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Perceived Herding Behavior and Experienced Regret on Crypto Asset's Investment Decisions by Millennials

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Abstract

Introduction/Main Objectives: *This research aims to determine the effect of herding behaviour and experienced regret on millennials' decisions to invest in crypto assets. In addition, this research would explain the investment decisions of crypto assets in urban communities in the Surabaya and Sidoarjo areas.* ***Background Problems:*** *The number of crypto asset enthusiasts had increased significantly over the past few years. Commodity Futures Trading Supervisory Agency (Badan Pengawas Perdagangan Berjangka Komoditi/BAPPEBTI) noted that crypto investors in Indonesia had reached 17.25 million people in April 2023. Under these conditions, investors' behaviour can be influenced by psychological and emotional factors such as herding behaviour and experienced regret.* ***Research Methods:*** *The research method used a survey method with a sample of students and employees domiciled in the urban areas of Surabaya and Sidoarjo. The analysis technique used in this research was multiple linear regression analysis using SPSS version 26 software.* ***Finding/Results:*** *The research results showed that herding behaviour and experienced regret had a partially positive effected on millennials' investment decisions in crypto assets.* ***Conclusion:*** *The novelty of this research was to explain the differences in crypto asset investment decisions between students and employees.*

Keywords: *Crypto Assets; Experienced Regret; Herding Behavior; Investment Decision; Urban Society*
JEL Classification: M40; M41

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INTRODUCTION

Over the time various types of investment instruments were growing. There were many choices for investment instruments, such as gold, stocks, mutual funds, and bonds. Currently, a new type of investment instrument is emerging in Indonesia; the type of investment is crypto assets. Crypto assets can be traded in Indonesia by the Regulation of Commodity Futures Trading Supervisory Agency Number 5 of 2019 concerning Technical Provisions for Organizing the Physical Market for Crypto Assets on the Exchange. During the period of the COVID-19 pandemic in Indonesia, Indonesian interest in crypto assets continued to increase. As of April 2023, the Commodity Futures Trading Regulatory Agency (Bappebti) noted that crypto investors in Indonesia had reached 17.25 million people in April 2023.

Despite the large number of crypto asset enthusiasts, crypto assets were very volatile and difficult to predict, especially due to the price characteristics, so investors need to be extra careful when investing in these assets (Zakaria et al., 2022). This causes a lot of investor behaviour, leading to the least rational decision-making. Research by Kapoor and Prasad (2017) stated that investors tend to be less rational because they tend to choose types of investment instruments that have the opportunity to experience losses. This happens because investors want high returns quickly (Addinpujoartanto & Darmawan, 2020). This relates to the behavioural finance theory, which discusses investors' behaviour in making psychological investment decisions. Behavioral finance theory combines psychological factors and a rational financial perspective in the decision-making process (Khanza et al., 2022). The research also explained that behavioural finance does not only always have a rational nature but is also determined by irrational traits such as sociological and psychological factors.

Behavioural finance theory was developed by a professor of economics and behavioural science named Richard Thaler (Sedalia & Butar-Butar, 2014, pp. 3-5). The book also explains that behavioural finance is the science that studies how psychological phenomena can influence financial behaviour. According to Ricciardi and Simon (2000), factors such as sociology, finance, economics, accounting, investment, and psychology can influence behavioural finance. The research also explains that behavioural finance does not only always have a rational nature but is also determined by irrational traits such as psychological and sociological factors. Under the behavioural finance theory, there is a behavioural bias. Examples of these behavioural biases include herding behaviour and experienced regret (Pompian, 2006).

Crypto asset investors were irrational investors. This happens because crypto-assets did not have precise information to analyze investment decisions, so investors were influenced by sociological and psychological factors when determining investment decisions in crypto-assets. Therefore, a behavioural bias appears called herding behaviour. Based on research by Virigineni & Rao (2017), investors who behave in herding behaviour made their investment decisions based on other investors' behaviour or conditions that occur in the market. Research by Youssef & Waked (2022), Al-Mansour (2020), and Afifah & Juwita (2022) revealed that herding behaviour had a positive influence on decision-making to invest in crypto assets. Yarovaya et al. (2021) research revealed that hourly data on the crypto asset market showed significant herding behaviour. Research by Mandaci and Cagli (2022) revealed significant herding behaviour in the crypto asset market during the COVID-19 pandemic. Research by Kyriazis (2020) revealed herding behaviour in the crypto asset market in a bullish condition. Based on research by Yousaf and Yarovaya (2022) revealed that there was herding behaviour only when crypto asset prices have low volatility. Mnif et al. (2022) research reveals herding behaviour in the conventional crypto asset market.

