The effect of financial literacy on Gen-Z crypto investment decision through herding behavior as mediator

Dhiyyah Arriqoh[1], Intan Zoraya[1]

[1]*Management Department, Faculty of Economics and Business, Universitas Bengkulu, Bengkulu, Indonesia*

Corresponding author: Dhiyyah Arriqoh, dhiyyaharriqoh@gmail.com

Received: November 14th, 2023; Accepted: December 12th, 2023; Published: March 21st, 2024
DOI: http://dx.doi.org/10.24123/jmb.v23i1.737

Abstract

The progression of investment in Indonesia has witnessed rapid growth, particularly in the realm of crypto assets. By April 2023, the number of crypto investors in Indonesia had surged to 17 million, with the Gen Z cohort dominating this category of asset investors. The primary objective of this research is to examine whether herding behavior can mediate the relationship between financial literacy and crypto investment decisions among Gen Z individuals. This investigation was conducted among crypto investors residing in the city of Bengkulu. A total of 156 individuals were selected as the sample. The collected data was subsequently processed using the Smart PLS 3 application. The research findings indicate that financial literacy has a significantly positive influence on herding, and financial literacy has a significantly positive impact on Gen Z's crypto investment decisions. Moreover, herding mediates the relationship between financial literacy and Gen Z's crypto investment decisions.
Keywords*: financial literacy, investment decision, herding behavior, crypto investment, generation Z.*

Introduction

The proliferation of various investment instruments has stimulated an increase in the number of investors within the community. Cryptocurrency is a rapidly developing investment instrument among the public(Joo et al., 2020). Indonesia is one of the nations witnessing a significant surge in cryptocurrency investors. In June 2023, over 17 million crypto investors were recorded, marking a 9.3% increase compared to the preceding period (Statista, 2023). Furthermore, data released by Statista (2023) indicates that in 2022, Indonesia ranked 20th out of 146 countries in terms of the fastest cryptocurrency adoption index. Statista's data for 2023 also reveals that 54.9% of cryptocurrency investors in Indonesia are aged 18 to 24, 42.5% are aged 25 to 34, and the remainder are 35 years and older (Statista, 2023). Additionally, Statista elucidates that Generation Z investors engage in various financial instruments, with cryptocurrency being their preferred choice (Statista, 2023). This underscores the popularity of cryptocurrency investments in Indonesian society.

The Commodity Futures Trading Regulatory Authority (Bappebti) under the Ministry of Trade reports that in the second quarter of 2023, the total value of

cryptocurrency transactions in Indonesia declined by 23.8% compared to the same period the previous year (Bappebti, 2023). This decrease is attributed to highly volatile price fluctuations and associations with criminal activities such as money laundering and terrorism financing (Nevid et al., 2011). Moreover, the inherent anonymity of cryptocurrencies can render investors susceptible to manipulation, wherein they may place trust in seemingly legitimate companies only to become victims (Bris et al., 2021). Challenges of this nature are exacerbated by investors' lack of financial literacy in assessing and understanding the types of investments and associated risks in investment decision-making.

Wise investment decisions are fundamental to achieving optimal investment outcomes (Frimpong, 2022). Such decisions should be based on comprehensive analysis and a complex thinking framework to yield rational investment choices (ul Abdin et al., 2022). Furthermore, investors can ascertain and ensure potential returns on investments and risk tolerance in the future (Bris et al., 2021). Investors are called upon to enhance their financial skills and knowledge. Investors with a strong understanding of finance can aid them in making better investment decisions and optimizing financial products (Hossain and Siddiqua., 2022).

Additionally, Hossain & Siddiqua (2022) elucidate that a high level of financial knowledge can assist an investor in challenging financial situations. Consequently, when an investor possesses a solid financial knowledge foundation, it enables them to comprehend various techniques and strategies for mitigating potential risks in the future (Bris et al., 2021). Essentially, a high level of financial knowledge is underpinned by good financial literacy (Kasoga, 2021).

