

# A study on behavioral biases and personal investment decision: Recent Systematic Literature Review

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## Abstract

**Purpose:** The purpose of this research is to review the relevant research papers and examine the influence of behavioural biases on equities investors' investment decisions. The paper is an attempt to show how behavioural biases of investor behaviour work and how important they are in making investment decisions now. The study aims to identify and priorities the behavioural biases that influence investors' decision making.

**Design/Methodology:** In order to select the literatures, author used the database to identify papers published in English-language journals that may be accessed for free. To be eligible, a paper must include the search term in the title and abstract, as well as be published in a journal or a conference. This criterion was used to select 123 papers for an in-depth evaluation in the current study.

**Findings:** The study found that behavioural finance treats people like they're normal, not smart. Investors make decisions based on behavioural biases that are talked about, and this has a big impact on them. Thus, the behaviour of investors has an impact on their investment decisions.

**Originality/Value:** Behavioural finance is a new field of study in finance that focuses on the psychological underpinnings of how individual investor financial decisions influenced by the behavioural bias The arrival of behavioural finance opened up new areas for studying and investigating how investors make decisions that take into account their emotions. This study, therefore, will benefit a wide range of stakeholders in their efforts to better understand how investors make investment decisions.

## Introduction:

### What are behavioral biases in Finance:

The study of behavioural finance gives light on the irrationalities of investors. Not calculative utility maximizing computers, but human beings who are impacted by emotions, cognitive biases, and other psychological processes, are what investors are. Behavioral finance has benefited us in realizing that the concept of homo economics is erroneous, thanks to the work of David Ricardo. Investors may be unable

to maintain self-control, may be overconfident in their talents, may miscalculate facts, may overreact, or may simply follow the herd. The term regret refers to a feeling of sorrow or disappointment over something done or not done. Several studies in the field of behavioural finance in India have discovered the presence of these biases in Indian investors. As a result, Indian investors are not immune to the effects of their emotions and other psychological processes.

Value investing expert Benjamin Graham made reference to this in his book "Successful investing does not demand a superhuman IQ, exceptional business insights, or insider information." What is needed is a logical framework for decision-making, as well as the ability to resist emotions from corroding the framework." As an investor, you must exercise prudence and avoid making unsafe decisions that could jeopardize your financial journey and prospective returns.

Behaviorism in finance was founded by Tversky and Kahneman (1974) with their groundbreaking research. Financial and economic theories of the period were dominated by the expected utility theory and efficient market hypothesis, which held that individuals would make rigorously rational decisions and maximize the usefulness of each choice. (Barberis & Thaler, 2003). Individuals regularly use heuristics and cognitive biases to make judgments, according to research by Tversky and Kahneman in 1974. (Valcanover and colleagues, 2015).

#### **Why awareness towards behavior biases is important for Investors:**

When an investor decides to invest in something, he or she will look for the highest possible reward while minimizing risk. Investing, on the other hand, is not a matter of theory and analysis. Prior to making an investment, an investor must examine a variety of significant internal and external elements. While the relevance of external factors is clear, experts have begun to recognize the importance of internal factors in investing in the last decade. This category encompasses behavioural and psychological variables.

As a result of the ensuing biases and tendencies, investors behave irrationally, which has an effect on their decision-making behaviour.

Kartini and Nuris (2015) validated this study, stating that certain biases can be deleterious, as they can result in risk miscalculations. Additionally, such biases are difficult to suppress since they are imperceptible and are associated with mental processes that involve emotions or sensations. Despite this challenge, Olsen (1998) cautioned that the primary goal of behavioural finance is to understand the systematic influence of psychological elements on the financial market in order for each individual to make more wise decisions.

## 1. Conceptual Framework:

### Behavior biases

It is possible to think about biases as reflections of an investor's own thinking. When it comes to making a decision, biases have no bearing on how well it goes. There are many ways in which biases might arise, but they are often the product of unreasonable or unduly positive views. Irrational investment decisions are rooted in behavioural biases (Ahmad, 2015). Only by making rational and irrational decisions can investors lower their risk (Naseem et al., 2016). As Chandra (2008) emphasized, it is important to examine behavioural components that influence investment decision making as risk factors. There are many examples of these, including heuristics, cognitive dissonance, anchoring, fear and greed, and mental accounting.

