, the minimum sample size of this study is 180 respondents using the Hair method. So, the total number of respondents in this study = 180 users to become respondents and by using an error tolerance of 10%. The use of a 10% margin of error with a confidence level of 90% is considered by researchers to be sufficient to represent this large population, especially since the majority of users live on the island of West Java.

While the analytical method used is Partial Least Squares (PLS). Broadly speaking, PLS testing is divided into two, namely testing the measurement model or what is called the outer model (applied to test validity and reliability) and the structural model or what is called the inner model which aims to test causality between latent variables. Before conducting PLS analysis, authors conducted a single factor Harman test to determine whether there was a common method bias problem in this study.

As for testing the validity of the data, it can be seen from the loading factor value test that has more than 0.5 or 0.6 to 0.7 which is still acceptable and can also be seen by the Average Variance Extracted (AVE) value which must be more than 0.5 stated valid (Isnaini&Fiona, 2021). To measure reliability using an assessment between 0 to 1 with a Cronbach alpha value or composite reliability must be more than 0.7 so that it can be declared reliable (Hair, 2010). Inner model testing aims to predict the relationship between latent variables. The test is carried out by testing the path coefficient/direct effects, the coefficient of determination test (R-Square) and the quality index (Ghozali&Latan, 2015).

Meanwhile, to determine the level of influence between one variable and another variable, direct effects testing is used, in order to see the relationship between variables which is declared significant if the t-statistic value is greater than 1.96. This relationship is listed in the p-values column; if the p-values in a relationship are less than 0.05, the relationship is declared significant (Hair, 2010). While the quality index aims to test the suitability of model with data. The quality index can be measured by GoF Index (Goodness of Fit) by calculating  $GoF = \sqrt{(Comm \times R^2)}$  and has a rating level of 0.10 is the smallest value, 0.25 is medium value, and 0.36 is the highest which means the value is said to be very good.

## RESULTS AND DISCUSSIONS

The results of distributing online questionnaires obtained as many as 180 samples in data processing. Respondent data consisted of 108 men (60%) and 72 women (40%). Meanwhile, according to age, there were 23 respondents (12%) aged 18-20 years, 52 respondents (30%) aged 21-29 years and 105 respondents (58%) aged 30-40 years. Respondent data based on the latest level of education, there were 43 respondents (24%) graduated from SMA/K and 137 respondents (76%) graduated from S1. Meanwhile, for respondent data based on type of work, there were 86 respondents (48%) as private employees, 52 respondents (29%) as entrepreneurs and 42 respondents (23%) as students.

A common method biased analysis can be problematic if there is a bias that causes errors during the data testing process. At study it was suggested that variance value be lower than 50% so that the test sample data is stated to have no error. The results that have been tested through SPSS

show a variance value of 27.433% which means that the assessment criteria with a result lower than 50% and is declared no error.

**Table 1. Test of Common Method Biased**

Total	% of Variance	Cummulative%
14,276	27,433	27,433

Source: Data analysed, 2022

Validity testing aims to measure a questionnaire which is stated by whether or not a data is valid. The output data results below show the Outer Loading and Average Variance Extracted (AVE) values. based on the Outer Loading test results in table 2, there are 36 question indicators used in this study and all of them are declared valid because the factor loading value is more than 0.5 so that question items can continue to the next testing stage.

**Table 2. Test of outer loading**

Variable	Loading Factor	Result
Representativeness 1	0,532	Valid
Representativeness 2	0,651	Valid
Representativeness 3	0,786	Valid
Representativeness 4	0,638	Valid
Representativeness 5	0,839	Valid
Representativeness 6	0,520	Valid
Representativeness 7	0,721	Valid
Representativeness 8	0,605	Valid
Representativeness 9	0,801	Valid
Representativeness 10	0,593	Valid
Overconfidence 1	0,619	Valid
Overconfidence 2	0,738	Valid
Overconfidence 3	0,584	Valid
Overconfidence 4	0,770	Valid
Overconfidence 5	0,667	Valid
Overconfidence 6	0,712	Valid
Overconfidence 7	0,648	Valid
Overconfidence 8	0,629	Valid
Herding 1	0,851	Valid
Herding 2	0,738	Valid
Herding 3	0,706	Valid
Herding 4	0,829	Valid
Herding 5	0,735	Valid
Herding 6	0,881	Valid
Herding 7	0,640	Valid
Herding 8	0,850	Valid
Investment Decision 1	0,708	Valid
Investment Decision 2	0,813	Valid
Investment Decision 3	0,891	Valid
Investment Decision 4	0,842	Valid
Investment Decision 5	0,722	Valid
Investment Decision 6	0,791	Valid
Investment Decision 7	0,866	Valid
Investment Decision 8	0,753	Valid
Investment Decision 9	0,711	Valid
Investment Decision 10	0,805	Valid

Source: Data analysed, 2022

Based on the outer loading test as many as 36 question indicators show all valid results and have fulfilled to be able to proceed to the Average Variance Extracted (AVE) testing stage. The results of the Average Variance Extracted test in table 3 for all constructs show valid indicators because they have an AVE value above 0.5.

**Table 3. Test of Average Variance Extracted (AVE)**

Variable	Sampel mean	Result
<i>Representativeness</i>	0,669	Valid
<i>Overconvidence</i>	0,671	Valid
<i>Herding</i>	0,779	Valid
<i>Investment Decision</i>	0,790	Valid

Source: Data analysed, 2022

Reliability testing states how much variable measurement is in a fixed consistency. The results of this test can be seen from the value of Cronbach's Alpha/Composite Reliability which together can pass the number 0.70, so that the measurement of variables is declared reliable for each construct. Based on the results of the Composite Reliability test in table 4 it shows that all variables are declared reliable because they produce values above 0.70.

