Behavioral Finance in Investment: A Systematic Review

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ABSTRACT: Behavioural finance plays an important role in the field of finance. Behavioral finance refers to understanding how human behavior and psychological factors, including human emotions, affect financial decisions. The data used in this research is secondary data, which means data that is not directly provided to data collectors. This type of data comes from literature related to behavioral finance, such as books, journals, scientific articles, and websites.

This research uses the systematic literature analysis (SLR) method. This research aims to increase the understanding of the factors that influence financial behavior in decision-making, identify trends regarding the review or study of financial behavior, and predict the type of research to come. It is expected that the findings of this research will provide new knowledge and perspectives on the current field of financial behavior studies. What contributions are needed at this time and may attract other researchers to study financial behavior in investment decision-making.

KEYWORDS: Behavior Finance, Investment Decision, Systematic Literature Review

I. INTRODUCTION

Investment is the activity of investing capital in the form of money or valuable assets for the purpose of making a profit. Investment can also be defined as the placement of funds in one or more types of assets over a certain period with the aim of making a profit or increasing the value of these assets. Investment is a component of economic activity called capital investment.(Kostov, 2020)

The concept of traditional finance, once developed, explains that traditional finance theory is based on two assumptions: (1) people can make rational decisions, and (2) people can make unbiased decisions about things that will happen in the future. However, in reality, people often act without reason and make mistakes when they think about what will happen in the future (Nofsinger, 2017a). Traditional economic and financial theory is built on the key assumption that people are rational; they consider all available information when making investment decisions. Proponents of the efficient market hypothesis and modern portfolio theory believe that all known information is priced into a stock or investment product. Regardless of investment discipline, people often make investment mistakes. Most investor decision-making is done through intuitive and automatic processes rather than deliberative and controlled ones. (Mittal, 2022)

In the finance business, investors often make rational or illogical decisions based on their knowledge. Traditional finance believes that investors are rational and make investment decisions to maximise returns or earn profits by choosing the best investment options, especially in difficult times. (Weixiang et al., 2022). Conventional finance theory argues that humans are rational and only make decisions based on relevant facts (Mittal, 2022)

The theory of *expected utility* has become the basis for analyzing decision-making in risky situations. The theory is generally considered a normative model of rational choice and is widely used as a descriptive model of economic behavior. (Bell, 1982) Therefore, it is assumed that any reasonable individual would want to abide by the axioms of the theory and that most people actually do so most of the time. Kahneman, 1979 ; (Omar, 2023)(Attimani, 2021)

The expected utility theory, or behavioural theory, helps people act rationally. A rational investor will seek to make a profit and avoid risk while still making rational investment-Informed decisions (Omar, 2023). However, in reality, individuals often act *irrationally* and make mistakes regarding future predictions. *Irrational* individual behaviour cannot be explained within the scope of traditional finance. (Nofsinger, 2017b)

Prospect theory, introduced in 1979 by Kahneman and Tversky, focuses on how people act when making uncertain decisions. According to this theory, people do not just think rationally when assessing and making decisions; they are more likely to be inconsistent and unreasonable. Thus, prospect theory is an analysis of a person's behavior in making economic decisions. It introduces a behavioral analysis that conceptually contradicts the *expected utility theory* that researchers have long used to explain the decision-making process. The research then led to the emergence of various studies in *behavioral finance in* the following

decades.. (Kahneman, Daniel, 1995).

In the era of globalization and economic globalization, investors in the 21st century are challenged to make the right investment decisions due to complex socio-economic phenomena. Behavioral finance theory can help accelerate investment decisions by considering social, political, economic, and geographical phenomena. (Andriamahery & Qamruzzaman, 2022), (Ritika & Kishor, 2022).

(Ladrón de Guevara Cortés et al., 2023) In their research, they also stated that prospect theory considers many things, not just the sum of rationality. This includes economic, social, and psychological aspects. A person makes decisions based on gains or losses, according to the decision-making model. According to this theory, decision-makers will refuse to take risks if the reference value is considered to be an expenditure that looks favorable. However, if they incur a loss, they will be more willing to take the risk. (Sagnak et al., 2020)

Subsequent studies also explain how a new concept called behavioral finance emerging in finance and economics can explain the different reasons why investor behavior changes and deviates from rational decision-making. Different behavioral biases can show the irrationality of human behavior, and in addition, they can compare behavioral finance theory with traditional and modern finance theory. (Attimani, 2021)(Mittal, 2022) (P.H & Uchil, 2020b). Various behavioral biases influence the investment decision-making process. Investors are encouraged by these biases to deviate from rationality and make irrational investment decisions. (P.H & Uchil, 2020b). This study thoroughly reviewed the behavioral biases involved in individual investment decisions (Nareswari et al., 2021). A study evaluating behavioral biases should be conducted (Ahmad & Shah, 2022).

