

Cognitive Biases in Finance and Marketing Literature: A Meta-Analysis Approach

ABSTRACT

Cognitive biases are in the focus of attention of both marketing and finance, as they are highly influential in the decision-making process of consumers and investors. In proportion to this effect size, it is observed that the studies on this subject in the marketing and finance literature have increased in recent years.

In this study, it is aimed to analyze the studies published and indexed in two important international databases since 2015, the time period when cognitive biases started to come to the fore in the context of economy and business. Due to the importance of cognitive biases in economic decisions, within the scope of this study, thirteen different cognitive biases were examined from the perspectives of finance and marketing disciplines and scanned in two national and international databases (Web of Science and Scopus), and finally 313 articles were accessed within the framework of the limitations of the study.

As a result of the analyzes and bibliographic data visualization, it was determined that cognitive biases were studied more intensively in the field of finance compared to the field of marketing. Another important finding is that cognitive biases are mostly researched together with the "risk" phenomenon in both marketing and finance. That is, most of the studies on this subject have focused on revealing the relationship between the perceived risk in the decision-making phase and the cognitive biases that individuals have. In future studies, it is thought that evaluating different types of cognitive biases together with various variables may contribute to both marketing and finance literature.

Keywords: Behavioral Finance, Behavioral Marketing, Cognitive Biases, Meta-analysis, Biases in Decision Making

INTRODUCTION

Behavioral finance and marketing has shifted the focus of economists and researchers from mathematical and statistical models to human behavior and psychology. It tries to explain the reasons behind the irrational behavior of consumers and investors and to find answers to many unanswered questions. Curtis (2014) explains this issue by stating that decision makers are usually guided by their desires, hopes and fears rather than facts, and they can ignore the existing facts while making mental reasoning.

Economists think that such irrationality that occurs in the complex world of finance is due to cognitive biases that arise due to the limited cognitive capacities of decision makers. Cognitive bias is a broad term that includes various processes that can lead to incorrect judgments or interpretations, and can also affect memory, reasoning and decision making. In other words, systemic errors in reasoning and irrational results in decision making are actually the result of cognitive biases. In real-life situations, many decisions are made based on subjective judgments, preferences, and biases that often do not reflect the real world. Understanding cognitive biases, which is one of the important elements that shape consumer behavior, is extremely important for both finance and marketing in order to develop the right strategies for consumers. Due to the importance of cognitive biases in economic decisions, within the scope of this study, thirteen different cognitive biases were drawn attention and tried to be discussed from the perspective of finance and marketing disciplines with the method of meta-analysis. In this way, it is aimed to better understand the causes of "irrationality" in financial decision making and to remove some of the confusion regarding this issue.

COGNITIVE BIASES

Zindel et al. (2014) defines biases that lead to systematic judgment errors, deteriorate the way individuals perceive reality, and result from simplification of information processing strategies, as cognitive biases. These can also be expressed as strategies or shortcuts that people can apply to various problems in the decision-making process, but that it is not always possible to reach the right result. From time to time, it can be seen that investors resort to cognitive shortcuts when they have to make urgent decisions, make approximate calculations, or when there is too much information on the subject and they do not have much time to think about it, or when they have very little information.

Cognitive biases have negative effects on the individual's judgment and decision-making processes. Although they provide convenience in the decision-making process, these decisions can be misleading and cause individuals to have bad experiences (Wasserman & Bracken, 2003). In order not to experience such negativities, we must also take into account the tendencies that cause cognitive biases.

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While Kahneman and Tversky (1974) classify the tendencies that cause cognitive biases as representation, presence, support and correction tendencies, Pompain (2012) classifies cognitive biases as cognitive dissonance, conservatism, verification, representation, illusion of control, and past opinion tendencies. The behavioral finance and marketing literature is particularly concerned with the following behavioral biases:

Cognitive Dissonance Bias

Cognitive conflict is the mental conflict people experience when evidence is presented that their beliefs and assumptions are wrong. Therefore, cognitive dissonance can be classified as a kind of remorse or regret for false beliefs (Athur, 2014).

