



Review of Behavioral Finance from an Inventor's Perspective

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Abstract. This study aims to determine how the development of behavioral finance from year to year. As we know, developments regarding today's investment decision-making are heavily influenced by behavioral finance. This is because, in several studies, it is known that an investor can behave irrationally in making investment decisions. This research will investigate and combine previous research related to behavioral finance in the last six decades. This is done to know how behavioral finance impacts investment decision-making from an investor's perspective. Data processing was done by collecting related articles through the publish or perish program. Then all articles related to behavioral finance were processed using the VOS Viewer application to find out about behavioral finance, which is the basis for decision making from an investor's point of view.

Keywords: investment decision · investor · irrational · behavioral finance

1 Introduction

Investment is a process of purchasing financial assets in securities and other financial instruments using their resources to obtain profit in the future. In investing, the most important thing is how to decide on the right and optimal investment to get maximum profit; thereby, the right investment decision is needed. In the traditional financial view, decision-making, especially regarding investments, always assumes that the investor is a rational individual. This condition is supported by Markowitz's research [1] that centered on speculations to create an ideal portfolio on two things: (1) how to maximize speculation returns at a certain level of chance, or (2) minimize chance at a particular rate of return. In building portfolio hypothesis, Markowitz accepted that all financial specialists are judicious people in making choices. Markowitz's portfolio hypothesis expect that on the off chance that a speculator is confronted with 2 portfolio alternatives that offer the same level of return but contrast in chance levels, at that point the financial specialist will select a portfolio with a lower level of chance, or the increment in chance must be offset by an increment within the level of surrender. In other words, investors do not like risks. Markowitz suggested that a portfolio is best managed optimally by considering each trade-off (decision on two or more things, sacrificing/losing an aspect for another aspect to gain profits) between risk and returns that will be disputed later. This model will generate a portfolio through a mean-variance process. Mean is a yield

expectation that is widely calculated in an average way, and variance is a measure of risk used. Markowitz's model portfolio theory revealed that investing by breaking down invested funds that are called then putting them on different paths instead of focusing on one path alone or called diversification. The placement of funds separately is intended to reduce the risks that will arise in the future. This theory is also supported by several other theories, including the Efficient Market hypothesis theory introduced by Fama [2]. In addition, the statement that all investors are rational is also supported by The Theory of Capital Asset Pricing Model (CAPM) introduced by John Lintner [3], Sharpe [4]. Both of these theories use the same assumption that investors are always rational because, basically, conventional financial theory always assumes that investors in making investment decisions will be irrational by collecting as much information as possible about the conditions and selecting investment assets. Information in financial markets is plentiful, but correct information is scarce, making it difficult for individual investors to decipher financial information. Therefore, the calculation of risk and corresponding returns is complex, making it difficult for investors in financial markets. Rational decisions are always based on the study of cause-and-effect relationships, but the equations that govern these relationships are difficult to understand.

However, this condition began to be refuted by several studies, including Simon [5] who stated that Bounded Rationality emphasizes cognitive limits and argues that decision-making results are only a "satisficing" choice that ensures that the decision taken is not an "optimal" decision. Simon used the weakness of decision-making rationality to build a bounded rationality model. Then Kahneman [6] conducted research related to financial psychology with results that prospect theory is a theory of decision-making in risky conditions, so that decisions taken are based on the circumstances that occur. The state is in a state of uncertainty, where it is difficult to predict the consequences or outcomes of the event. Decisions taken involve an internal conflict over trade-off values, which are difficult choices when there are conflicting values and goals. It also mentions that investors will also make irrational choices under certain conditions. Behavior in the decision-making process is limited by cognitive ability.

Research conducted by De Bondt Thaler [7] showed that investors do not always behave rationally, where there are conditions of overreaction from investors under certain conditions that impact investors who will tend to experience losses. In addition, the January effect is a condition where the rate of return on profits is expected to be paid at the beginning of the coming year or January. This research then became a driver of the emergence of research related to behavioral finance.

The behavioral finance paradigm provides an alternative perspective of human behavior based on a multidisciplinary understanding of human behavior. In particular, investor decisions and preferences are believed to be limitedly rational and adaptive. Bounded rationality refers to investor decision-making involving rational and irrational elements. Bounded rationality theory asserts that normal humans are not entirely rational in their decision-making due to Simon's [5] various heuristic and behavioral biases. Individual decisions are under inconsistent time preferences, incomplete information, and different learning environments. Behavioral finance is an integration of sociology, economics, and psychology. The concept of behavioral finance begins when financial institutions are interested in understanding the behavior of groups and individuals to invest as a whole.

Furthermore, psychological science helps understand the behavior of groups and individuals to design appropriate strategies that can influence investors to make investment decisions. On the other hand, economics is responsible for analyzing the relationship between risk and returns that will provide financial information to take [8].

Currently, much research is related to investor decision-making indicators related to behavioral finance. Igual Santamaría's [9] research resulted in a thorough review of behavioral finance theory from an asset pricing perspective that describes a conceptual map focusing on behavioral finance research. Market anomalies, particularly the separation between risk and return, along with heuristic representation (bias beliefs) and prospect theory (unconventional preferences) in psychology, have led to irrational models of investor behavior. The result is that overconfidence and loss aversion appear to be the most relevant biases behind the irrationality of investors.

Research by Kinatta et al., [10], showed that investors' cognitive biases and intuitive attributes have a positive and significant effect on the quality of investment decisions in commercial real estate properties. In addition, the two components of investor cognitive bias (frame variation and cognitive heuristics) have a positive and significant influence on the quality of investment decisions, while mental accounting has a negative and significant effect on the quality of investment decisions. For the intuitive attributes of investors, the level of overconfidence and loss aversion has a positive and significant effect on the quality of investment decisions, while herding has a negative and significant effect on the quality of investment decisions in commercial real estate properties in Uganda. Based on this, this study will look at how behavioral finance patterns are viewed from the perspective of investor investment decisions based on some research that has been done before.