Meanwhile, herding behaviour was not very significant in the gold-backed cryptocurrency market. There were differences in the results of research conducted by Pranyoto et al. (2020), proving

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that herding behaviour does not affect investment decisions in bitcoin crypto assets. The following hypothesis is developed and to be examined:
H_1: Herding behaviour positively influences millennials' decision to invest in crypto assets.

Apart from herding behaviour, other factors, such as experience, can influence a person's investment decisions. Based on this, a behavioural bias called experienced regret appears. According to Putra et al. (2016), the more a person had a lot of investment experience, the more that person had lost investment experience. This research also explains that the higher the experienced regret a person had, the more likely he is to choose the type of investment instrument with a high risk. Based on research by Wulandari & Iramani (2014), experienced regret occurs when someone continues to invest for a long time even though the returns received were not as expected. Research by Sébastien and Solnik (2008) revealed that regret theory applies to determining financial decisions, including investment decisions. Investors anticipated their future regrets and include them in their objective function. Research by Gazel (2015), Pranyoto et al. (2020), and Addinpujoartanto & Darmawan (2020) suggested that experienced regret had a positive influence on investment decision-making. Subash (2012) also revealed that regret aversion positively affects investment decisions. From this discussion, the following hypothesis is developed and to be tested:
H_2: Experienced regret positively influences millennials' decision to invest in crypto assets.

Based on the previous research described above, there were different research results on the variables of herding behaviour and experienced regret that affect the variable determining the decision to invest in crypto assets, so this variable can be continued with research to deepen the subject matter. This research aimed to determine the effect of herding behaviour, and regrets experienced on millennials' decision to invest in crypto assets in the Surabaya and Sidoarjo areas. The novelty of this research is that it explains the differences in crypto asset investment decisions between students and employees. In addition, this research would also explain the crypto asset investment decisions in urban communities in the Surabaya and Sidoarjo areas.

RESEARCH METHOD

This type of research was quantitative research using a questionnaire survey method. The type of data used in this research was quantitative data. At the same time, the primary data source in this research is the data source. The primary data collection process was carried out by distributing questionnaires directly using the Google Form media to respondents who meet the criteria. The number of respondents in this research was 107 people. Questionnaire answers were measured using a Likert Scale of 1 to 5. The explanation of the scale would be explained in table 1. The analysis technique used was multiple linear regression analysis with the help of SPSS version 26 software.

Table 1. Likert Scale

Description	Value
Very Disagreed	1
Disagreed	2
Neutral	3
Agreed	4
Very Agreed	5

Source: Sugiyono, 2022

The population of this research was the millennial generation who lived in the Surabaya or Sidoarjo area, aged between 20-and and 39 years. The number of millennials in Surabaya and Sidoarjo, based on data for 2020 at the Badan Pusat Statistik, was 1,868,396 people. Slovin formula was used to determine the sample to be used for this research, complemented by the purposive sampling method with criteria that had been made by the researcher, namely:

a. Age between 20 years – 39 years;
b. Domiciled in Surabaya or Sidoarjo;
c. Have invested in crypto assets;
d. Have invested in other instruments besides crypto assets.

Variable Measurement

Herding Behavior

Based on research by Fityani & Arfinto (2015), herding behaviour was the investors' behaviour imitating the behaviour of other investors when making investment decisions with the result of forming an inefficient market. The indicators of this variable were the decisions of other investors regarding the selection of types of investment instruments that impact determining investment decisions, and the decisions of other investors in buying and selling a type of investment have an impact on determining investment decisions. They were responsive to changes in other investors' investment decisions and directly imitate other investors' behaviour (Tan et al., 2008).