Financial literacy reflects an investor's ability to apply their knowledge and skills in assessing and managing their financial resources efficiently in the long term to evaluate and maintain their financial well-being, including making investment decisions (Kasoga, 2021). Furthermore, financial literacy is of utmost importance to investors, particularly crypto investors, as it provides a profound understanding of aspects related to cryptocurrency investment, including comprehension of blockchain technology, cryptocurrency workings, risks, and more (Jiménez et al., 2019). It can be concluded that an investor can make prudent and rational investment decisions through a robust and comprehensive enhancement of financial literacy. This relationship has also been corroborated by earlier research conducted by Zhao & Zhang (2021); Barthel & Lei (2021), which indicates a significant positive influence of financial literacy on investment decisions, as financial literacy plays a pivotal role in assisting individuals in making smarter investment decisions while minimizing risks.

The analysis of the relationship between financial literacy and investment decisions does not consistently yield the same findings, as Zhao & Zhang 2021); Barthel & Lei (2021) have noted. Some prior studies have revealed differing results. Weixiang & Qamruzzaman (2022) explain that financial literacy does not affect investment decisions, as emotional factors, personal preferences, and market volatility can also play a significant role in individual investment decision-making. These discrepancies in research findings regarding the relationship between financial literacy and investment decisions further highlight the presence of inconsistency. To bridge this gap, this study employs mediating variables to

accommodate the relationship between these two variables. In this case, the mediating variable used is herding behavior. Based on research conducted by Dehghani et al. (2014), herding behavior tends to reflect the social and emotional influence on investment decision-making.

The investment decision-making process refers to the cognitive and emotional process in which an investor selects the most suitable option from various available scenarios. Investors cannot rely entirely on existing resources to make investment decisions. Furthermore, unpredictable market anomalies also have a fundamental impact on investor behavior and overall financial market performance Woo et al. (2020); Mohanty et al. (2023); Metawa et al. (2019). Individuals with a high level of financial literacy tend to make more rational financial decisions, can better identify and assess risks, and become more financially independent (Dehghani and Sapian, 2014). Moreover, in their research, Dehghani et al. (2014) state that investors are more aware of psychological biases and social pressures that can influence financial decisions, making them more cautious in following herding behavior. Additionally, financial literacy can help investors recognize the benefits of diversified investment portfolios and sustainable investments (Bris et al., 2021). Thus, financial literacy aids individuals in avoiding herding behavior that may not always be financially beneficial and making financial decisions aligned with their personal goals. This is also affirmed by previous research conducted by Zaimah et al. (2013), indicating that financial literacy can significantly influence herding behavior, as investors with high financial literacy tend to avoid herding behavior.

Investors engaged in herding may disregard independent analysis and rely on market sentiment (Dehghani and Sapian, 2014; Gupta and Shrivastava, 2022). The consequences include increased investment risk due to concentration in the same assets, greater market volatility, and instability that can trigger sharp price fluctuations (Kengatharan, 2014). Furthermore, Kengatharan (2014) explains in their research that herding can also lead to the abandonment of diversification, disrupt accurate evaluations, and cause delays in responding to market changes. To avoid these negative impacts, conduct independent analysis, understand investment assets, and have an investment plan based on personal goals and risk tolerance (Ainia & Lutfi, 2019). In other words, a high level of financial literacy can help individuals recognize herding behavior and make more rational and informed investment decisions. This is also confirmed by previous research conducted by Gupta et al. (2022), Kengatharan (2014), and Ainia & Lutfi (2019), which shows that herding behavior can lead individuals to follow market trends or others' actions without deep consideration, resulting in investment decisions that are not always rational and independent, potentially increasing market risk and volatility and hindering optimal portfolio diversification.

This study aims to fill this void by focusing on cryptocurrency investment decision-making in Indonesia. Another reason that sets this research apart is that very few studies consider behavioral biases (such as overconfidence bias, first-thinking bias, and representativeness bias) in the relationship between financial literacy and investment decision-making. Therefore, this study is expected to address theoretical gaps by investigating the mediating effects of herding behavior in financial behavior (Bikhchandani et al., 2001). The primary goal of this research is to explore the influence of financial literacy on investment

decision-making through the mediating role of heuristic bias.