2 Research Methods

Data processing in this study used VOS viewer tools by taking all research sourced from the Web of Science published with the theme of investment decisions related to behavioral finance over the past 30 years. The keywords used were 'behavioral finance' and 'sentiment'. The Web of Science database search system used Boolean operators (OR, AND, etc.). Thus, following the Costa et al. [11] search method, we utilized OR administrators between terms that characterize the common hypothetical field (behavioral back OR behavioral back) and AND administrators to associate the terms connected to the field (behavioral fund OR behavioral fund AND financial specialist choices).

Subsequently, the sentences utilized within the Web of Science Center Set were: Subject: (behavio\$ral back?) OR Subject: (fund behavio\$ral?) AND Subject: (speculator choice). The "\$" image permits the word 'behavioral' to be included within the comes about. This method guarantees that all distributions on behavioral back are included within the think about. "?" image permits looks for all words that start with 'finance' in any case of their conclusion, guaranteeing that any word alluding to back is included. Based on data collection, there are 10 articles with the highest number of citations are shown in Table 1.

Based on Table 1, the highest citation number is Fama's [12] article titled "Market efficiency, long-term returns, and behavioral finance". The research results are in line

Table 1. The highest number of citations.

Cites	Authors	Title	Year
7803	EF Fama	Showcase proficiency, long-term returns, and behavioral back	1998
5118	N Barberis, R Thaler	A survey of behavioral finance	2003
2884	RJ Shiller	From effective markets hypothesis to behavioral fund	2003
2655	H Shefrin	Beyond greed and fear: Understanding behavioral finance and the psychology of investing	2002
1353	RH Thaler, RH Thaler	Advances in behavioral finance	1993
1231	JR Ritter	Behavioral finance	2003
1007	H Shefrin	Behavioral corporate finance	2001
957	MM Pompian	Behavioral finance and wealth management: how to build investment strategies that account for investor biases	2011
922	RH Thaler	The end of behavioral finance	1999
835	AW Lo	Accommodating productive markets with behavioral back: the versatile markets theory	2005

with the Theory of Efficiency market hypothesis anomaly that occurs in the market is a coincidence; the overreaction drawn from the stock price to the information circulating is a common thing under such reactions, and the continuation of abnormal returns before the information is circulated and post-information circulated is as often as the return after the event. Most importantly, those long-term return anomalies are volatile. They tend to disappear in a reasonable change in ways that have been measured.

The next highest number of citations is Barberis [13], that revealed behavioral finance and argued that some financial phenomena prove that there are investors who are not all rational. The next highest number of citations is Shiller [14], who expressed that collaboration between back and other social sciences, known as behavioral fund, has driven to a more profound understanding of our information of budgetary markets. It is critical to apply suitable benchmarks in evaluating the affect of monetary behavior to date.

3 Results and Discussion

Data processing using VOS Viewer obtained the results as shown in Fig. 1.

The research data collected was 1000 articles and grouped into 9 main clusters. Each cluster describes the large number of studies that use “behavioral finance” keyword. Each cluster will closely relate to behavioral finance indicators in investor decision-making. The division of clusters is as follows.

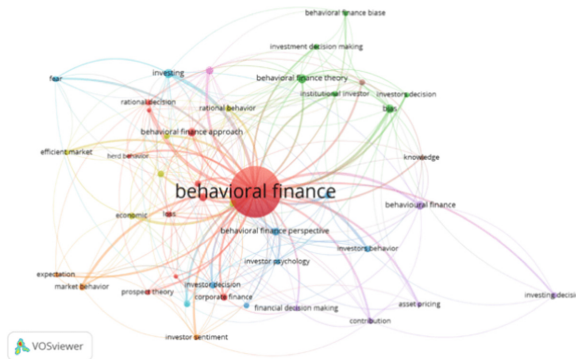


Fig. 1. VOS VIEWER results related to behavioral finance indicators in various previous studies.

Cluster 1 is the cluster that has the most indicators, namely behavioral finance as the primary indicator that will be interconnected with other indicators. The cluster 1 sections are behavioral finance approach, behavioral finance study, corporate finance, decision-maker, efficient market hypothesis, herd behavior, investment behavior, loss, prospect theory, and rational decision. It is the most frequently researched cluster in the last 6 decades.

Cluster 2 is the next cluster that researchers often trace. The cluster 2 sections are behavioral finance bias, behavioral finance theory, bias, institutional investor, and investor decision. Cluster 3 consists of behavioral finance factors, behavioral finance perspective, decision-making process, investor decision, investor psychology, and investor behavior. Cluster 4 consists of anomaly, behavioral, economy, efficient market, rational behavior, and rational investor. Cluster 5 consists of asset pricing, behavioral finance, contribution, financial decision-making, and investing decisions. Cluster 6 consists of emotion, fear, and investing. Cluster 7 consists of expectations, investor sentiment, and market behavior.

Cluster 8 consists of behavioral economics and knowledge. Cluster 9 consists of irrational behavior. Based on the data in Fig. 1, it is known that research related to behavioral finance from investors' perspective for indicator asset pricing, financial decision making, and investing decisions.

4 Conclusion

From the results of this study, it is known that 9 clusters were formed in the formation of behavioral finance indicators from the investor perspective. Most research on financial behavior indicators is related to the behavioral finance approach, behavioral finance study, corporate finance, decision-maker, efficient market hypothesis, herd behavior, investment behavior, loss, prospect theory, and rational decision. This research is useful to increase our competence as Doctoral's degree students at the Faculty of Economics and Business at University of North Sumatera.

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