**Table 4. Test of composite reliability**

Variable	Sampel mean	Result
<i>Representativeness</i>	0,831	Reliable
<i>Overconvidence</i>	0,792	Reliable
<i>Herding</i>	0,874	Reliable
<i>Investment Decision</i>	0,906	Reliable

Source: Data analysed, 2022

There is a direct influence on the variables that are interconnected, expressed by the level of significance listed in the t-statistic column which is greater than 1.96 and p-values less than 0.05 (Hair, 2010). Based on the test results, there is a direct effect in Table 5. It shows the relationship between variables which is expressed as significant or not significant.

**Table 5. Results of Direct Effect Test (Direct Effect)**

Variable	t-statistic	p-values	Result
<i>Representativeness</i> → <i>Investment Decision Making</i>	2,271	0,042	Reliable
<i>Overconvidence</i> → <i>Investment Decision Making</i>	2,163	0,208	Reliable
<i>Herding</i> → <i>Investment Decision Making</i>	3,062	0,186	Reliable

Source: Data analysed, 2022

Based on the results of the direct effect test in table 5, it can be concluded as follows: (a). H1: Representativeness has a significant negative effect on investment decisions with a t-statistic value of 2.271 and a p-value of 0.042. The results of this test are in accordance with (Rasheed, 2018), (S.Putri&Halmawati, 2020), and (Budiman&Erвина, 2020) that the behavior of looking at past experiences that have had an effect on investment decision making, such as: past investment experiences or depending on previous company performance that generates optimal profits, (b). H2: Overconvidence has a significant positive effect on investment decisions with a t-statistic value of 2.163 and a p-value of 0.208. The results of this study are in line with research (Theng, 2019) and (Bakar&Yi, 2016) which state that people are more confident in their abilities in some situations and are more confident in making investment decisions. Investors have more confidence in the skills, knowledge and strength within themselves to make investment decisions in order to achieve

maximum profit, (c). H3: Herding has a significant positive effect on investment decisions with a t-statistic value of 3.062 and a p-value of 0.186. The results of this study are in line with (Bakar&Yi, 2016), (Akinkoye&Bankole, 2020), and (Madaan&Singh, 2019) which state that herding behavior tends to follow majority decisions with the aim of reducing risks that arise and increasing returns in every investment decision making. Investors also assume that by following the behavior of the majority of a group, it will be the right way to get profits.

The results of the variable test as shown in table 6, show an Adjusted R-Square value of 0.529 which means that the Representativeness, Overconfidence, and Herding variables affect the Investment Decision by 52.9%. While the remaining 47.1% is influenced by other variables outside this research model.

**Table 6. Test Results for R-Square Adjusted**

Variable	R-Square	R-Square Adjusted	Result
<i>Investment Decision Making</i>	0,556	0,529	Moderate

*Source: Data analysed, 2022*

Testing the results of the Quality Index is applied to assess the model as a whole. The high value of GoF can determine how well a model is produced. Ghozali and Latan stated that the communality value was 0.5 and the R-Square value from the smallest was 0.02, the medium was 0.13 and the largest was 0.26 (Ghozali&Latan, 2015). To calculate the value of GoF using the formula  $GoF = \sqrt{(Comm \times R^2)}$ . Based on the results of the Quality Index test in table 7, it shows that the GoF value is more than 0.26 so it can be said that this research is classified as high.

**Table 7. Test Results for Godness of Fit (GoF)**

Communality	R-Square	GoF	Result
0,722	0,556	0,6418	High

*Source: Data analysed, 2022*

## CONCLUSION

Based on the test results that have been presented through the stages of descriptive analysis, Common method biased, Outer loading validity, Average variance extracted, Composite reliability, R-square, and Quality index, it can be seen that there is a significant influence both positively and negatively between the variables that are the focus study. Representativeness has a significant negative effect on Investment Decisions for investors using sharia-based seed applications in the West Java region. Respondents understand their decisions are based on past performance and the right experience in investing. Overconfidence has a significant positive effect on the Investment Decision of investors using sharia-based seed applications in the West Java region. Respondents have high self-confidence, causing an overestimation of their ability to deal with risks that will occur. Herding has a significant positive effect on the Investment Decision of investors using sharia-based seed applications in the West Java region. Respondents tend to have imitative behavior and follow a group of other investors in order to avoid any risks that will occur in the future. Coupled with the availability of adequate information, so that it can be used as a basis for making investment decisions. This research has implications for future researchers as a reference source for the variables studied so that they can be further developed through the addition of other variables and the number of respondents related to investor behavior using sharia-based applications in making investment decisions. Furthermore, to investors, especially the millennial generation, to be more careful and understand mature knowledge related to investment by utilizing sharia-based seed application media technology to make better investment decisions. Millennial investors also always pay attention to market information and financial readiness in order to avoid investment decisions that are detrimental and provide benefits in the future. The

Financial Services Authority (OJK) should provide outreach to the public, especially the millennial generation regarding knowledge, benefits and ways to invest properly and correctly in order to increase the interest and quality of millennial investors' knowledge regarding investment, as well as reduce the bias aspects of millennial investors in order to create profitable investments. and quality in order to increase national economic growth.

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