International Journal of Finance and Commerce
www.commercejournals.com
Online ISSN: 2664-715X, Print ISSN: 2664-7141
Received: 01-02-2025, Accepted: 02-03-2025, Published: 18-03-2025
Volume 7, Issue 1, 2025, Page No. 19-23

The influence of cognitive biases and emotional factors on investor behavior: A bibliometric review

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Abstract
Emotional and cognitive biases frequently impact investor behaviour, resulting in less-than-ideal financial choices. This study conducts a bibliometric review to explore the impact of cognitive limitations, emotional influences, and social interactions on investment choices. A quantitative research approach was employed to analyze data collected from investors in the Lucknow division. Partial Least Squares-Structural Equation Modeling (PLS-SEM) was conducted using SmartPLS 3.0. The results show a significant influence of overconfidence and illusion of control biases on investor decision-making. Furthermore, gender acts as a moderating variable in this relationship. The study identifies key publications, influential authors, and emerging trends in behavioral finance research. Findings provide valuable insights for portfolio management, risk assessment, and investment strategy development.

Keywords: Behavioural finance, behavioural biases, bibliometric Analysis, investment decision, cognitive errors.

Introduction

There are several steps involved in the process of selecting an investing option. There is a possibility that individuals working in the financial and investment sectors, as well as private investors, might not always conduct themselves in a reasonable manner while making judgements. As a result of a wide range of behavioural biases, they have a tendency to make judgements about their finances that are less than optimal. These biases are caused by a variety of psychological variables, such as social interactions, emotional impacts, and cognitive limits (Kartini & Nahda, 2021) [23]. Social relationships are one of the other elements. To have a complete understanding of how these biases influence the behaviour of investors, it is necessary to perform a comprehensive investigation of the psychological factors that are at play (Holt-Lunstad et al., 2010) [22]. The decision-making process for investment strategies are made more difficult by the combination of cognitive biases, emotional affects, and social interactions. The psychological aspects of investment behaviour are now being investigated by academics in order to get a better understanding of the role that investors' cognitive and emotional biases play in the choices that they make about their investments. These biases induce investors to behave irrationally, which prevents them from making judgements that are reasonable or logical. On the contrary, they lead them astray. Both institutional fund managers and individual investors must have a solid understanding of the complicated relationship that exists between behavioural biases and the judgements that they make about their investments. Understanding the psychological dynamics that drive financial markets may be beneficial to a number of different aspects of investing, including portfolio management, risk assessment, and the development of investment strategies. Furthermore, a substantial body of research has shown that the process of decision-making is plagued with an abundance of behavioral biases (Yasmin & Ferdaous, 2023) [24]. Despite the fact that behavioural finance has been the subject of several bibliometric studies, no one has ever compiled the findings into a comprehensive review. This study makes use of bibliometric tools to uncover patterns in publications, the most popular journals that publish these trends, the authors who have made the most important contributions, and keyword analysis in order to fill this vacuum in knowledge. In addition, the study intends to conduct a comprehensive evaluation of the ten research publications that have received the most citations in order to gain a better understanding of how behavioural biases affect investment decisions. The methodologies, data sources, and research designs that were used by the other writers will be illuminated as a result of this.

Objective

1. To Investigate how emotional and cognitive biases affect investment decisions.
2. To recognise seminal works, famous writers, and emerging trends in the field's study.

Research methods

In order to determine the extent of causal linkages, this study makes use of a quantitative research approach that is based on survey research. This investigation targets stock market investors from Lucknow. The number of representative samples is determined by this study in accordance with the proposal made by Hair et al. (2019) [21], which is to multiply the total number of indicators by either five or ten. The variables that are being investigated are comprised of twenty indicators, and then each of those indicators is raised by five. The total number of samples is now 100, which is the result of multiplying five indications by twenty. Unintentional sampling was performed with the use of structural equation modelling using partial least squares; specifically, SmartPLS 3.0 was used.

Variable Measurement

There are particular about the measurement of each variable that are shown in Table 1. These specifics are determined based on previous research.