In 2019, the OJK researched the Financial Literacy Index percentage, and the data revealed that the financial literacy of the Indonesian population reached 38.03%. This implies that around 62% or 62 people out of every 100 Indonesian citizens lack adequate financial understanding. Such a situation could impact their investment decisions, as a significant portion of the population may make irrational or unprofitable investment choices.

Moreover, a Kasoga (2021) study found that financial literacy significantly influences investment decisions. Additionally, research by Adil et al. (2022) examined the differences between male and female investors. They found that financial literacy significantly impacts the interaction between overconfident male investors and their investment decisions. According to OJK, in 2021, they will research the Financial Literacy Index percentage every three years. So, the hypothesis obtained:

H1: Financial Literacy has a positive and significant impact on Investment Decision

Financial literacy and herding behavior are intertwined in the realm of investment decisions. Financial literacy is vital in empowering individuals to make informed, rational investment choices. When investors lack financial literacy, they are more likely to be influenced by the actions and decisions of others, leading to herding behavior. This means they may follow the crowd rather than conduct independent assessments, and this behavior can be driven by a lack of confidence in their financial judgment. A higher level of financial literacy can mitigate the inclination to engage in herding behavior, as individuals are better equipped to make independent, informed decisions, reducing the tendency to follow others in the financial markets blindly. So, the hypothesis obtained:

H2: Financial Literacy has a positive and significant impact on herding

In financial crises, one crucial observation is that investor behavior can become irrational due to a lack of financial understanding. Traditional financial theory assumes rational decision-making, but contemporary behavioral finance, as Shiller (2003) advocates, incorporates behavioral biases that lead to irrational decisions. Herding bias, where investors follow the crowd and ignore their information, is a significant example. Research by Adil et al. (2022), Gupta et al. (2022), Metawa et al. (2019), and Kasoga (2021) confirmed that herding behavior strongly influences investor decisions. So, the hypothesis obtained:

H3: Herding has a positive and significant impact on Investment Decision

H4: Herding can mediate the relationship between Financial Literacy and Investment Decision

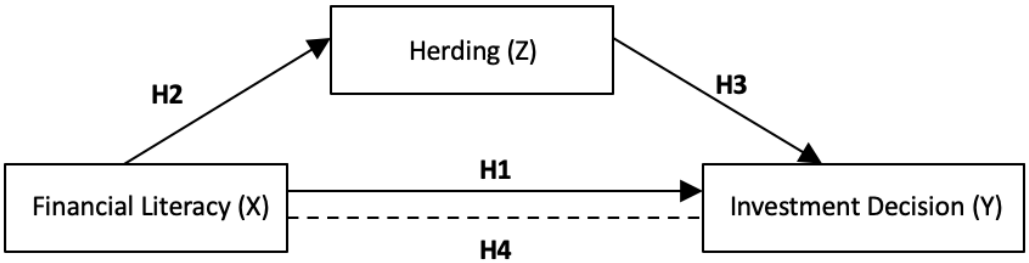

Figure 1. Research Framework

Research Methods

This research employs a quantitative research methodology. All data and

information for this study were gathered from primary sources using an online questionnaire based on Google Forms, with assistance from social media platforms such as WhatsApp, Instagram, Facebook, and Telegram for distribution. The research was conducted in the Bengkulu Province. The data analysis method utilized is Smart PLS3, involving both the outer and inner models. The outer model encompasses convergent validity, discriminant validity, and reliability, while the inner model includes R-Square and hypothesis testing for significance. Figure 1 below identifies the influence of financial literacy and herding on cryptocurrency investment decisions among Gen Z and whether herding can mediate the impact of financial literacy on cryptocurrency investment decisions among Gen Z.