People also tend to be biased about their past investments. For example, a bad investment performance in the past is remembered somewhat better in the investor's memory. Because people like to think their investment is good. The studies carried out support the idea that the memories of past investments are remembered more positively than they actually are (Nofsinger, 2012; translated; Gazel, 2014). In other words, the investor feels the need to justify the decision he made in the past. The effort to justify oneself brings the investor the expectation that the negative situation is temporary or that the financial instrument taken as a result of the wrong decision will gain value again. This situation is explained by cognitive dissonance.

There are many behavioral errors that can be caused by cognitive dissonance bias. For example, investors do not want to admit that they made the wrong decision and continue to hold depreciating stocks in their portfolios, which they would not hesitate to sell on other terms. The common expression for this concept is "don't throw money away-continue to invest money in a failed business". Also, cognitive dissonance bias can push investors into herd behavior. When people come across information that conflicts with their current knowledge, they tend to ignore it until it spreads enough to get other people to act together. Finally, cognitive dissonance may push investors to think "this time is different" (Pompain, 2012).

Conservatism Bias

Conservatism bias is that individuals unconsciously value their old knowledge more than new knowledge. They subconsciously place less value on new information and find it difficult to let go of old information.

The conservatism bias is faced with the representational bias. When something changes, people react less than expected because of the conservatism bias, but if there are enough examples, then people adapt to it and give the expected reaction (Ritter, 2003). In other words, people may react less than expected due to representative bias under changing conditions, but they will respond in the long run. People react slowly to changing situations (Veeraraghavan, 2010). On the other hand, Shiller (1992) defines conservatism bias as a combination of overconfidence and attachment and correction biases.

According to Montier (2002) conservatism means to be blindly and stubbornly attached to a foresight or foreboding. Byren and Utkus (1992) explain the conservatism bias as the idea of clinging to old information despite new contradictory information. In this case, people either completely ignore the new information or partially change their views by partially considering this information. For example, if an investor who invests in a high-profile company continues to maintain their hopes for the company even after receiving new information that the profitability of the company has deteriorated, it is possible to talk about conservatism bias.

Confirmation Bias

This bias, which is also called confirmatory bias in some sources, is a bias that pushes the individual to investigate the information that supports his/her own thought, but causes him to postpone the information about the opposite views. Therefore, the individual gives excessive importance to the information that confirms his own truth, but does not give enough importance to the evidence that does not confirm his own truth (Rappaport & Mauboussin, 2001). In addition, individuals may experience fear of losing their dignity when they start to think about information that will reveal their own mistakes.

Individuals with confirmation bias only pay attention to information that confirms their own ideas and beliefs, and reject unverified interests and evidence. In terms of financial investments, the tendency of investors to focus on positive information about an investment, ignore or reject negative information is known as the confirmation tendency. This may lead the investor to reject evidence that the screening criteria used to analyze investments are inaccurate or incomplete. In addition, focusing only on positive information about investments can lead to overconfidence in the investment and concentration of a certain investment in the portfolio.

The way to minimize potential investment errors due to confirmation bias is to carefully examine and analyze information that seems to contradict previous beliefs and ideas. While doing this, it is necessary to work consciously and to examine this information with different analysis methods in order to seek and find this new information that does not confirm the existing ideas.

Representative Bias

The representational bias is the tendency of the individual to evaluate the object in question according to this focal point, focusing on how much it resembles something else, rather than using the actual probabilities of an object. However, the understanding of decision-making based only on similarities and representation can cause individuals to make serious mistakes. The representation and perception of the situation may lead to ignoring the factors that are actually effective by taking the situation away from its essence (Taffler, 2002). An investor with a representative bias puts too much emphasis on new information when setting his expectations. A newcomer can build grand strategies based on a little knowledge.

Barberis et al. (1998) define the representativeness bias as the tendency of investors to give excessive weight to the last, most salient elements when making their judgments. In this sense, the representation bias can be considered as an investor who has to make a decision about the financial asset, taking into account the latest performance of this financial asset.

In order to minimize the investment errors that may be caused by the representation bias, the investor must first categorize the new information correctly. If there is misclassified information, the investor should step back and look for the real category. It should then reasonably determine the weight of the effect of that information on their expectations.

Illusion of Control

The illusion of control is individuals' belief that they can influence outcomes that they cannot control. According to Shefrin (2007), the illusion of control is defined as the tendency of people to believe that they can control and influence outcomes that may actually have no effect on them. Especially when it comes to a situation where people have been successful before, they tend to have the illusion of control if they have a lot of knowledge about the subject or if the subject is familiar to them. (Montier, 2007).