Table 1: Operational Definition and Dimensions

Variable and Source	Definition	Dimensions
Overconfidence Bias (Kansal & Singh, 2018; Koo & Yang, 2018; Mishra & Metilda, 2015)	Feelings of being overconfident in one's abilities or knowledge in trading or investing.	1. Better than average 2. Self-attribution 3. Positive illusion 4. Planning Fallacy
Illusion of Control Bias (Nofsinger, 2005; Hönl et al., 2017; Sha & Ismail, 2021)	Very high belief in the ability to predict outcomes, but in fact, it is not.	1. Ignoring risk 2. Assuming everything is easy to be done 3. Assuming to be able of determining a decision result
Investor Decision-making (Scott & Bruce, 1995; Rasheed et al., 2018; Gambetti & Giusberti, 2019)	A complex process that includes an analysis of several factors and following several steps.	1. Rational 2. Intuitive 3. Dependent
Demography (Katper et al., 2019; Bashir et al., 2013; Vuong & Dao, 2012).	Characteristics of a population both in terms of size, structure, population distribution, and changes	1. Gender 2. Age 3. Education

Source: Existing literatures of variable & source

Results and discussions

Descriptive Analysis

Approximately fifty-three percent of the participants are male, and the bulk of them are between the ages of twenty-six and thirty-five, which accounts for sixty-six percent of the total. Furthermore, seventy-five percent of them have earned a bachelor's degree or above. Additional details are given below.

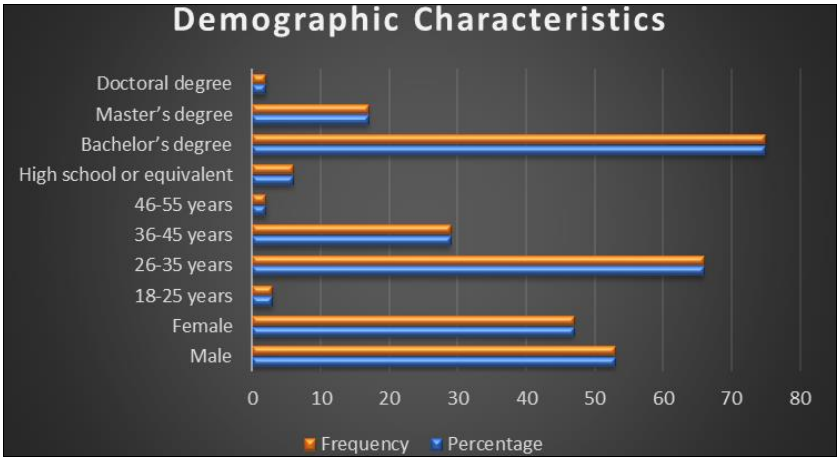

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Fig 1: Demographic Characteristics

Verificative Analysis

Outer model evaluation

The findings of the validity and reliability assessments of the outer model are shown in Figs 1 and 2, along with the calculation of the path coefficient.

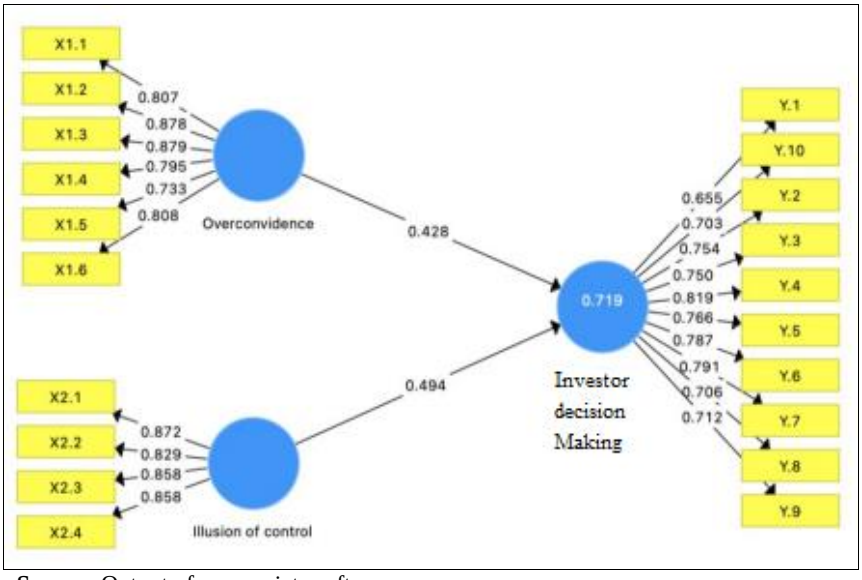

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Fig 1: Results of Outer Model Evaluation

Fig 1 shows a simple model trying to understand how two things (Overconfidence and Illusion of Control) affect another thing (Investor Decision Making). Overconfidence (the blue circle on the left) is connected to Investor Decision Making (the circle on the right) with a line that has a number 0.428. This means that when people are more overconfident, they tend to make different investment decisions. The 0.428 shows a moderate connection. Illusion of Control (the blue circle at the bottom) is also connected to Investor Decision Making with a line that has a number 0.494. This means that when people have a stronger illusion of control, they also make different investment decisions. This connection is a bit stronger than the one with overconfidence. The big circle for Investor Decision Making has the number 0.719 inside. This means that the model can explain about 71.9% of why people make certain investment decisions.