Behavioral biases are psychological aspects that influence individual or institutional investment decisions, according to prior research. Behavioural finance literature has found numerous factors and heuristics that influence decisions. These include the anchoring bias, the conservatism of conservatism bias, the lack of knowledge about probabilities and the lack of emotional factors. Other factors and heuristics include the confirmation bias and the endowment and house-money effect. 2014 In the words of Shakun and Arya,

According to Joo and Durri, (2015) biases are caused by herding, loss aversion, the disposition effect, overconfidence, framing, hindsight bias, and representativeness. Mental accounting, representativeness, overconfidence, anchoring, availability bias and confirmation bias were among the cognitive biases studied by Sukheja (2016).

On the subject of anchoring, mental accounting, the gambler's fallacy and the herd mentality as well as overconfidence and prospect theory there was a lot of discussion Cognitive and affective components of psychology were categorized by Pompian in 2016. An emotional response may be considered a spontaneous reaction rather than an intentional thought process. Intuition-based decision-making can lead to an emotional bias, according to the definition of an emotional bias: A lack of control over one's own instincts or impulses makes it harder to overcome these biases. To make a bad investment decision, investors' emotions can be linked to their impressions of items or relationships.

Consistent deviations from norms and reasoning lead to the development of cognitive biases. According to Sha and Ismail (2015), investors make decisions based on information that is readily available, and the difficulty is how they build their impressions of that information. It's important for investors to understand the numerous kinds of cognitive biases that could put them in a significantly better or worse position. In their research, they found that investors are susceptible to a number of cognitive biases.

Boda and Sunitha (2013) classified biases into heuristic and cognitive types. Representativeness, anchoring, and availability are all examples of heuristic bias. Overconfidence, overreaction, and herding are all examples of cognitive bias.

**Table 1: Types of Biases**

Emotional Bias	Cognitive Bias
Overconfidence bias	Anchoring bias
Loss-aversion bias	Mental accounting bias
Regret aversion bias	Herd behavior
Endowment bias	Hindsight bias
Status quo bias	Disposition effect
Self-control bias	Framing bias
	Self-Attribution bias
	Ambiguity Aversion bias
	Conservatism bias
	Representativeness bias

**Source:** Pompian, M. (2016). *Risk profiling through a behavioral finance lens*. CFA Institute Research Foundation.

### Operational definition

**Loss aversion bias:** When compared to other sorts of clients, conservative investors are more sensitive to the agony of losses than the joy of wins. Even when there is no hope of a return on investment, some clients may hold on to their losses for too long. Many financial advisors have a tendency to be fearful about losing money.

**Status Quo Bias:** A lot of conservative investors (and other people, for that matter) prefer to retain the status quo when it comes to investments and other aspects of their lives. "Things have always been this way," these investors tell themselves, and hence they feel safe in maintaining things the same.

**Endowment bias:** An investment that a person already owns (such a piece of real estate or an inherited stock position) tends to be valued more highly than an investment that they don't own or have the ability to acquire.

**Anchored bias:** Asked if investor should buy or sell an investment, conservative investors are more likely to rely on purchase points or arbitrary price levels.

**Mental accounting bias:** As a result, conservative clients tend to regard different amounts of money differently based on how they categorize them. These investors, for example, divide their assets into "buckets" labelled "safe" and "risky." If all investments are seen as safe money, returns will almost surely be lower than they could be.

**Hindsight bias:** Moderate clients may be vulnerable to hindsight bias, which occurs when an investor sees prior investment results as though they were predictable.

**Conservatism bias:** Conservatism bias occurs when people refuse to accept new information in favour of clinging to a preexisting belief or forecast.

**Representation bias:** When new information is processed, a faulty perceptual framework can lead to a prejudice known as representativeness bias. Some investors try to predict outcomes that are similar to their own preconceived notions in order to make the new information easier to comprehend.

**Self-Assessment (Self-Enhancing) Bias:** Associating one's triumphs and failures with one's natural abilities is known as self-attribution bias (or self-enhancing bias).