Individuals with the illusion of control bias think they have more control over the consequences of their decisions than they actually do. Such an illusion of control over an investment can lead to over-trading, with accompanying excessive trading costs. In addition, this bias can lead to less diversified portfolios and the high risk they will create. The way investors can protect themselves from the investment mistakes that the tendency to illusion of control will create depends on revealing the true complexity of the investment. Investors should be encouraged to seek the opinions of others. They should also keep records of their transactions, so that they can easily analyze transactions as well as their transactions. Thus, they can see the results and successes of their investment decisions more clearly.

One of the negative reflections of the illusion of control bias is that it causes the investor and consumer to be overconfident in this tendency. In particular, if the investor has made a successful investment decision in the past or has a successful business life, he may be overconfident that his new and future investments will also be successful.

Hindsight Bias

According to Pompian (2012), past opinion bias is a difficult bias to measure because people are rarely aware that they have this bias. That's why very few people can take this test and admit to being influenced by the "I knew it all along" behavior. Even people who have reason to believe they will objectively be harmed by past opinion bias are unlikely to admit it to themselves.

Past opinion bias leads people to exaggerate their beliefs before the event occurs and supports the view that human cognition tends to be conservative (Bülbul, 2008). In addition, this bias will trigger the tendency to overconfidence, as it leads people to know the outcome beforehand. The overconfidence it gives to investors and consumers can lead to a false sense of confidence when making a purchase or investment decision. This will show itself in the form of excessive risk taking. It can also be considered along with the tendency to think that you already know the outcome. Past opinion bias also affects predictions about the future.

Mental Accounting Bias

In its most basic sense, we can call it "mental accounting" that we spend our money according to different categories that we have created entirely in our minds. Although we often think that it facilitates our decisions about consumption and investment, in fact, it often causes us to make mistakes.

Goldberg and Von Nitzsch (2001) explain mental accounting with the following example. According to the example, there are two situations.

Scenario 1: You bought a ticket for a concert by paying \$150. When you came to the entrance on the day of the concert, you realized that you lost your ticket. Would you buy a new ticket by paying \$150 at the ticket office?

Scenario 2: You have booked a \$150 ticket to a concert, but have not yet paid for it. When you came to the entrance on the day of the concert, you realized that you lost \$150 in your wallet. Would you buy a new ticket from the ticket office?

When the above two cases are examined carefully, it is seen that both cases are the same. In both cases, the loss is \$150. However, it is seen that individuals hesitate to buy a ticket again in the first case, whereas in the second case they pay \$150 for a new ticket. In the first case, in mental accounting, the individual has already set aside \$150 for the concert and does not want to buy a new ticket again when they lose the ticket. However, in the second case, a ticket for the concert has not been bought yet, according to the accounting record made in the mind. Therefore, individuals preferred to buy a new ticket. Although the loss was the same in both cases, the results were different. Pompian (2012) explains this situation as follows: Mental accounting bias causes people to see a total cost of \$300 in the first scenario, two tickets and a cost of \$150 for each ticket. On the other hand, most people somehow consider separately the \$150 cash loss plus the \$150 ticket price in the second scenario. Mentally these are debited in two separate accounts. In other words, \$300 is not debited in a single account. Either way, the concert ticket would undoubtedly cost \$300.

Although investment and consumption decisions made under the influence of mental accounting bias are considered correctly by individuals, they can be misleading and cause negative results to be experienced because they are placed in different categories while planning in the mind.

Anchoring and Adjustment Bias

When individuals make an estimation, especially under uncertainty, they usually act from a reference point, and this reference point is usually a numerical value determined by the individual himself based on his previous experiences. There is a tendency to be tied to the reference point in financial investment decisions. It is also known as anchoring and straightening in various sources (Güngör, 2018).

The brain's choice of reference point is important because it determines whether we feel the joy of a win or the sadness of a loss. At the same time, the reference point determined by the investor may change over time. For example, not selling an investment that will make a profit of 1,000 TL after the purchase price and then selling it on the day it makes a profit of 500 TL may upset the investor as if it were a loss. The reason for this is loss of profit. In other words, the first reference point of the investor is the purchase cost, while the second reference point is the profit of 1,000 TL. Therefore, although it has made a profit of 500 TL according to the first reference point, it has lost 500 TL according to the second reference point (Nofsinger, 2012; translated; Gazel, 2014).