Behaviour finance identifies two main reasons why investors behave irrationally. First, investors are humans and have different experiences and emotional levels in making investment decisions; and second, external factors such as news, social media and research results. Traditional finance theory explains what a person should do, while behavior finance explains what a person actually does (Mittal, 2022)

This prompted us to find different biases in financial behavior that affect investment decisions in previous studies. The purpose of this systematic review article is to discover different behavioral biases and how they impact an investor's investment decisions

II. RESEARCH METHODS

The purpose of this literature review study is to correlate the impact of financial behavior and investment decisions. The keywords used to search for journals are behavioral finance and investment decisions. The search results included journals that incorporated various biases and then subdivided by various biases. The results include ndividual and institutional investors as well as mutual funds. The time frame of the study was from 2019 to 2023 (the last 5 years). Then, the results were summarized and analyzed using Microsoft Excel. The researchers used several techniques to review the existing literature, collect some baseline data for the study, or conduct a limited and empirical survey to get the desired results. The study is usually conducted for several studies, in several countries, or over a period of time.

All studies that assessed the relationship between financial behavior and investment decisions were eligible for inclusion in this review. The criteria for inclusion were as follows:

a. Written in English

b. Objectively written about the assessment of financial Behavior and investment decisions

c. Only studies with open access

d. Including all kinds of documents, research papers, articles, etc.

e. Included subjects: Accounting, Business, Business Finance, Industrial Business, Economics, Econometrics & Finance, Finance & Management, Financial Behavior and Investment Decisions

f. Database: Data collected using Publish or Perish software and saved as RIS files will be processed using Mandeley software.

g. The existing data was then downloaded from various publisher websites such as Scopus, Emerald Insight, Elsivier, Sage, Wiley, Google Scholar and Science Direct, Etc.

h. The data was analyzed and visualized in the form of images using Vos Viewer software

III. RESULTS AND DISCUSSION

Searching for journal data according to the keywords, namely financial behavior and investment decisions that are included in the Publish or Perish software list, is then carried out so as to get 32 journals. Some research results explain the behavioral finance factors that influence investment decisions among stock investors.

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Table 1. Research journal

No.	Researcher (Year)	Research Title	Source	Publisher
1	(Başarir & Yilmaz, 2019)	Herd behavior and its effects on the purchasing behavior of investors	Contemporary Studies in Economic and Financial Analysis	Emerald Insight
2	(Baker et al., 2019)	How financial literacy and demographic variables relate to behavioral biases	Managerial Finance	Emerald Insight
3	(Srivastava et al., 2019)	Human brain and financial behavior: a neurofinance perspective	International Journal of Ethics and Systems	Emerald Insight
4	(Lopus et al., 2019)	Improving financial literacy of the poor and vulnerable in Indonesia : An empirical analysis	International Review of Economic Education	Google Scholar Elsivier
5	(Areiqat et al., 2019)	Impact of vehavioral finance on stock investment decisions applied study on a sample of investors at Amman Stock Exchange	Academic of Accounting and Financial Studies Journal	Google Scholar Elsivier
6	(Jiang et al., 2019)	Financial literacy and retail investors' financial welfare: Evidence from mutual fund investment outcomes in China Jinglin	Pacific-Basin Finance Journal	Google Scholar Elsivier
7	(Bouri et al., 2019)	Herding behaviour in cryptocurrencies Elie	Finance Research Letters	Google Scholar Elsivier
8	(Rasool & Ullah, 2020)	Financial Liracy and behavioral biases of individual investors empirical evidence of Pakistan Stock Exchange	Journal of Economics, Finance and Administrative Science	Emerald Insight
9	(Raheja & Dhiman, 2020)	How do emotional intelligence and behavioral biases of investors determine their investment decisions?	Rajagiri Management Journal	Emerald Insight
10	(Aren & Nayman Hamamci, 2020)	Relationship between risk aversion, risky investment intention, investment choices, Impact of Personality traits and emotion	Kybernetes	Emerald Insight
11	(P.H & Uchil, 2020a)	Impact of investor sentiment on decision making in Indian Stock market an Empirical Analysis Haritha	Journal of Advance in Management Research	Emerald Insigth
12	(P.H & Uchil, 2020b)	Influence of Investor sentiment and its antecedent on investment decision making using Partial Least Square Technique	Management Research Review	Emerald Insigth
13	(Fujii et al., 2021)	Equity crowdfunding and financial literacy of individual investors in Japan	Journal of Capital Markets Studies	Emerald Insigth
14	(Ah Mand et al., 2021)	Herding behavior and stock market conditions Abdollah	PSU Research Review	Emerald Insigth
15	(Ritika & Kishor, 2022)	Development and validation of behavioral biases scale: a SEM approach	Review of Behavioral Finance	Emerald Insigth
16	(Ahmad & Shah, 2022)	Overconfidenct heuristic driven bias in investment decision making and performance: mediating effect of risk perception and moderating effects of financial literacy	SAGE Open	SAGE Open
17	(Andriamahery & Qamruzzaman, 2022)	Do Access to Finance, Technical Know-How, and Financial Literacy Offer Women Empowerment Through Women's Entrepreneurial Development?	Frontiers in Psychology	Emerald Insigth
18	(Hanaffy & Widyastuti, 2022)	Determinant of Financial Management Behavior and Implication on Investment Decision	International Journal of Innovative Science and Research Technology	Emerald Insigth
19	(Van Nguyen et	Understanding financial literacy and	Heliyon 8	Science Direct