**Overconfidence bias:** It's better to think of overconfidence as having an unjustified faith in one's own abilities and thinking, which includes both mental and emotional components. Investors who are overconfident in the quality of their judgement show their overconfidence in their own abilities.

**Regret Aversion Bias:** If you're a moderate investor, you're more likely to put off making a decision for fear that you'll regret it later. It is possible for moderate investors to be too cautious in their investment decisions due to past losses.

**Table 2: Major behavior biases and their explanation**

Authors	Bias	Explanation	Implications
Czerwonka (2012)	Anchoring	An individual's judgement is unduly influenced by an opinion that has already been exposed to them.	investors tend to base their future investment decision on the initial price of the stock they purchased
Zhang and Zheng (2015)	Herding	The investor's opinion is heavily influenced by the opinions of others, while he or she ignores his or her own.	They are largely influenced by emotion and instinct, rather than by their own independent analysis.
Pikulina et al. (2012)	Overconfidence	When it comes to knowledge and competence, investors tend to overestimate their own abilities and know-how.	overestimate their competence and underestimates the risk.
Khaneman and Tversky (1979)	Loss Aversion Bias	The pain caused by a loss outweighs the pleasure experienced as a result of a successful outcome.	It is a cognitive bias that explains why the pain of losing is psychologically double the joy of winning for individuals.
Shiller (2000)	Hind sight bias	The investor believes that a previous incident was predicted, despite the fact that it was not the case.	It is possible that prejudice will lead to the establishment of misleading causal linkages, which will result in faulty oversimplifications.

## 2. Research methodology and data

The articles available in the public domain on behavioural biases and their impact on individual investment decision-making have been reviewed using a complete literature review approach, which has been applied to all of the papers reviewed. The study used database like ELSEVIER, Science direct, Google scholars, Emerald, EBSCO, Proquest and JSTOR. The literatures from these databases were searched using the keywords such as behavior finance, behavior bias, individual investment decision, emotional bias, cognitive bias, and psychological factors.

The current study used recent literatures, have time frame of almost one decade (2010-2016) on different behavior biases and their impact or relationship with individual investment decisions in stock market, equity market etc. The literatures were chosen based on the identifications of articles published in various journals that are freely accessible in English via the above database. The requirements encompass a broad range of publications that are theoretical, analytical, literature reviews, case studies, working papers, and conference papers; as well as papers that incorporate the search key phrase in the title and abstract. The current study chose 123 papers for an extensive review based on this criterion.

## 3. Analysis of literature

### 4.1 Relationship between Behavior biases and Investor decision making:

When it comes to making investment decisions, Kafayat (2014) discovered that three factors were associated with poor outcomes: overconfidence, overoptimism, and self-attribution. Overconfidence bias has been discovered to have an impact on investment decision-making, according to Ramiah et al. (2016). Overconfidence bias and the "illusion of control," according to Qadri and Shabbir (2014), have a considerable beneficial effect on investing decisions in their study, which was published last year. Following are the biases that, according to Tripathy, might influence investment decision-making. They include: overconfidence; anchoring; regret bias; and loss aversion (2014).

According to Messis and Zapranis (2014), the presence of herding adds another risk factor to investors' portfolios. Thus, the presence of herding behaviour has a favourable effect on the volatility metric. According to Jaiyeoba and Haron (2016), investors exhibit herding behaviour when making investment decisions. Metawa et al. (2014) provided evidence that herd prejudice influenced investment decisions.

Glaser et al. (2013) use interval estimates to quantify overconfidence. This strategy quantifies investor overconfidence on an individual basis. The findings indicate that professional experience does not decrease losses. Investors may be overconfident or underconfident, depending on the work at hand.

Luu Thi Bich Ngoc (2014), it was shown that people thoroughly analyse stock market trends and current price fluctuations before making an investment. The findings of Bashir et al. (2013), Kafayat (2014) and Bakar and Yi (2016), among others, show that overconfidence has a significant impact on investors' investment decisions.