The population under investigation in this study comprises cryptocurrency investors residing in Bengkulu. The sample for this research consists of Generation Z investors with experience in cryptocurrency investments within the Bengkulu region. The sample selection technique employed here is purposive sampling, wherein the selection of samples is based on predetermined criteria set by the researcher. The requirements for the sample in this study encompass respondents who engage in cryptocurrency investments, fall within the age range of 17 to 26 years, and are domiciled in the city of Bengkulu.

Table 1. Definition of Operational Variables

Variable	Indicators	Items	Reference
Financial Literacy	Deposit Literacy Risk Literacy Insurance Literacy Debt Literacy Inflation Literacy	I comprehend the distinction between cryptocurrency investment and depositing funds in a conventional bank. I possess knowledge of the appropriate methods for securely storing cryptocurrencies. I understand that the price volatility of cryptocurrencies can offer high profit potential but also entails high risks. I acknowledge that diversifying cryptocurrency investments is a strategy that can help manage risk. I am aware that cryptocurrency investments lack the protection guarantees typically associated with conventional investment insurance. I realize that security risks and the potential loss of access to cryptocurrencies are not insured. I comprehend that investing in cryptocurrencies through borrowing (debt) can increase my financial risks. I am knowledgeable about how to prudently manage and repay debts associated with cryptocurrency investments. I understand that inflation can influence the value of cryptocurrencies	(Sekitavikas & Ogaki, 2018)

		and the purchasing power of my investments. I am aware that monetary policies and inflation can have a significant impact on cryptocurrency prices in the market.	
Herding	Following the Investment Decisions of Other Investors Following the Purchase/Sale of Securities Instruments of Other Investors Swift Reaction to Market Changes	In the realm of cryptocurrency investment I tend to pay heed to, or follow, the investment strategies announced by prominent figures or crypto influencers. I consider the investment decisions of other investors as sources of inspiration and deliberation in my cryptocurrency investments. On occasion I have executed purchases or sales of crypto instruments based on the actions taken by fellow investors. I firmly believe that following the actions of buying or selling crypto instruments by other investors can assist me in making more informed investment decisions. I have devised a strategy that enables me to promptly act when the prices of crypto assets undergo significant fluctuations. I am convinced that swift responses to market changes constitute a crucial skill in effectively managing cryptocurrency investments.	(Ngoc, 2013)
Investment Decision	The utilization of income for high-risk investments. Investment devoid of careful consideration. Investment without any form of security or guarantee. Investment based solely on intuition or feelings.	I allocate a portion of my income to invest in high-risk crypto assets. I plan a specific percentage of my income to be invested in crypto assets. I have previously engaged in crypto investments without conducting adequate research or analysis beforehand. I am aware that making investments without due consideration can have a negative impact on my investment outcomes. I have made investments in crypto assets without any guarantee or protection for those investments. I consider the risks and uncertainties before making crypto investments without assurances. Occasionally, I make crypto investments based on intuition or	(Ayu Wulandari & Iramani, 2014)

	feelings without conducting in-depth analysis. I believe that decision-making based on intuition also plays a significant role in crypto investments.

Result and Discussions

The convergence validity assessment is conducted by calculating the Average Variance Extracted (AVE) and the values of loading factors. A variable is deemed valid if it possesses an AVE value of at least 0.5 and a loading factor value of at least 0.7. It is considered invalid if a variable does not conform to these specified values. The results of the convergence validity testing are as follows:

Table 2. Convergence Validity

Variable	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Financial Behavior	0.919	0.937	0.712
Herding	0.847	0.897	0.686
Investment Decision	0.881	0.913	0.679

Cross-loadings characterize the discriminant validity employed in this research. A variable is deemed valid when the value of each indicator within that variable surpasses the values of indicators from other variables. The outcomes of the discriminant validity assessment are as follows:

Table 3. Discriminant Validity

Item	Financial Behavior	Herding	Investment Decision
X1	0.870	0.600	0.528
X2	0.856	0.709	0.670
X3	0.817	0.577	0.500
X8	0.813	0.618	0.587
X9	0.850	0.576	0.484
X10	0.854	0.622	0.527
Z1	0.708	0.848	0.601
Z2	0.710	0.886	0.672
Z3	0.507	0.802	0.614
Z4	0.482	0.774	0.619
Y2	0.672	0.615	0.732
Y3	0.503	0.619	0.866
Y5	0.465	0.590	0.829
Y7	0.440	0.609	0.867
Y8	0.595	0.661	0.819