		associated factors among adult population in a low-middle income country		
20	(Majewski & Majewska, 2022)	Behavioral portfolio as a tool supporting investment decisions	Procedia Computer Science	ScienceDirect
21	(Ahmed et al., 2022)	Mediating Role of Risk Perception Between Behavioral Biases and Investor's Investment Decisions	Journals Sage	SAGE Open
22	(Weixiang et al., 2022)	An empirical assessment of financial literacy and behavioral biases on investment decision: Fresh Evidence from small investor perception	Frontiers in Psychology	Emerald Insigth
23	(Adil et al., 2022)	How financial literacy moderate the association between behavior biases and investment decision?	Asian Journal of Accounting Research	Emerald Insight
24	(Schuhen et al., 2022)	Financial Literacy of Adults in Germany FILSA Study Results	Journal of Risk and Financial Management	Emerald Insight
25	(Breuer et al., 2022)	Measuring risk taking and patience in financial decision making	Review of Financial Economics	Wiley
26	(Seraj et al., 2022)	The roles of financial literacy and overconfidence in investment decisions in Saudi Arabia	Frontiers in Psychology	the National Institutes of Health
27	(Husnatarina et al., 2022)	The Influence of Investor Intrinsis Motivation on Islamic Stock Investment Decision Making	Prosiding of the International Conference on Social, Economics, Business, and Education (ICSEBE 2021)	Advances in Economics, Business andManagement Research
28	(Khalaf, 2023)	An empirical Investigation on Investor Psychological Biases	Corporate and Business Strategy Review	Emerald Insight
29	(Saputri et al., 2023)	Determinant Factors of Herding Behavior and Financial Literacy on Investment Decision and Risk Tolerance as Mediator Factor	The International Journal of Social Science World	Growing Scholar Publishing
30	(Abideen et al., 2023)	Do Behavioral Biases Affect Investors' Investment Decision Making? Evidence from the Pakistani Equity Market	Risk	MDPI
31	(Savitri et al., 2023)	Literacy and Behavior Finance on Investment Decision in the Millenial Genaration in the Sub District Across From Ulu II Palembang City	ICBEM1	International Conference on Business, Economics & Managmenet fot Sustainable Future
32	(Dangol & Manandhar, 2020)	Impact of Heuristics on Investment Decisions : The Moderating Role of Locus of Control	Journal of Business and Social Science Research	DOI

No.	Researcher (Year)	Country	Context	Types of Biases deals
1	(Başarir & Yilmaz, 2019)	Turkey	Herd Behavior in Financial Market	-Rational Herd Behavior -Reputation-based Herd Behavior -Compensation-based Herd Behavior -Irrational Herd Behavior
2	(Baker et al., 2019)	India	examine how financial literacy and demographic variables	-Behavioral Bias -Demografi variable -Financial Literacy
3	(Srivastava et al., 2019)	India	to review the relationship between neurological processes and financial behavior	-Brain areas -Financial decision making
4	(Lopus et al., 2019)	Indonesia	Financial Literacy dan Poor and vulnerable youth	- Financial Literacy - Soft skill

5	(Areiqat et al., 2019)	Yordania	Behavioral Finance and Investment Decisions	-overconfidenc -loss aversion -risk perception - herding
6	(Jiang et al., 2019)	China	Financial Literacy and Investment Outcome	-Financial Literacy - Investment Outtcome -individual investor -retail investor
7	(Bouri et al., 2019)	Afrika Selatan	herding behavior in the cryptocurrency market.	-Herding behavior -cryptocurrency market
8	(Rasool & Ullah, 2020)	Pakistan	Financial Literacy and Behavioral Biases	-Financial Literacy - Behavioral Biases
9	(Raheja & Dhiman, 2020)	India	Emotional intelligence and behavioral biases	-emotional intelegence -behavioral biases
10	(Aren & Nayman Hamamci, 2020)	Turkey	Relationship between risk aversion, risky investment intention, investment choices Impact	-financial literacy, -big five personality traits -emotions - risk aversion - risky investment intention
11	(P.H & Uchil, 2020a)	India	Investor Sentiment and Investment Decision Making	- herding, -market and awareness factors -Investor Sentiment
12	(P.H & Uchil, 2020b)	India	investor sentiment and its antecedent on investment decision-making	-Herding -media factor -advocate recommendation - social interaction
13	(Fujii et al., 2021)	Japan	Equity crowdfunding and financial literacy	-expected market capitalization in - expected returns on investment
14	(Ah Mand et al., 2021)	Malaysia	Herding behavior and stock market conditions	herding phenomenon is distinct in Islamic versus conventional stocks.
15	(Ritika & Kishor, 2022)	India	Behavioral biases of individual investors	Behavioral biases, Scale development, Investment decision, Behavioral finance
16	(Ahmad & Shah, 2022)	Pakistan	Mediating Role of Risk Perception Between Behavioral Biases and Investor's Investment Decisions	-Risk perception -Behavioral Biases -investment decisions. -Disposition Effect, -Herding Bias -Blue Chip Stock
17	(Andriamahery & Qamruzzaman, 2022)	China	The effects of access to finance, technical khow-how, and financial literacy on women's empowerment through establishing women's entrepreneurial development.	-Financial Literacy - Technical Know – How -Acces to finance -Women entrepreneurial development -Women Empowerment
18	(Hanaffy & Widyastuti, 2022)	Indonesia	Determinants Financial Management Behavior and Implication on Investment Decision	-Financial Attitude -Financial Knowledge -Emotional Intelegence -Risk Perception -Financial Management Behavior -Investment Decisions
19	(Van Nguyen et al., 2022)	Vietnamese	Identify whether demographics, socio-economic factors, the usage of the internet, smartphone and bank, and cultural factor affect Vietnamese adults' financial literacy	--demographics -socio economic factors -the usage of the internet, smartphone and bank -cultural factors financial literacy
20	(Majewski & Majewska, 2022)	Poland	The relatively new group of methods supporting investment decisions	Behavioral portofolio's optimization