Experienced Regret

According to Weber & Johnson (2009) experienced regret refers to someone who had experience, and that experience can cause that person to feel regret and disappointment in making investment decisions. The indicators of this variable were experiencing losses when investing, having feelings of regret when investing, and the impact of experiencing losses on subsequent investments (Wulandari & Iramani, 2014).

Investment Decision

According to Dewi & Jati (2014), an investment decision involves using specific capital to buy one type of asset or several assets to obtain future profits. Indicators of this variable were using income to invest in risky investments, investing without prior consideration, investing without collateral, and investing based on intuition/feelings (Wulandari & Iramani, 2014).

Data Analysis Technique

Multiple linear regression analysis techniques using BM SPSS version 26 software were used for data analysis. The choice of using multiple regression analysis in this research was based on a research model that tested the effect of two independent variables and one dependent variable. The independent variables used in this research were herding behaviour (X_1) and experienced regret (X_2), while the dependent variable in this research is investment decisions (Y). Before carrying out multiple linear regression analysis, the classical assumption test is carried out first to be free from multicollinearity and heteroscedasticity, and the data can be normally distributed. After the classic assumption test process, the hypothesis is tested: the coefficient of determination (R^2), the F test, and the individual parameter significant test (T-test). The following is a multiple linear regression equation.

$$ID = \alpha + \beta_1 HB + \beta_2 ER + \varepsilon_i$$

ID: Investment Decision
HB: Herding Behavior

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ER: Experienced Regret
α: Constanta
$\beta_{1,2}$: Regression Coefficient
ε_i: Error

RESULTS AND DISCUSSION

The respondents of this research consisted of 0,34% who were employees and 66% who were students. The data shows that 34% were men, and 66% were women. Meanwhile, 52% were investors in the capital market consisting of stocks, mutual funds and bonds, and 48% were crypto asset investors. From the data collected, respondents who invest in crypto assets not only invest in crypto assets but were also accompanied by investments in capital markets such as stocks, mutual funds, and bonds.

Validity Test

The validity test results for all statement items for each variable have a $_{count}$ value of more than 0.1900, meaning that all statement items for each variable were said to be valid with a probability of 5%.

Reliability Test

The herding behaviour variable had a Cronbach alpha value of 0.784, the experienced regret variable had a Cronbach alpha value of 0.814, and the investment decision variable had a Cronbach alpha value of 0.735. All statement items for each variable were considered reliable because they have a Cronbach Alpha value of more than 0.60.

Normality Test

Table 2. Normality Test

N	107
Asymp. Sig. (2-tailed)	0.200[c,d]
a. Test distribution is Normal.	

Source: Data processing, 2023

In Table 2 above, the amp can be seen.sig (2-tailed) value is 0.200, meaning that the significance value is more than 0.05, so the data obtained in this research is usually distributed.

Multicollinearity Test

In Table 3, all independent variables have a VIF (variance inflation factor) value of 1.122, meaning that all independent variables have a VIF (variance inflation factor) value of less than 10, so there were no signs of multicollinearity in the dependent variable.

Table 3. Multicollinearity Test

Variable	VIF
HB	1.122
ER	1.122

Source: Data processing, 2023

Heteroscedasticity Test

In Table 4 below, the herding behaviour variable had a significance value of 0.095, and the experienced regret variable had a significance value of 0.680. This means that all independent variables have a significance value of more than 0.05, so there is no heteroscedasticity problem.

Table 4. Heteroscedasticity Test

Variable	Sig.
HB	0.095
ER	0.680

Source: Data processing, 2023

Multiple Linear Regression

The table below shows the regression equation that can determine whether two or more independent variables influence the dependent variable. The following is the equation of the multiple linear regression model.

$$ID = 6.588 + 0.281\ HB + 0.304\ ER + \varepsilon$$

Table 5. Multiple Linear Regression

Model	B
Constant	6.588
HB	0.281
Er	0.304

Source: Data processing, 2023

Coefficient of Determination

Based on Table 6, the adjusted R square had a value of 17.2%. Thus, it can be concluded that the independent variables used in this research, namely herding behaviour and experienced regret, influence the dependent variable, namely the decision to invest in crypto assets, by 17.2%. Meanwhile, around 82.8% could be affected by other variables not tested in this research.