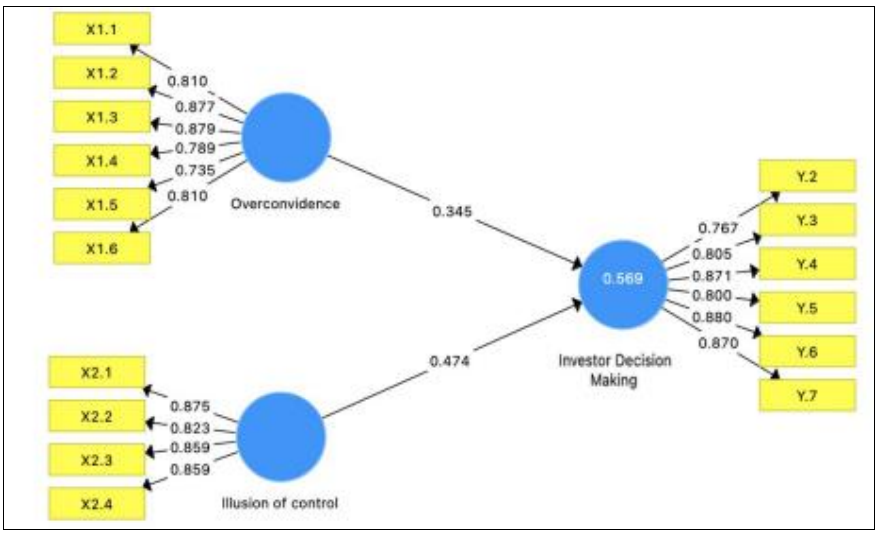

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Fig 2: Outcome of Evaluation of the Outer Model Convergent Soundness

In order to determine whether or not convergent validity exists, we examine the loading factor value and determine whether or not the indication in each item is authentic or credible. The loading factor value limit that is used in this investigation is 0.7. Fig 2 shows that variables Y.1, Y.8, Y.9, and Y.10 were removed from the study due to factor loadings below the acceptable threshold. Fig 2 demonstrates that any and all of the variables' indicators continue to have valid loading factor values that are larger than 0.70 even after the indicators have been removed. Convergent validity standards have been satisfied, it may be said.

Discriminant Validity

A research model exhibits strong discriminant validity when the square root of the average variance extracted (AVE) for each construct exceeds the inter-construct correlations for that construct. In Table 3, you can see the results of the study.

Table 3: Square Root Value of AVE

	Illusion of Control Bias	Investor Decisionmaking	Overconfidence Bias
Ilussion of Control Bias	0.854		
Investor Decision-making	0.712	0.833	
Overconfidence Bias	0.692	0.673	0.818

Source: Output of appropriate software

Table 3 indicates that the square roots of the average variance extracted (AVE) for all three constructs exceed 0.5. This demonstrates that the constructs' values (0.854, 0.833, and 0.818, respectively) are greater than their corresponding square roots of AVE. With regard to the discriminant validity, the outer model seems to be showing some signs of promise.

Reliability and Avaerage Variance Extracted

On display are the outcomes of a test of reliability, which comprise Cronchbach's Alpha, Composite Reliability, and Average Variance Extracted (AVE). If the Average Variance Extracted (AVE) exceeds 0.50, the Composite Reliability (CR) is greater than 0.70, and Cronbach's Alpha surpasses 0.60, the construct can be considered reliable. The findings of the SmartPLS test used to determine the dependability of composites are shown in Table no. 4.

Table 4: Test, Cronbach's Alpha, Composite Reliability, and AVE

	Cronbach's Alpha	Composite Reliability	AVE
Ilussion of Control Bias	0.877	0.915	0.730
Investor Decision-making	0.911	0.932	0.695
Overconfidence Bias	0.900	0.924	0.669

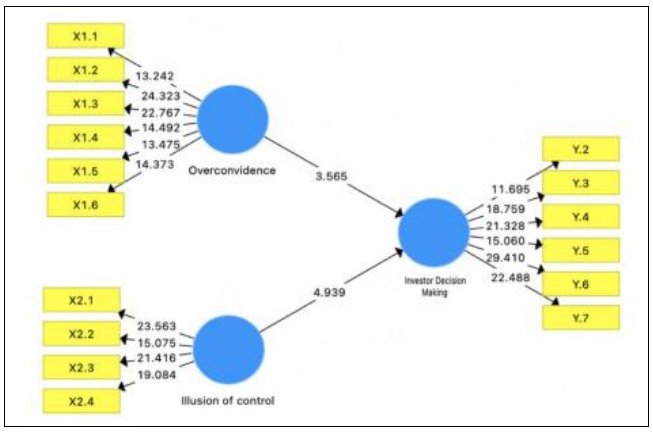
Source: Output of appropriate software

Based on the SmartPLS results presented in Table 2, all constructs demonstrate strong reliability. Each construct demonstrates an Average Variance Extracted (AVE) value exceeding 0.50, a Composite Reliability (CR) greater than 0.70, and a Cronbach's Alpha above 0.60, indicating its reliability. These findings provide strong support for the reliability of all constructs in the model.