21	(Ahmed et al., 2022)	Pakistan	Behavioral biases and investor's investment decisions via the mediating role of risk perception	-Behavioral biases -Stock selection -Herding bias -Disposition effect -Bluc chip stock bias -Risk Perception
22	(Weixiang et al., 2022)	India	An Empirical assessment of financial literacy and behavioral biase on investment decisions	-financial literacy -investor psychology -behavioral bias, -investment decisions, - cognitive illusion
23	(Adil et al., 2022)	India	Financial Literacy modrate the association between behavior biases and investment decision	- risk-aversion -herding -disposition -investment decision - overconfidence - financial literacy
24	(Schuhen et al., 2022)	Germany	Financial Literacy of Adults in Germany FILSA Study Results	-financial literacy -basic education; -financial decision-making
25	(Breuer et al., 2022)	Germany	Risk Taking and Financial Decisions	-financial behavior - decision making, -risk attitude,
26	(Seraj et al., 2022)	Saudi Arabia	financial literacy and overconfidence	-Financial Literacy -Overconfidence
27	(Husnatarina et al., 2022)	Indonesia	The Influence of Investor Intrinsic Motivation	-the intrinsic motivation: -attributes -ofoption, -competence, - full ofmeaning,
28	(Khalaf, 2023)	Jordanian	An Empirical Investigation on Investor Psychological Biase Biases	-cognitive - emotional biases -overconfidence -representation -availability -loss aversion -achoring -regret aversion -financial decisions
29	(Saputri et al., 2023)	Indonesia	Herding Behavior and Financial Literacy on Investment Decision and Risk Tolerance Mediator Factor	-Herding Behavior -Financial Literacy -Risk Tolerance -Investment Decisions
30	(Abideen et al., 2023)	Pakistan	Behavioral Biases on Investment Decision	-Behavioral Biases -Investment Decision -Financial Literacy -Stock Market Anomalies
31	(Savitri et al., 2023)	Indonesia	Financial Literacy and Behavior Finance on Ivestmen Decisions	-financial literacy –investment decisions - financial behavior
32	(Dangol & Manandhar, 2020)	Nepalese	the impact of heuristics on the investment decisions	-representativeness, -availability, Rationality -anchoring and adjustment -overconfidence bias on rationality

No.	Researcher (Year)	Sample	Population	Data CollectionMethod
1	(Başarir & Yilmaz, 2019)			
2	(Baker et al., 2019)	500 individualinvestor	Individual investor at market Indian Capital	Survey research with Questionnaire design
3	(Srivastava et al., 2019)			Using neuroimaging techniques in mapping in the brain areas