According to Table 3, variable X is deemed valid, as the value of each indicator within variable X surpasses those of variables Z and Y. Variable Z is similarly considered valid, given that the value of each indicator in variable Z exceeds those of variables X and Y. The same holds true for variable Y, which is also considered valid, as the value of each indicator within variable Y is more significant when compared to the values of variables X and Z.

The reliability test can be assessed through Cronbach's Alpha and Composite Reliability values. A variable is considered reliable if it possesses Cronbach's Alpha and Composite Reliability values of at least 0.7. The results of the reliability assessment are presented in Table 2. Based on Table 2, variable X is deemed reliable as its Cronbach's Alpha value is 0.919, more significant than 0.7, and its Composite Reliability is 0.937, also exceeding the threshold of 0.7. Similarly, variable Z is considered reliable with a Cronbach's Alpha of 0.847 and a Composite Reliability of 0.897, surpassing the 0.7 benchmark. The same holds true for variable Y, which is considered reliable due to its Cronbach's Alpha value of 0.881 and a Composite Reliability of 0.913, both exceeding the 0.7 threshold.

Examining the inner model is employed to ascertain the relationship between constructs, significance values, and the R-square of the research model. Subsequently, the structural model will be assessed employing the R-square for the dependent construct, the t-test for path coefficients, and the significance of the structural path coefficients. In evaluating the model using Partial Least Squares (PLS), one can gauge the R-Square value for each latent dependent variable. In the current testing scenario, the R-Square values obtained using Smart PLS3 are as follows:

Table 4. R-Squared Result

Variable	R Squared	R Square Adjusted
Herding	0.542	0.539
Investment Decision	0.593	0.588

Table 4 presents the R-Square values about the variable 'herding' (Z), influenced by financial literacy (X), which amounts to 0.542. Furthermore, for the variable 'investment decision' (Y), influenced by both the variables 'financial literacy' and 'herding,' the R-Square value stands at 0.593. These findings indicate that the variable Z, influenced by the variable X, is equivalent to 5.4%, and the variable Y, influenced by both the variables X and Z, is equivalent to 5.9%.

Hypothesis testing in Partial Least Squares (PLS) is conducted using bootstrapping. The purpose of bootstrapping tests is also to mitigate data non-normality. The results of the model testing with bootstrapping can be observed in Table 5.

Table 5. Hypotheses Testing

Variable	Original Sample	T-Statistic	P Values
$X \rightarrow Z$	0.736	10.462	0.000
$X \rightarrow Y$	0.222	2.280	0.024
$Z \rightarrow Y$	0.592	6.545	0.000
$X \rightarrow Z \rightarrow Y$	0.436	5.943	0.000

Based on the test results, it is known that the path coefficient is 0.736 with a p-value of 0.000, which is less than 0.05. This result demonstrates that financial literacy has a positive influence on herding. Financial Literacy's Impact on Gen Z Crypto Investment Decisions Based on the test results, it is known that the path coefficient is 0.222 with a p-value of 0.024, which is less than 0.05. This result confirms that financial literacy positively impacts Gen Z's crypto investment

decisions. This finding aligns with the study by Fujiki (2021), which found a positive relationship between financial literacy and crypto investment decisions. However, this result differs from the findings of Zhao & Zhang (2021b), who discovered a negative relationship between financial literacy and crypto investment ownership. Hence, based on the analysis results, it is evident that the path coefficient is equal to 0.736, with a p-value of 0.000, which is less than 0.05. These findings substantiate that financial literacy exerts a positive influence on herding behavior.