Table 6. Coefficient of Determination

Model	R Square	Adjusted R Square
1	0.188	0.172

Source: Data processing, 2023

Hypothesis Test (F Test)

From Table 7, it can be seen that the F_{count} value is 12.002 with a significance value of 0.000. It can be interpreted that the variables of herding behaviour and experienced regret simultaneously influence millennials' decision to invest in crypto assets. The analysis results show that the F_{count} is

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12.002 > F_{table} 3.083, and the significance value is 0.000 <0.05. Based on the results of the analysis that had been described, it can be interpreted that H0 fails to be accepted, and Ha can be accepted.

Table 7. F Test

	F	**Sig.**
Regression	12.002	0.000

Source: Data processing, 2023

Hypothesis Test (*t-Test*)

Based on Table 8, the herding behaviour variable had a t_{count} value of 2.508 > t_{table} of 1.983 with a significance value of 0.014 <0.05, so H_0 fails to be accepted, and H_1 can be accepted. From the analysis results, the herding behaviour variable positively influences millennials' decision to invest in crypto assets. The experienced regret variable had t_{count} of 3.148 > t_{table} of 1.983 with a significance value of 0.002 <0.05. so that H_0 fails to be accepted and H_2 can be accepted. From the analysis results, the experienced regret variable positively influences millennials' decision to invest in crypto assets.

Table 8. *t -Test*

	t	Sig.
HB	2.508	.014
ER	3.148	.002

Source: Data processing, 2023

The research results show that H_1, which consists of herding behaviour, positively influences millennials' decisions to invest in crypto. People can be easily influenced by other people around them who also use crypto assets, so they also invest. Apart from being influenced by other people, investment trends can also influsomeone'saking crypto asset investment decisions. This means that when someone follows other people in making investment decisions on crypto assets, it means that someone is also following a growing investment trend.

The dominance of research respondents with student status shows that herding behaviour strongly influences millennials' decision to invest in crypto assets. A student and an employee certainly have different behaviours when managing finances. This also applies in determining investment decisions. As employees, they have more sensitivity to investment risk assessment than students. The results of this research were by Al-Mansour (2020) and Youssef & Waked (2022), which suggested that herding behaviour positively influences decisions to invest in crypto assets. The results of this research were also consistent with the behavioural finance theory. One example of behavioural bias in behavioural finance theory is herding behaviour (Pompian, 2006).

The results of subsequent research suggest that H_2, which comprises experienced regret, positively influences millennial investment decisions in crypto assets. This means that the greater the regret experienced by a person, the more courageous he is in making investment decisions by choosing high-risk investment instruments. Most of the research respondents were crypto asset and stock investors. The respondents of this research were risk takers because stocks and crypto assets were high-risk types of investment. This is also evidenced by the respondents' domiciles in the urban

areas of Surabaya and Sidoarjo. People living in urban areas have characteristics of being open to risk and innovation, change, and new ideas (Inkeles, 1980, pp. 87-99).

Therefore, people who live in urban areas such as Surabaya and Sidoarjo were willing to take risks and were open to developments in the investment sector. This can also be shown from the characteristics of research respondents, who consist of 48% crypto asset investors and 52% capital market investors dominated by stocks, where crypto assets and stocks were a type of investment instrument with a high risk. The results of this research align with research by Subash (2012) and Putra et al. (2016), which reveal that experienced regret positively influences investment decisions. The findings of this research were also consistent with the behavioural finance theory. One example of behavioural bias in behavioural finance theory is regret aversion, which consists of experienced regret (Pompian, 2006).

CONCLUSION

Based on the data analysis and discussion results, both herding behaviour and experienced regret partially positively influence millennials' investment decisions in crypto assets. It is suggested that future researchers be able to add other research variables such as risk tolerance, overconfidence, risk perception, and anticipated regret, which were part of regret aversion bias. This research is only limited to respondents or investors who were domiciled in the Sidoarjo and Surabaya areas, so it is suggested that future researchers use criteria for other districts/cities or expand the criteria for respondents' domiciles, such as East Java or throughout Indonesia.

AUTHORSHIP CONTRIBUTION STATEMENT

All authors contributed to this article by compiling content, analyzing data, and making conclusions.

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