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4	(Lopus et al., 2019)	601 students 25 teachers	Trainees in West Java	GEEA developed asset of assessment instrument ("Forms")
5	(Areiqat et al., 2019)	165 individual investor	Investor in Amman Stock exchange	Questionnaire
6	(Jiang et al., 2019)	30,000 Chinese individual investors and a dataset of mutual fund investment performances	Investor the Chinese stock market	Questionnaire
7	(Bouri et al., 2019)	14 leading cryptocurrencies	50 largest cryptocurrencies	Secondary data in the form of price
8	(Rasool & Ullah, 2020)	300	retail investor's sub-accounts is 245,975	Questionnaire
9	(Raheja & Dhiman, 2020)	500 financial specialists	Ludhiana Stock Exchange in Punjab state	Questionnaire
10	(Aren & Nayman Hamamci, 2020)	446	Turkey population	Questionnaire
11	(P.H & Uchil, 2020a)	875 individual investor	Individual Investor on The Indian stock market	a questionnaire-based survey
12	(P.H & Uchil, 2020b)	366	total number of equity broking firm is 7,669	A structure questionnaire survey
13	(Fujii et al., 2021)	96 Japanese companies that conducted ECF campaigns	109 Japanese companies that conducted ECF campaigns	Secondary data
14	(Ah Mand et al., 2021)	74 % Sample of conventional stocks of Malaysia consists conventional stocks of Malaysia	Investor on conventional stocks of Malaysia	Secondary data - cross-sectional absolute deviation of returns
15	(Ritika & Kishor, 2022)	274 investor	Investors who invest in financial markets	Questionnare
16	(Ahmad & Shah, 2022)	450	Individual investors who are engaged in investment for several years in Pakistan Stock Exchange	Questionnare
17	(Andriamahery & Qamruzzaman, 2022)	795	950 women – owned SME	Questionnare
18	(Hanaffy & Widyastuti, 2022)	350 investor	10 best securities companies	Questionnare
19	(Van Nguyen et al., 2022)	601	669	Questionnare
20	(Majewski & Majewska, 2022)	The Warsaw Stock Exchange and Concern Stock of Companies Quoted	The Warsaw Stock Exchange and Concern Stock of Companies Quoted	Experiment
21	(Ahmed et al., 2022)	450 investor	Investor Who are involved directly or indirectly in stock's trading in Pakistan Stock Exchange	Questionnare
22	(Weixiang et al., 2022)	450	Investor on stock market investment	Questionnare
23	(Adil et al., 2022)	253 individual investors.	individual investors of the Delhi-NCR region.	Questionnare
24	(Schuhen et al., 2022)	212	The individual competence of the respondents with regard to financially determined life situations	A digital questionnaire

25	(Breuer et al., 2022)	7000 university students	Individuals in nine different countries, namely China, Germany, India, Iran, Italy, Singapore, South Korea, Spain, and Russian	Survey (questions)
26	(Seraj et al., 2022)	180 investor	Investor in Saudi Arabia	Questionnare
27	(Husnatarina et al., 2022)	82 investors of Islamic stocks in Central Kalimantan	100 investors of Islamic stocks in Central Kalimantan	Questionnare
28	(Khalaf, 2023)	693	2000	Questionnare
29	(Saputri et al., 2023)	50	Investor on ISE	Questionnare
30	(Abideen et al., 2023)	676	Investor Pakistani equity market	Questionnaire
31	(Savitri et al., 2023)	100	residents of Seberang Ulu II District, Palembang City	Questionnaire
32	(Dangol & Manandhar, 2020)	391	Nepalese investor's investment	Questionnaire

No	Researcher (Year)	Tool that used for analyzis	Result and Conclusion
1	(Başarir & Yilmaz, 2019)	Regression	Investors change their decisions and irrationally follow the decisions of theirpeers. other investors for various reasons
2	(Baker et al., 2019)	Research This using one-way analysis ofvariance (ANOVA) -Factor Analysis -Multiple Analysis	The results also show that good financial knowledge has a positive correlation with accounting mental bias, and a negative correlation with dispositional effects and herding bias. However, it is not there is a significant correlation between overconfidence and emotional bias.
3	(Srivastava et al., 2019)	To achieve the research objectives, a conceptual paper analyzes the current literature and conducts a meta-analysis.	Neurofinance, an emerging field in finance, can explain how human brainactivity relates to financial decisions.
4	(Lopus et al., 2019)	Regression	Both the trainers and the students involved showed statistically significantimprovements in students' financial literacy and their understanding ofacquisition of soft skills.
5	(Areiqat et al., 2019)	Multiple regression and hierarchical regression analyzed	The results show that financial behaviour on the Amman Stock Exchange influencesindividual investors' investment decisions, with the overconfidence variable being the most significant compared to risk perception, loss aversion, financial behavior and herding
6	(Jiang et al., 2019)	Regression	Retail investors with better financial knowledge tend not to suffer any losses when compared to those with lower financial knowledge. There is a strong correlation between financial knowledge and investment performance.
7	(Bouri et al., 2019)	rolling-window analysis /Logistic Regression	Herding behavior affects cryptocurrency market
8	(Rasool & Ullah, 2020)	Regression	There is a negative correlation between financial literacy and investment propensity individuals
9	(Raheja & Dhiman, 2020)	Multiple Regression	There is a positive correlation between financial specialists' behavioral tendencies and speculators' business choices, as well as financial specialists' enthusiastic insights and business choices.them..
10	(Aren & Nayman Hamamci, 2020)	IBM SPSS Statistics for analysis. ANOVA, t-test and discriminant analysis	For the purpose of avoiding investment risk, it was found that there were two personality traits, namely neuroticism and openness, and one personality, fear and anger.
11	(P.H & Uchil, 2020a)	PLS SEM	Market and herding effects have asignificant influence on investorsentiment. Media, social interaction, and advocate recommendations have the most impact from the source of awareness.
12	(P.H & Uchil, 2020b)	PLS SEM	The results show that investor sentiment strongly influences the