Based on the test results, it is known that the path coefficient is 0.592 with a p-value of 0.000, which is less than 0.05. This result proves that herding positively impacts Gen Z's crypto investment decisions. This finding aligns with the study by Veerasingam & Teoh (2023), which found a significant positive influence of herding on crypto investment decisions. Research conducted by Kourtidis et al. (2011) and Sood et al. (2023) also found that herding can affect investment decisions. Furthermore, based on the test results, it is known that the path coefficient is 0.436 with a p-value of 0.000, which is less than 0.05. This result demonstrates that herding can mediate the relationship between financial literacy and Gen Z crypto investment decisions.

Discussion

This study delves into the dynamics between financial literacy and heuristic bias in the investment decisions of Generation Z, particularly in the context of cryptocurrencies. The research findings underscore the pivotal role of financial literacy, which accounts for a substantial 80.8% of the variation in investment decisions. Financial literacy is a critical tool that empowers individuals to make well-informed financial choices. The study presents four hypotheses, delving into the relationships between financial literacy, herding, and investment decisions. It confirms that financial literacy directly and positively impacts investment decisions, consistent with previous research. Moreover, herding, encompassing behaviors like overconfidence and anchoring, also directly influences investment choices.

A noteworthy finding is that herding mediates the relationship between financial literacy and investment decisions, suggesting that individuals with a firm grasp of financial concepts can leverage herding effectively to enhance their investment choices. Moreover, if members of Generation Z observe a significant number of their peers making similar investment choices, they may be inclined to follow suit, even if they possess varying levels of financial literacy. Going deeper, this herding behavior among Generation Z individuals creates a social influence dynamic, where the decisions of others become a prominent factor in shaping their own investment choices. In this context, herding serves as a mediating mechanism by which the collective actions of the peer group influence and potentially override the individual's level of financial literacy. Consequently, despite possessing diverse financial knowledge, the observed investment patterns within their social circle can significantly impact Generation Z's crypto investment decisions, highlighting the intricate interplay between social dynamics, financial literacy, and investment behavior in the cryptocurrency market. This study carries implications, highlighting the significance of financial literacy in mitigating herding and ultimately improving investment outcomes. It

underscores the pivotal role of informed financial decision-making, especially in navigating the world of cryptocurrencies, and provides valuable insights into the decision-making processes of Generation Z investors.

Conclusion

Based on the analysis conducted, it is evident that financial literacy has a positive and significant impact on Gen Z crypto investment decisions. Similarly, herding positively and significantly impacts Gen Z crypto investment decisions. Furthermore, financial literacy has a positive and significant impact on herding. Additional research findings indicate that herding can mediate the relationship between financial literacy and Gen Z crypto investment decisions. The sample and research design chosen are believed to be sufficient to achieve the research objectives. However, this study is susceptible to various challenges like any other research. One of these is that the study only covers the Bengkulu City region. Future research can include other areas and states, as crypto investors, especially Gen Z, may have different decision-making perspectives in different regions. For future research, it would be beneficial to combine and expand the sample size of Gen Z crypto investors and extend the study to include other regions to accurately depict the overall phenomenon of Gen Z crypto investment decisions in the Bengkulu Province. Also, consider incorporating additional control variables, such as demographic factors, economic conditions, and market sentiment, to understand better herding behavior's influence on investment decisions. Lastly, this study recommends that future researchers investigate the role of technology and social media platforms in facilitating herding behavior and shaping investment decisions among Generation Z individuals.

Acknowledgments

In preparing this article, I would like to express my deepest gratitude to all parties who have played a role in creating this article. I want to extend my utmost respect to the professors and mentors who have provided guidance and profound insights, assisting me in navigating the complexity of the material and pushing me to reach my maximum potential.

Indeed, inseparable from their crucial role is the support from my parents and family. Thank you for the prayers, encouragement, and unwavering financial support that have tirelessly been given, helping materialize this educational journey. This success would not have been possible without all parties' involvement and full support. I hope this article can provide benefit and inspiration to others and serve as a form of appreciation for the valuable contributions of every individual involved. Once again, thank you to everyone who has played a role in the success of this article.