Sometimes the reference point that individuals choose may also depend on the ranking of the alternatives presented to them. In a study by Tversky and Kahneman in 1974, they conducted an experiment on people's choice of reference point. According to this experiment, two groups of people (2x3x4x5x6x7x8) were asked to predict the outcome of the procedure, while the other group was asked the same question (8x7x6x5x4x3x2). As a result, the average of the predictions of the first group was found to be 512, and the average of the predictions of the second group regarding the outcome was determined as 2.250. This experiment reveals that the people in the first group take the number 2 as a reference while making the estimation, and the people in the second group refer to the number 8, and it is important in terms of showing that the order in which the alternatives are presented to the individual is effective in choosing the reference point (Tversky & Kahneman, 1974).

Framing Bias

Framing is a concept about how a subject is presented to individuals, and this is effective in individuals' consumption and investment decisions. The reason why they give different answers to the same question according to the way they are asked is the framing bias.

For example; while restaurants offer “cheaper” prices during off-peak hours, they do not campaign for “increased prices” during peak times. Even if the prices are the same, people may spend more at off-peak times, thinking that prices are cheaper anyway, rather than paying more during peak times (Ritter, 2003). This issue is a good example of how people shape their behavior according to the way the alternatives are presented.

Consumers and investors find it difficult to make decisions when they are not sure of all the facts in the market or when there are many unknown factors. Thus, in such cases, they are more likely to be affected by framing bias.

Availability Bias

Qawi (2010) interprets the presence bias as an event that is more recent and considered to be relatively important will affect decision making more. Presence bias concerns access to information, its classification, experiences, and resonance. Therefore, individuals will classify the information they can access most easily according to their own experiences and make their decisions in a way that is compatible with both their own personalities and those who think like them.

People with a presence bias tend to assume that an event is more likely to happen based on how often it is seen or witnessed in their life. Because people with this tendency remember probabilities that are more likely to happen than possibilities that are difficult to imagine or realize.

Self-Attribution Bias

Individuals assume that their actions are correct and wait for their actions to be approved (Bülbül, 2008). Self-attribution bias is a concept that has been researched for a long time in psychology research and causes individuals to attribute success to their personal skills and failures to uncontrollable external factors (Hoffman & Post, 2014). A clear example of self-attribution bias is that a professional athlete with self-attribution bias blames his coach, referees, other teammates, or "bad luck" after a failed match (Zinn, 2013). From the point of view of consumers and investors, it can cause individuals to misinterpret the information they receive, depending on their abilities and self-confidence, and to attribute the resulting gain to themselves and the losses to external causes. From this point of view, self-attribution bias can be explained as attributing a successful result to the abilities and hunch that is within the individual's control area, and attributing an unsuccessful result to luck and other external factors, which are uncontrollable. In addition, the combination of self-attribution, self-exaggeration and self-protection biases contribute to the formation of overconfidence bias.

It is possible that an investor who attributes his success to his own abilities and his unsuccessful investment decisions to external factors that cannot be controlled by him, persists in this opinion even after a long time, causing him to take unnecessary risks by making a wrong decision.

Outcome Bias

Outcome bias appears to occur when people simply interpret the outcome without considering the actual quality of the decision. This bias is common in business, investment, sports and politics. In the left hemisphere of the brain, there is a region called the interpreter, which accepts anything as soon as it sees and effortlessly and creates a reason to explain it. This region creates a natural pattern about the subject and is oblivious to chance. This results in poor decision making. In order to manage this region of the brain, it will be useful to learn in advance how determinative luck can be on an issue, and if the effect of luck is high, it will be useful to try to focus on the decision process rather than the result (Mauboussin & Callahan, 2013).

Pumpin (2012), who defines outcome bias as individuals' tendency to make decisions on the basis of recent results when making a decision on any issue, states that investors with outcome bias only look at the outcome of successful or unsuccessful decisions made by investment advisors, and under which external factors the advisors make these decisions.