			investment decisions made by investors individuals.
13	(Fujii et al., 2021)	Regression	The results of this analysis suggest that Japanese individual investors may not have sufficient financial knowledge.enough.
14	(Ah Mand et al., 2021)	Regression	This study shows that the herding behaviour of investors in Islamic stocks occurs when the market rises and has a high correlation with the herding behaviour of investors in Islamic stocks. is not linear with the market return
15	(Ritika & Kishor, 2022)	SEM	Confidence them prior beliefs, past experiences, and market trends influence choice their choice for investments and securities
16	(Ahmad & Shah, 2022)	SEM	The results show that risk perception fully mediates the relationship between the overconfidence heuristic and investment decisions and performance. Conversely, the results show that overconfidence can impair the quality of investment decisions and performance, while financial literacy and risk perception can improve the quality of investment decisions and performance. improve its quality
17	(Andriamahery & Qamruzzaman, 2022)	SEM and multivariate regression analysis	is recommended that the economy invites the sustainability of women's entrepreneurship, increased technical knowledge, accessibility of financing, and understanding of finance, so that women can be empowered to a large extent.
18	(Hanaffy & Widyastuti, 2022)	PLS SEM	This suggests that financial behaviour management and emotional intelligence can influence financial decisions. investment through financial management behaviour.
19	(Van Nguyen et al., 2022)	Multivariate regression analysis	This research is helpful for economic actors by having a strong financial strategy and policy makers by providing guidance reliable financials.
20	(Majewski & Majewska, 2022)	Empirical research	However, in practice, using knowledge of behavioural finance provides a significant advantage over ordinary market participants. A model based on these assumptions becomes a useful tool to assist with investment decision-making.
21	(Ahmed et al., 2022)	Modelling covariance-based structural equation (CB-SEM)	One of the strongest predictors of perceived risk is behavioural and stock selection bias, herding bias, disposition effect, and blue-chip stock bias.
22	(Weixiang et al., 2022)	Likert scale method and SEM method	Heuristic bias and the evolution of behavioral bias in decision-making have statistically significant relationships.
23	(Adil et al., 2022)	Regression	Investment decisions are associated with biased investor behavior that affects their knowledge of finance. The results showed that variations in financial literacy and investor bias can also affect their investment proportions. Furthermore, it was found that certain behavioural bias, such as herding bias and risk avoidance, negatively and significantly influenced male investor investment decisions, while overconfidence was found
24	(Schuhen et al., 2022)	SEM	The results show that the underlying structure of FILSA is legitimate, and that the buildable area has been determined.
25	(Breuer et al., 2022)	Regression	Analyses based on actual decision-making in experimental contexts are very similar to our new survey questions on investment behavior
26	(Seraj et al., 2022)	PLM SEM	The results show that overconfidence positively influences investment decisions, and the relationship between financial literacy and investment decisions is moderated by financial literacy. positive and significant by overconfidence
27	(Husnatarina et al., 2022)	Multiple Regression	This research shows that all aspects of intrinsic motivation - choice, ability, significance, and progress - positively and significantly influence investment decisions of Islamic stock investors.
28	(Khalaf, 2023)	PLS SEM	Jordanian investors believe that their decisions will yield profits, although they do not rely on highly advanced models that can guide investment strategies..
29	(Saputri et al., 2023)	PLS SEM	The results show that there is a relationship between mediating risk tolerance and herding behaviour towards investment decisions partially. However, the results also show that there is a full relationship between mediating risk tolerance and financial literacy

			towards investment decisions.
30	(Abideen et al., 2023)	PLS SEM	Empirical evidence suggests that financial literacy helps control the relationship between behavioural biases and market anomalies. Ultimately, taking Investor investment decisions are influenced by financial literacy
31	(Savitri et al., 2023)	Regression	This study shows that financial behaviour and financial literacy are positively and significantly correlated with investment decisions, and financial literacy is also positively and significantly correlated with investment decisions.
32	(Dangol & Manandhar, 2020)	Regression	The results showed that locus of control has a moderating influence on the relationship between the three heuristic biases and irrationality in investment decision making.