Investors' decision-making processes are affected by a variety of biases, according to Bakar and Yi (2015), who examined this issue. Overconfidence, conservatism, and availability prejudice all have a significant impact on investor decision-making, whereas herding bias has no effect. Anchoring has a negative impact on individual investors and traders, according to academics (Maqsood Ahmad, Syed Zulfiqar Ali Shah, 2013).

Raheja & Dhiman's (2014) study revealed a link between behavioural biases and investor decision-making. They classified behaviour biases into four dimensions: conservatism, overconfidence, herding, and regret. Their research demonstrates a substantial association between overconfidence and investors' investment selections, as well as a relationship between regret and investors' investment decisions. There is no discernible relationship between conservatism and investor investment decisions, herding, or investor investment decisions between investors.

Studying the impact of anchoring, herding bias, and overconfidence on investing decision-making was the goal of Robin and Angelina (2015). There is a significant positive impact on individual investment decision-making when the study's specified biases are used. There's a strong correlation between a herding bias's standardised beta coefficient and its influence on decision-making.

In Nigeria, Akinkoye and Bankole (2015) looked into the impact of emotional bias on investor decision-making. Loss aversion, overconfidence bias, herding, regret aversion, status quo bias, and self-control bias were all addressed in this study. Among Nigerian investors, emotional biases were found to have a moderate frequency of occurrence and a strong link to investing decisions, except for the status quo and self-control biases.

Factors Influencing the Investment Decisions of Indonesian Stock Investors was conducted in Surabaya in the year of 2015 by researchers Putri, Ramadhani, and Isbanyah. In order to minimise risk and maximise return on investment, investors tend to follow the majority of other investors' decisions due to the high level of herding.

Behavioural biases have an important impact in stock investment decisions, according to research by Nkukpornu et al. (2015). Overconfidence, regret, belief, and snakebite are found to have varied degrees of influence on investing decision-making, according to the research.

According to study by Kartini & Nahda (2016), investors' decisions are influenced greatly by anchoring bias, representativeness bias, loss aversion, overconfidence bias, optimism bias, and herding behaviour.

## 4.2 Study on Indian Investors:

Trehan and Sinha (2011) investigated overconfidence biases such as self-attribution, optimism, the better-than-average effect, miscalibration, the illusion of control, trading frequency, and trading experience. Investors have a high degree of confidence in their capacity to make solid investing decisions, their knowledge of the stock market, and their ability to select stocks for their portfolios.

Vijaya(2016) analysed the behavioural patterns of Indian retail equities investors in a paper Investing success was found to be influenced by herding (buy and sell; trading stock options; trading stock volume; and speed herding) as well as prospective (loss aversion, regret avoidance, and mental accounting) and heuristics (overconfidence and gamble's fallacy).In terms of investment success, heuristic behaviour has the most beneficial impact, while herding behaviour has the least positive impact Prospect behaviour, on the other hand, has a negative impact on investment returns.

Financial decision-making is influenced by behavioural biases, with a specific focus on confirmation bias, loss aversion and endowment prejudice being examined by Shoumita dey. The results of the research show that investors' choices are influenced by these biases.

Investors' portfolio construction and investment decision-making processes in India were studied by Sukanya (2015). Investors' decision-making processes in India were found to be significantly affected by behavioural biases such as overconfidence, anchoring biases, confirmation biases, hindsight biases, gamblers fallacy and herding bias.

Kumar and Babu (2013) examined the impact of loss aversion bias on the corporations in Trichy and Thanjavur. The regression analysis revealed that investors' risk perception had an effect on their loss aversion bias, and that loss aversion bias had a substantial effect on investors who engaged in the stock market.

## 4.3 Behavior biases identified in select papers:

The extensive assessment of 123 selected literatures found that five biases and their effect on investment decision making are widely explored. Overconfidence, herding, anchoring, loss aversion, and regret bias are the biases. The third table summarises the frequency with which biases are evaluated for their impact on investment decision-making.

**4.4 Statistical technique used in select papers:** The study highlighted the most frequently used statistical techniques in the select 123 papers. The findings of the table 4 indicate that correlation and regression analysis include simple regression, binary logistics & multiple regression methods are mostly used by the researchers for testing the impact of behavior biases on individual investment decision making. The other tests are descriptive analysis (26 papers), chi-square (12), factor analysis (9),

ANOVA (7). A few studies also applied higher tools as Decision tree, cluster analysis, confirmatory factor analysis, structural equation model using SPSS & Smart PLS.