Regency Bias

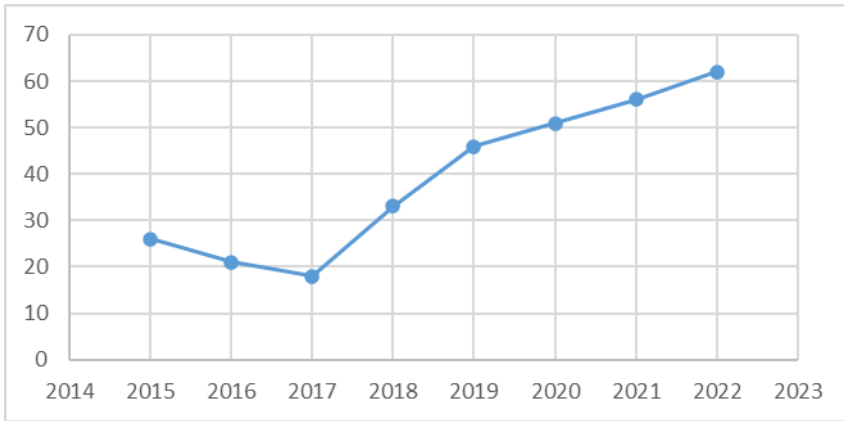
In experiments in psychology in which some meaningless words, pictures, or other items were shown, participants were found to remember items at the beginning and end of the list more than items in the middle of the list. The fact that the items at the beginning of the list are remembered more is called the priority tendency, and the items at the end of the list are called the recency tendency (Reed et al. 1991).

In finance and marketing science, the fact that consumers and investors are more affected by the results of their most recent transaction evokes this trend. Recent events are recalled from short-term memory and provide a memory advantage over information recalled from long-term memory. However, this trend may also be a precursor to other trends. Kahneman and Tversky (1973) state that people generally try to predict the future by focusing on the recent past, and they think less likely that these events may have happened by chance.

METHODS AND RESULTS

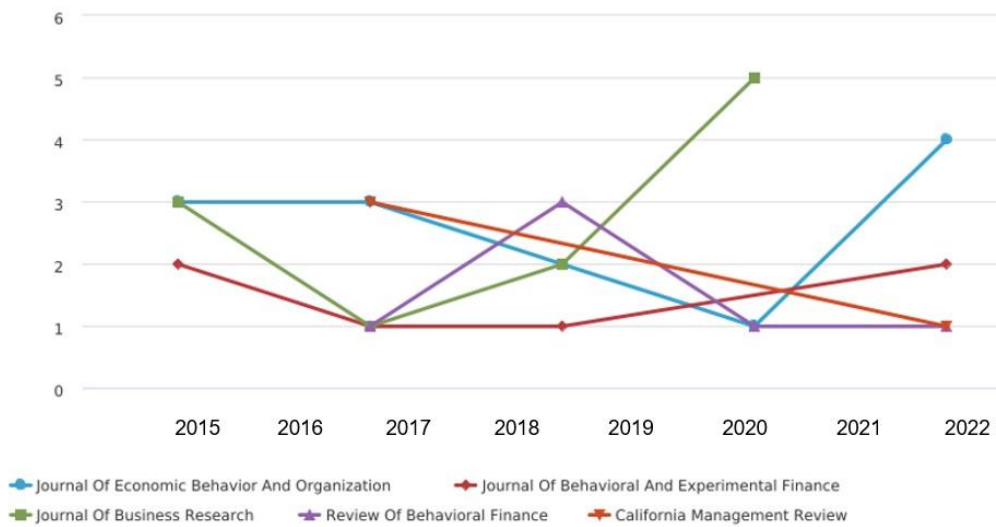
Due to the stated importance of cognitive biases in economic decisions, thirteen different cognitive biases are discussed from the perspectives of finance and marketing disciplines within the scope of this study. In this context, two national and international databases (Web of Science and Scopus) were scanned using the keywords "cognitive biases, finance, marketing". In the sampling, only the studies published between 2015 and 2020, which is the time period when the relevant literature started to rise rapidly, were included in the research. "Business, Management and Accounting" and "Economics, Econometrics and Finance" fields have been included in order to focus the search results only on Business and its sub-branches by separating the results from Psychology and related literature, which is the origin of cognitive biases. Finally, only the studies that were in article format and written in English were separated and the final sample was formed. A total of 313 articles were accessed through Scopus and Web of Science databases within the framework of the specified restrictions.