References

Abdin, Syed Zain ul, Omer Farooq, Naheed Sultana, and Mariam Farooq. (2017). The Impact of Heuristics on Investment Decision and Performance: Exploring Multiple Mediation Mechanisms. *Research in International Business and Finance* 42 (December). Elsevier Ltd: 674–88. doi:10.1016/j.ribaf.2017.07.010.

Adil, Mohd, Yogita Singh, and Mohd Shamim Ansari. (2022). How Financial Literacy Moderate the Association between Behaviour Biases and Investment Decision? *Asian Journal of Accounting Research* 7 (1): 17–30. doi:10.1108/AJAR-09-2020-0086.

Ainia, N. S. N., & Lutfi, L. (2019). The influence of risk perception, risk tolerance, overconfidence, and loss aversion towards investment decision making. Journal of Economics, *Business, & Accountancy Ventura*, 21(3), 401-413. doi: https://pdfs.semanticscholar.org/5890/4ca9ea7f5f8f4d0258c770b92d1769130193.pdf

Ayu Wulandari, D., & Iramani, Rr. (2014). Studi Experienced Regret, Risk Tolerance, Overconfidance dan Risk Perception pada Pengambilan Keputusan Investasi. *Journal of Business and Banking*, 4(1), 55. doi:https://doi.org/10.14414/jbb.v4i1.293

Bapebti. (2023). Laporan Kinerja *2022*. Badan Pengawas Perdangangan Berjangka Komoditi. https://www.bappebti.go.id/resources/docs/Lapkin%20Bappebti%202022.pdf

Barthel, A. C., & Lei, S. (2021). Investment in financial literacy and financial advice-seeking: Substitutes or complements? *Quarterly Review of Economics and Finance*, 81, 385–396. doi:https://doi.org/10.1016/j.qref.2021.06.020

Bikhchandani, S., Sharma, S., Chami, R., Felli, L., Flood, B., Hirshleifer, D., Hauswald, R., Khan, M., Kodres, L., Mody, A., Montiel, P., Nsouli, S., Pradhan, M., Richards, T., Welch, I., Wermers, R., & Wong, C. H. (2001). Herd Behavior in Financial Markets. *International Monetary Fund*. https://www.imf.org/external/pubs/ft/staffp/2001/01/pdf/bikhchan.pdf

Frimpong, Stephanie Efua, Gloria Agyapong, and Daniel Agyapong. (2022). Financial Literacy, Access to Digital Finance and Performance of SMEs: Evidence From Central Region of Ghana. *Cogent Economics and Finance* 10 (1) doi:10.1080/23322039.2022.2121356.

Fujiki, H. (2021). Crypto asset ownership, financial literacy, and investment experience. *Applied Economics*, 53(39), 4560–4581. doi:https://doi.org/10.1080/00036846.2021.1904125

Gupta, Shilpi, and Monica Shrivastava. (2022). Herding and Loss Aversion in Stock Markets: Mediating Role of Fear of Missing out (FOMO) in Retail Investors. *International Journal of Emerging Markets* 17 (7),1720–37. doi:10.1108/IJOEM-08-2020-0933.

Hossain, T., & Siddiqua, P. (2022). Exploring the influence of behavioral aspects on stock investment decision-making: a study on Bangladeshi individual investors. *PSU Research Review*. doi:10.1108/PRR- 10-2021-0054.

Kasoga, Pendo Shukrani. (2021). Heuristic Biases and Investment Decisions: Multiple Mediation Mechanisms of Risk Tolerance and Financial Literacy—a Survey at the Tanzania Stock Market. *Journal of Money and Business 1* (2). Emerald: 102–16. doi:10.1108/jmb-10-2021-0037.