**Table 3: Identified behavior bias affecting individual investment decision:**

Identified biases	No. of papers
Overconfidence	37
Anchoring	11
Herding bias	32
Loss aversion	18
Regret bias	9
Overall bias affecting investment	16

Overall bias here are the papers which includes all biases affecting investment decisions

**Table 4: statistical tests used in papers**

S.No.	Test/Tools	Number of papers
1	ANOVA	7
2	Chi-square	12
3	Descriptive analysis	26
4	Factor analysis	9
5	Regression methods	32
6	Correlation analysis	17
7	Confirmatory factor analysis	8
8	Structural equation model	7
9	Cluster analysis	2
10	Decision tree	2
11	Mann Whitney	1

#### 4. Results and findings

This paper identified five behavior biases that are affecting individual investment decision making. These biases namely: overconfidence, herding, loss aversion, anchoring and regret bias discussed by most of the researchers in recent years.

The findings of the present study will discuss impact of each bias on investment decision making and recommendations were farmed based on the results of selected literature.

The ability to make reasonable financial judgments is impaired by biases in behaviour. Biases present themselves in excessive trading, holding on to hazardous portfolios, holding on to excessively losing

shares, selling off gaining investments prematurely, making investment decisions without doing due diligence, and eventually making sub-optimal investment judgments. Emotional biases are tough to overcome, but investors must learn to deal with them and use them to their advantage.

Numerous studies found that investor behaviour biases influenced their investment decisions, and many more pointed to this as a possible explanation. There are five biases that might arise during the investing decision making process, and this study has come up with essential remedies. The prevalence of behavioural biases across countries and investor types has been established by behavioural finance. A small number of studies have attempted to address this problem. This research has made a significant contribution to solving this issue. Some of the research on the influence of different behavioural biases on investors' decision-making has already been explored in the study. As a result, consumers may become more aware of the benefits and drawbacks of various investment options, thereby reducing these biases.

**Table 5: Findings related to Overconfidence bias impact**

Behavior bias	Findings
Overconfidence	<p>A study by Rostami and Dehaghani (2015) found that overconfidence has a substantial impact on stock market investment decisions. According to Nkukpornu et al. (2000), overconfidence has a statistically significant impact on investment decisions.</p> <p>According to the findings of the Manazir et al. (2016) study, aggressive and excessive trading is more common among high-overconfident investors than among low-overconfident ones. They also argue that overconfidence bias results in a lack of awareness of bad news and unfavourable features and information related investing decisions, and that investors make mistakes owing to the sense of control as well.</p>

Solutions: Investors should seek expert advice and a second view on investing opportunities rather than relying on an individual's intelligence, which is invariably influenced by emotional characteristics.

**Table 6: Findings related to Herding bias impact**

Behavior bias	Findings
Herding	<p>Luu Thi Bich Ngoc (2014) demonstrated that individuals carefully analyse stock market information, including broad market information, historical stock price trends, and current stock price movements, before making an investment.</p> <p>Putri et al., (2015) and Ahmad (2015) conclude that Herding influences investment decisions. Herding inclination provokes such investors to follow the crowd that results into irrationality and low confidence in their decisions.</p>

**Solutions:** Information symmetry is very important for investors to make sound decisions. Information regarding stocks should be provided on top exchange platforms like the BSE and NSE of India, so that people may be aware of the current condition and raise their awareness would allow them to make the right decision by decreasing errors.