When the data obtained are examined, it is seen that a total of 313 studies focusing on cognitive biases entered an increasing trend as of 2017 (Graph 1). This is important in terms of demonstrating that the interest of both disciplines on the subject has increased.



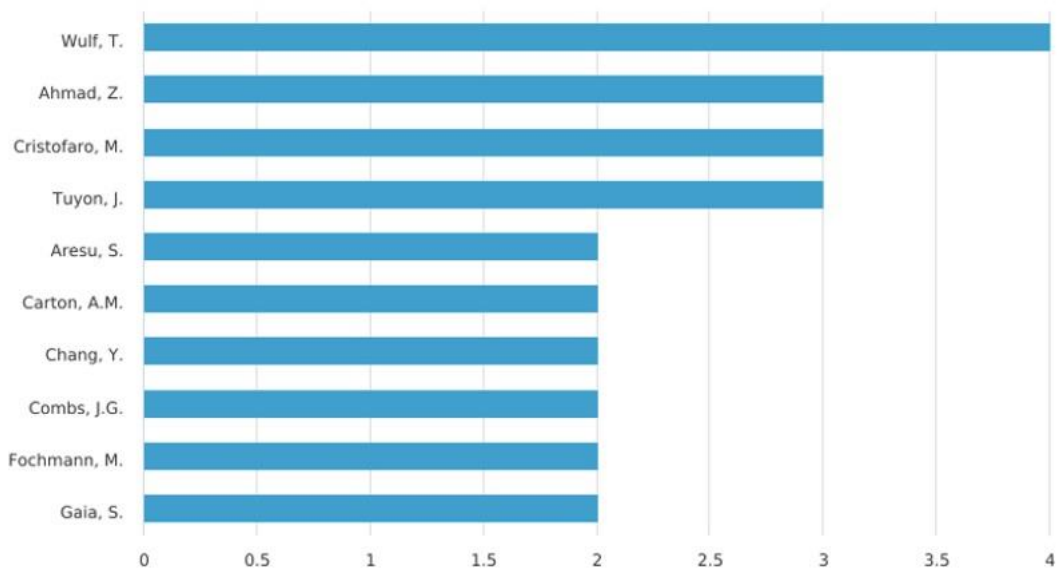
Graph 1. Distribution Of Studies On Cognitive Biases By Years

The second evaluation of the analysis was carried out to determine which journals published studies focusing on cognitive biases in finance and marketing in the relevant time period. In this context, the journals that most frequently include studies on the subject are; Journal of Economic Behavior and Organization, Journal of Behavioral and Experimental Finance, Journal of Business Research, Review of Behavioral Finance, and California Management Review. As can be seen in Graph 2, studies on cognitive biases in finance and marketing by journals called Journal of Business Research and Journal of Economic Behavior and Organization show an increasing trend.



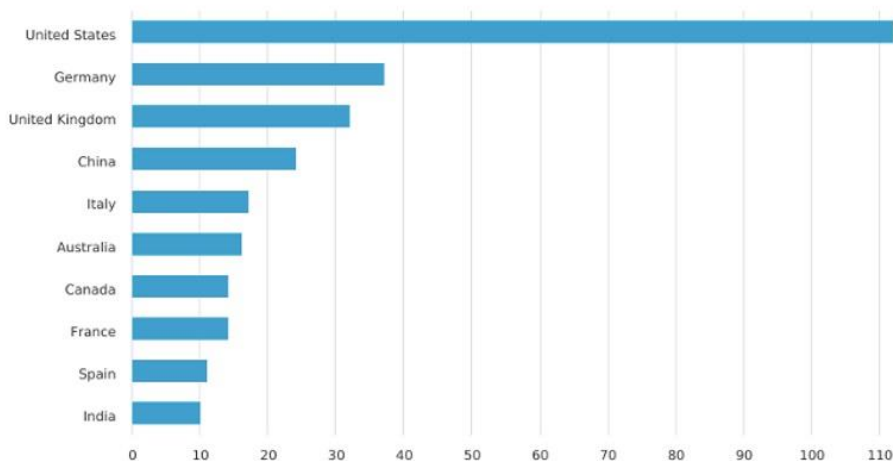
Graph 2. Distribution Of Studies On Cognitive Biases By Journals

After the frequency analysis conducted to reach researchers focusing on cognitive biases in both disciplines, it was seen that Torsten Wulf, an academician of the University of Hagen Department of Economics, had the most research with 4 studies. He is followed by Zamri Ahmad, a faculty member in Finance at Universiti Sains Malaysia, Matteo Cristofaro from University of Rome Tor Vergata, and Jasman Tuyon from Universiti Teknologi Mara with three studies each (Graph 3).