Furthermore, this research will show how network visualization, overlay visualization, and density visualization with keywords affect behavioral finance and investment decisions
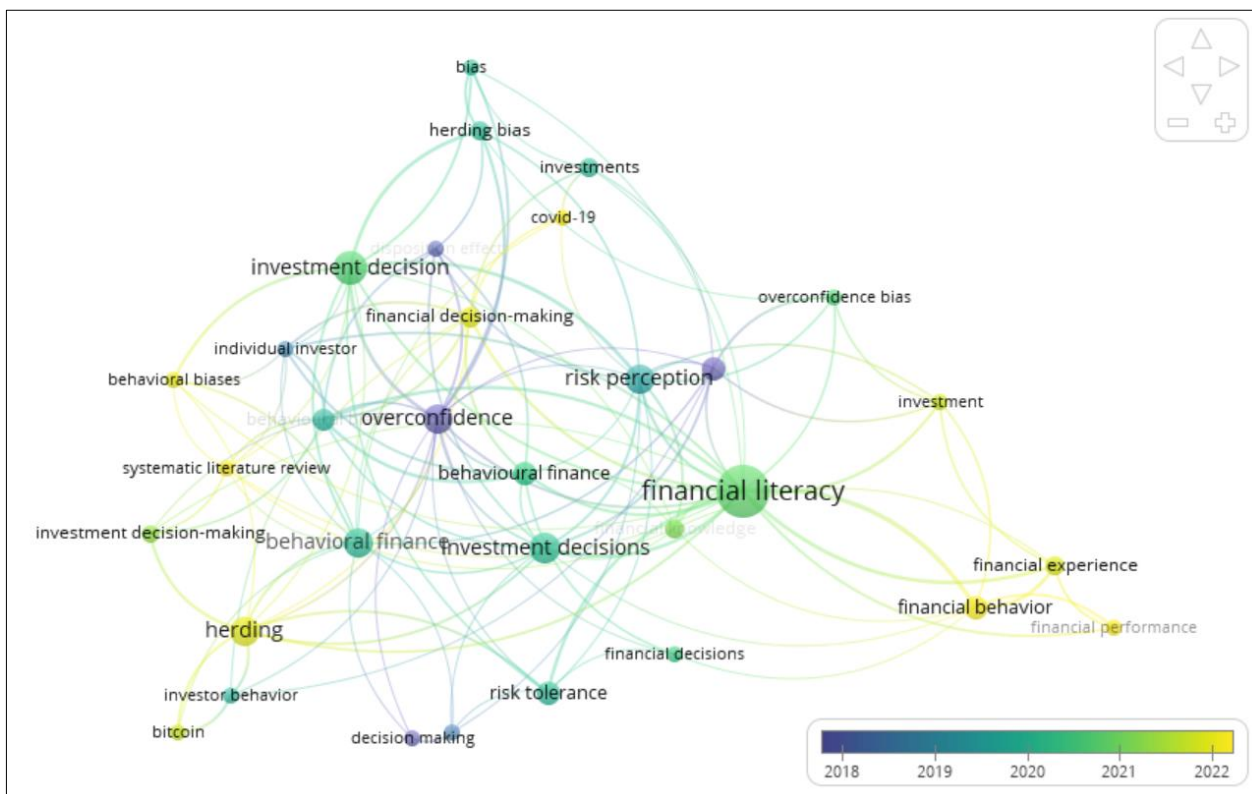
which can be seen in this figure.
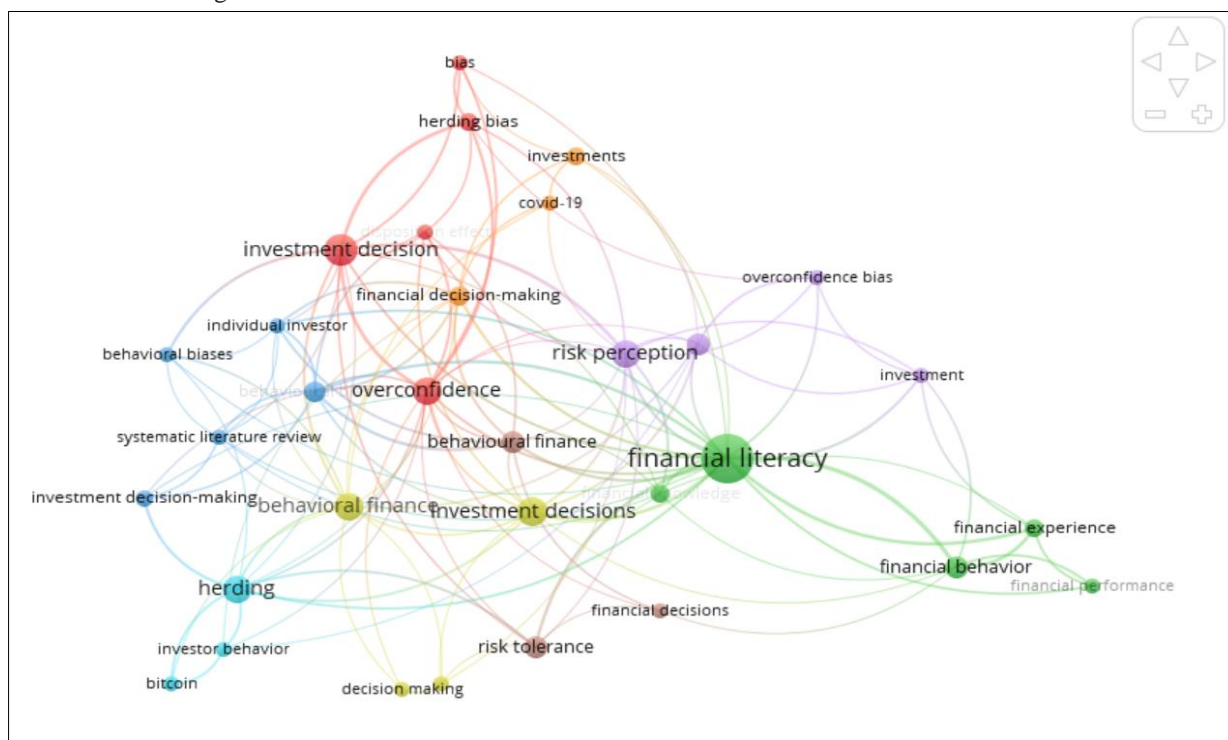
**Gambar1.1.** *Network Visualization*

The figure above shows 7 clusters with the keywords being Behavioural Finance and Investment Decision. The details of the clusters are Investment Decision, Behavioural Finance, Financial Literacy, Financial Experience, Risk Perception, Herding and Overconfidence.