Investors collect information from different sources, the information should not be considered before confirming to it. The announcements from the companies should be acknowledged and decision should be taken based on such reliable information as soon as it is announced. In order to help others, overcome their own biases and make rational investment decisions, financial professionals should have a thorough understanding of financial literacy and behavioural finance knowledge. This is the first step toward eliminating these biases and avoiding excessive and irrational trading

**Table 7: Findings related to Loss aversion bias impact**

Behavior bias	Findings
Loss aversion	<p>When evaluating potential profits and losses from an investment, Kumar &amp; Babu (2013) and Banerji et al., (2015) found that investors are less optimistic about potential returns and significantly more fearful of the chance of losing their initial investment.</p> <p>Gupta and Shrivastava (2016) demonstrated that investors' behaviour and decision-making are significantly influenced by the dispositions effect or loss aversion, in which investors sell stocks that have increased in value and hang on to those that have decreased in value.</p>

**Solution:** No one wants to bear the loss but simultaneously investors don't want to lose the gaining opportunity therefore it is advisable for them to construct a robust investment plan as per suitability and adopt some risk within your tolerance by considering assets that perform well.

While it is sometimes preferable to book a loss and move on to alternative investment possibilities, past scholars have urged that investors engage in a reasonable and objective portfolio performance evaluation process; if necessary, seek the assistance of a financial advisor. They should do what is necessary to help you achieve your financial goals, including selling funds that routinely underperform and transferring to stronger funds.

**Table 8: Findings related to Anchoring bias impact**

Behavior bias	Findings
Anchoring bias	<p>Ducles (2015) discovered that if the closing price of the previous day is greater than the opening price, implying that the previous day was an upward moving day, the prediction for the following day is for upward movements, resulting in higher investments that day. Mussweiler and Schneller (2004) suggested that when a chart has more prominent highs than lows, investors should buy more and sell less.</p> <p>Anchors are only effective in the short term. However, Grinblatt and Han (2005) and Park (2010) suggested that if these anchors are backed up by other stock price determinants, profit can be earned in the long run as well.</p>

**Solutions;** Anchoring to expectation can be reasonable, but the quality of the anchored value can be inadequate and should be checked. Investors must also keep an open mind while making investments and let go of the need to cling to the past in order to grasp the dynamic nature of stock market investing.

**Table 9: Findings related to Regret bias impact**

Behavior bias	Findings
Regret bias	<p>Gazel, S. (2015) Regret aversion is a well-established psychological theory that suggests that some people experience regret when their decisions turn out to be incorrect, even if they appeared to be correct based on ex-ante information. By assuming that investors compare their returns to exogenous benchmarks, the concept of regret naturally extends to finance.</p> <p>Imran Shah and Irfan Rashid Malik (2016) According to the data, investors who are more fearful of regret and fearful of losing money tend to trade less frequently. Contrary to popular belief, the frequency with which individual investors trade is not much affected by their perceptions of risk. Risk perception is found to be a moderator in the link between these two emotional behavioural biases.</p>

**Solutions:** Investors should check their performance on a regular basis and keep track of their pattern behaviours and biases in order to recall and reactivate their memory in order to improve their chances of making sound financial judgments while trading. According to expectancy theory, the pain associated with losses is greater than the joy associated with gains. As a result, investors tend to avoid future regret-inducing activities. In other words, individuals avoid actions that result in regret and seek out those that result in pride.

## 5. Conclusion and Suggestions

Cognitive and emotional biases in investing are examples of behavioural biases. These are two distinct types of biases: cognitive biases (statistical, information-processing, or memory errors) and emotional biases (impulse or intuition).

To counteract the negative consequences of behavioural biases on investment decisions, the report recommends that investors perform suitable research into cognitive and emotional biases.

Finally, the study suggests that investors become conscious of their own emotional tendencies and biases, then develop a strategy for dealing with or coping with them. When making investments, investors should seek advice from experts rather than depending solely on their own intelligence, which is invariably affected by their emotional qualities. In investing, investors should keep in mind that emotional biases are tough to overcome, and that's why they should develop and use a sound analytical approach. Investors have long relied on straightforward, high-quality information to make informed financial decisions. Investors need to be aware of the current market conditions and the dangers associated with their investment. By providing quantitative and qualitative information on the risk of certain equities, stock market regulators can help improve the quality of investors' investment decisions.

Individual investors can utilise the study's findings to uncover their own behavioural biases in order to better comprehend the dynamics of stock trading and make informed investing decisions. Finally, the greatest solutions provided to overcome well-documented biases benefit all individual investors, financial specialists, and other professionals participating in the investment decision-making process.

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