Graph 3. Distribution Of Studies On Cognitive Biases By Authors

When the distribution of the studies reached according to the countries they belong to is examined, it is seen that the United States of America is in the lead with a significant difference. It is followed by Germany, England and China (Graph 4).



Graph 4. Distribution Of Studies On Cognitive Biases By Country

After the frequency analyzes for the identifiers of the studies forming the sample, bibliographic analysis and visualization steps were carried out. In this direction, 313 articles constituting the sample were transferred to the VOSviewer program through the Endnote software.

With VOSviewer, 1341 keywords repeated at least 3 times were determined in the abstract, keywords and titles of the studies. These keywords were reduced to 111 to meet the threshold value in line with the main purpose of the research. 111 keywords were collected in 15 clusters in line with the strength of the relationship between them. It has been determined that there are a total of 330 connections between these components and they are visualized in line with their strengths.

The heat map obtained with VOSviewer is given in Figure 1. When we look at the density map, it is seen that keywords such as risk perception, risk assessment, framing heuristic, behavioral economics, behavioral finance, cognitive heuristics, gambling are directly related to economics and finance. In addition, it has been determined that the density of these words is higher than the others.

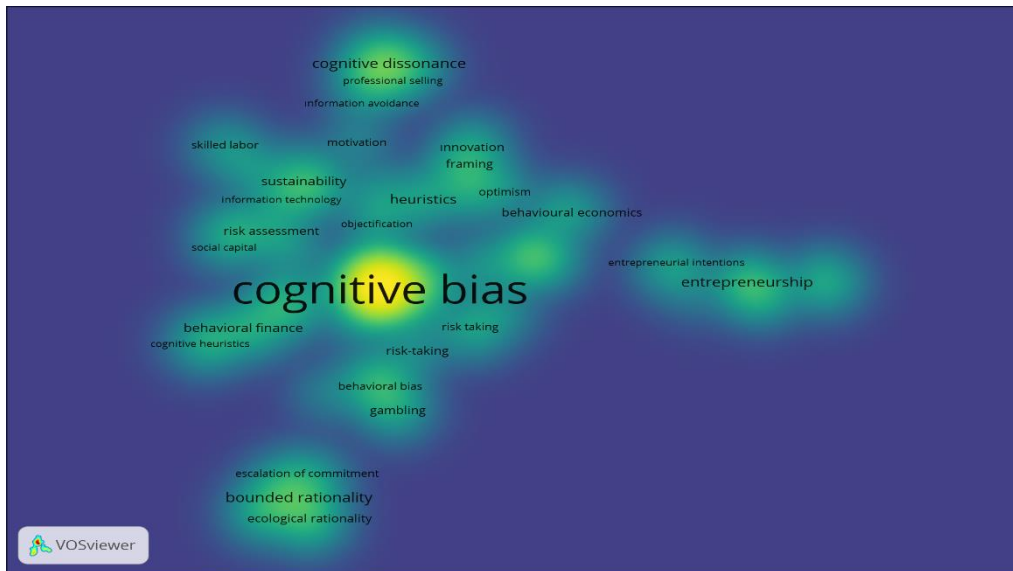


Figure 1. The Density Map Of Studies On Cognitive Biases

The results of the relationship analysis revealing the interaction between cognitive biases and other variables for the studies that make up the sample are given in Figure 2. The results of this analysis reveal that finance and especially behavioral finance studies are mainly examined with cognitive biases.