Gambar 1.2.Visualisasi Kepadatan

Figures 1.1 and 1.2 also explain the relationship between topics shown by lines between descriptors on each field in the network visualization and overlay. The more lines between descriptors, the closer the relationship between documents, and fewer or no lines indicate fewer or no documents. Figure 1.2 also shows that the most discussed keywords are financial literacy, behavioral finance and investment decisions.
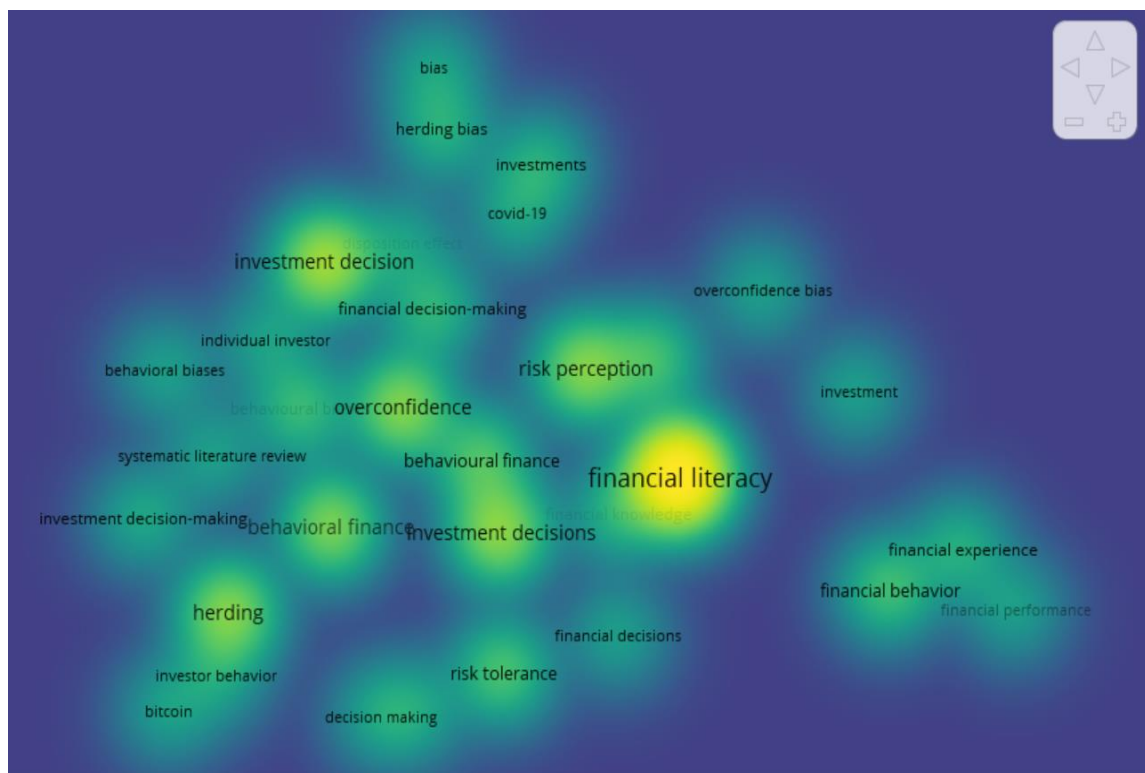
Gambar 1.3 *Visualisasi Hamparan*

Furthermore, Figure 1.3 shows the relationship between subjects and the color scale through density visualization. The green color indicates sparse or low research frequency, while the yellow color indicates dense or high research frequency.

In addition, it can be seen that there are many topics related to investment decisions and their influencing factors, such as investor behavioral bias, financial experience, and overconfidence bias, which can affect an investor's investment decision. From the figure, it can also be seen that research on behavioral bias in behavioral finance in relation to an investor's investment decision-making can still be conducted due to the differences in results from previous studies.

IV. CONCLUSIONS AND SUGGESTIONS

Studies conducted by researchers around the world on behavioural finance and how it affects investment decisions have provided many questions and solutions for the financial industry. *Behavioural finance, investment decisions*, and *financial literacy* are the most frequently studied, as can be seen from the visualisation created by VosViewer.

Suggestions that can be used for further research are needed. model development to further explore what influences an investment decision, it can be a variable of behavioural bias, psychological factors, emotional intelligence, gender, demographics, and culture.

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