Kengatharan, L., & Kengatharan, N. (2014). The Influence of Behavioral Factors in Making Investment Decisions and Performance: Study on Investors of Colombo Stock Exchange, Sri Lanka. *Asian Journal of Finance & Accounting*, 6(1), 1. https://doi.org/10.5296/ajfa.v6i1.4893

Kourtidis, D., Šević, Ž., & Chatzoglou, P. (2011). Investors' trading activity: A behavioural perspective and empirical results. *Journal of Socio-Economics*, 40(5), 548–557. https://doi.org/10.1016/j.socec.2011.04.008

Metawa, Noura, M. Kabir Hassan, Saad Metawa, and M. Faisal Safa. (2019). Impact of Behavioral Factors on Investors' Financial Decisions: Case of the Egyptian Stock Market. *International Journal of Islamic and Middle Eastern Finance and Management 12* (1), 30–55. doi:10.1108/IMEFM-12- 2017-0333

Mohanty, Stutee. (2023). Cognitive Biases and Financial Decisions of Potential Investors during Covid-19: An Exploration. *Arab Gulf Journal of Scientific Research*. Emerald Publishing. doi:10.1108/AGJSR-12-2022-0296.

Ngoc, L. T. B. (2013). Behavior Pattern of Individual Investors in Stock Market. *International Journal of Business and Management*, 9(1). https://doi.org/10.5539/ijbm.v9n1p1

Sekita、vikas, S., & Ogaki, K. (2018). Keio-IES Discussion Paper Series Wealth, Financial Literacy and Behavioral Biases: Evidence from Japan. doi:https://ies.keio.ac.jp/en/publications/10616/

Shiller, R. J. (2003). From Efficient Markets Theory to Behavioral Finance. *In Journal of Economic Perspectives* (Vol. 17). doi:10.1257/089533003321164967

Sood, K., Pathak, P., Jain, J., & Gupta, S. (2023). Gauging investors' investment decisions in the crypto market through the PRISM of behavioral biases: a fuzzy AHP approach. *International Journal of Emerging Markets*. doi:https://doi.org/10.1108/IJOEM-02-2022-0263

Statista. (2023). Distribution of cryptocurrency investors in Indonesia in 2023, by age group. doi:https://www.statista.com/statistics/1294784/indonesia-age-distribution-of-cryptocurrency-investors/

Ul Abdin, Syed Zain, Fiza Qureshi, Jawad Iqbal, and Sayema Sultana. (2022). Overconfidence Bias and Investment Performance: A Mediating Effect of Risk Propensity. *Borsa Istanbul Review 22* (4). Borsa Istanbul Anonim Sirketi: 780–93. doi:10.1016/j.bir.2022.03.001.

Veerasingam, N., & Teoh, A. P. (2023). Modeling cryptocurrency investment decision: evidence from Islamic emerging market. *Journal of Islamic Marketing*, 14(7), 1817–1835. https://doi.org/10.1108/JIMA-07-2021-0234Weixiang, Sun, Md Qamruzzaman, Wang Rui, and Rajnish Kler. (2022a). “An Empirical Assessment of Financial Literacy and Behavioral Biases on Investment Decision: Fresh Evidence from Small Investor Perception.” Frontiers in Psychology 13 (September). Frontiers Media S.A. doi:10.3389/fpsyg.2022.977444.

Weixiang, Sun, Md Qamruzzaman, Wang Rui, and Rajnish Kler. (2022b). An Empirical Assessment of Financial Literacy and Behavioral Biases on Investment Decision: Fresh Evidence from Small Investor Perception. *Frontiers in Psychology 13*. doi:10.3389/fpsyg.2022.977444.

Woo, K. Y., Mai, C., McAleer, M., & Wong, W. K. (2020). Review on efficiency and anomalies in stock markets. *Economies*, 8(1), 20. https://doi.org/10.3390/economies8010020

Zhao, H., & Zhang, L. (2021a). Financial literacy or investment experience: which is more influential in cryptocurrency investment? *International Journal of Bank Marketing*, 39(7), 1208–1226. https://doi.org/10.1108/IJBM-11-2020-0552

Zhao, H., & Zhang, L. (2021b). Financial literacy or investment experience: which is more influential in cryptocurrency investment? *International Journal of Bank Marketing*, 39(7), 1208–1226. https://doi.org/10.1108/IJBM-11-2020-0552.