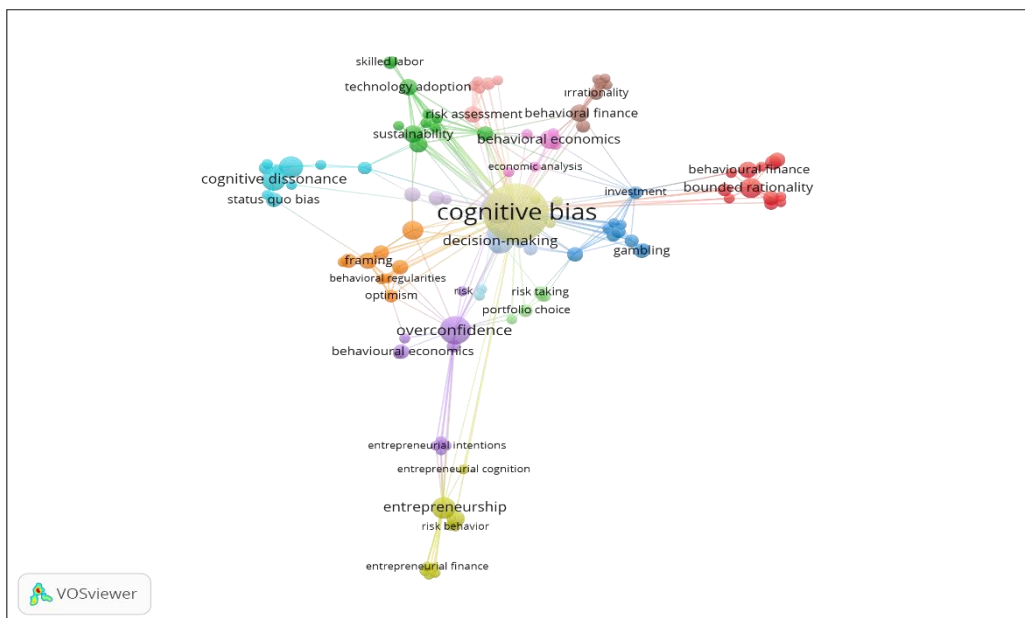


Figure 2. Relationship Map Of Studies On Cognitive Biases

CONCLUSION AND EVALUATION

Cognitive biases refer to systematic errors in judgment and decision making caused by various cognitive and emotional factors. This phenomenon has been extensively studied in psychology, neuroscience, and economics. Especially since the 2010s, it is also seen that the interaction with different variables in the marketing and finance literature has been investigated and its effects on the investor and the consumer have been revealed.

Cognitive biases in finance are frequently discussed issues as they can lead to wrong investment decisions and have the power to affect the accuracy of financial forecasts. In marketing, on the other hand, the determinant of cognitive biases on consumer behavior is examined and evaluated on different subjects from purchasing decisions to customer satisfaction, from brand evaluations to their effects on marketing communication.

As stated, cognitive biases refer to the mental tendencies of the human being, which is the focus of both disciplines, and the systematic errors they cause. Considering the intense interest of both branches of science on cognitive factors in the "decision-making" process in general, including purchasing and investment, the importance of biases that directly and continuously affect/shape the process is revealed. In proportion to this effect size, it is seen that the studies on the concept in the marketing and finance literature are increasing. However, it has been determined that the researches carried out on the subject in our country are quite limited compared to other countries.

In this study, it is aimed to analyze the studies published and indexed in two important international databases since 2015, the time period when cognitive biases started to come to the fore in the context of economy and business. In

this context, all studies published in the time period related to the criterion created were examined and finally 313 studies were accessed. The most important finding revealed as a result of the analyzes made for this sample and the bibliographic data visualization study is that cognitive biases are studied with a significant intensity in the field of finance. Although these biases are also examined in studies on marketing and, in particular, consumer behavior, it is seen that the studies in the field of finance have an overwhelming majority. From the perspective of investor behavior from the perspective of finance and economy, it is seen that it is extremely important for the literature to focus on investor's biases and their irrational behaviors and decisions due to these biases. The results obtained show that due to this importance, the studies in the field have increased with a significant acceleration.

Another important finding is that cognitive biases are mostly researched together with the "risk" phenomenon in both marketing and finance. Most of the studies conducted in this context are structured to focus on the relationship between investor and consumer behavior, perceived risk and cognitive biases that individuals have.

As a result, it is seen that cognitive biases are important factors that need to be examined in depth for both disciplines due to the important determinant of human behavior in the roles of investors and consumers. Besides, it is noteworthy to adapt the obtained outputs to practice in terms of bringing different perspectives to both fields of science. In this direction, it is thought that evaluating different types of cognitive biases together with various variables in future studies and examining them with quantitative research to be developed in this context has the potential to contribute to the field.

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