Inner Model Evaluation- Structural Model

The model met all of the requirements, according to the findings of the external model review. The route coefficient

that was generated from the t-statistic value and the reliability value of the indicator that was incorporated into the construct of the dependent variable may then be examined in order to conduct an inner model test or a structural model evaluation. Another measure that is used for evaluation is the value of the predicted relevance of the second query. The bootstrapping method is used in an effort to determine the ways in which several elements influence one another.



Source: Output of appropriate software

Fig 3: Initial Results of Inner Model Evaluation

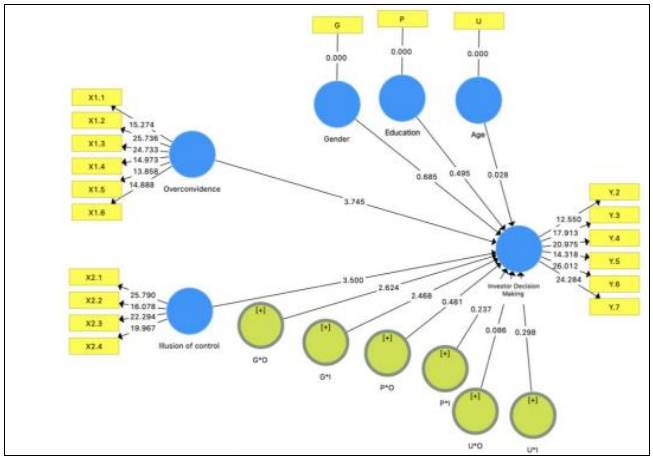


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Fig 4: Results of Inner Model Moderation Evaluation Variance Analysis (R^2) or Determinant Coefficient

The coefficient of determination (R^2) indicates the predictive accuracy of the model. When the value of R^2 is high, it indicates that the prediction model is of good quality. Based on the findings of this inquiry, the value of the determinant coefficient is shown in the table no. 5, given below.

Table 5: Value- Determinant Coefficient

	R^2	Details
Investor Decision-Making	0.569	Model Moderate (Before Adding the Moderating Variable)
Investor Decision-Making	0.613	Model Moderate (After Adding the Moderating Variable)

Source: Output of appropriate software

As given in Table 5, model used during the research was able to provide appropriate predictions both before and after the moderating variable was included into the equation.

Discussion

This study's findings reveal a positive and significant relationship between overconfidence bias and investor decision-making. Investors exhibiting higher levels of overconfidence are more inclined to make investment decisions. Overconfidence leads individuals to overestimate their abilities, fostering a belief in their superior competence. In the context of investing, this bias can result in excessive trading, suboptimal portfolio management, and the assumption of imprudent levels of risk. Investors who are overconfident tend to disregard the fact that they do not have a sufficient grasp of their assets because they believe they are always right. The study suggests that, investors in Lucknow are considered to be overconfident, and preference for self-directed investment management over seeking professional financial advice. As a consequence of this, investors who are overconfident in their abilities should be wary of taking further risks with their capital.

When it comes to the influence that overconfidence bias has on the decisions that investors make, gender is a significant mediating factor that plays a role. On the other hand, neither age nor degree of education seems to have any obvious impact in this respect. In this particular circumstance, individuals of both sexes have a tendency to behave in a manner that exudes an air of superiority. The study demonstrates that gender moderates the influence of overconfidence bias on investors' decision-making processes. According to the findings of this study, males are more likely to engage in trading and have better levels of self-confidence than women. This is mostly due to the fact that men normally possess more information processing and judgement abilities than women. As a consequence of this, the bulk of the comments come from male speakers. When they are early beginning their careers, investors often have a greater degree of overconfidence in their strengths and capabilities. In the subsequent years of his profession, he developed a greater sense of self-assurance. The expected profit of an investor decreases as the number of trades and the volatility of the market increase as a result of an overconfident investor purchasing investments that are too aggressive. The results of the study indicate that investors are impacted in a positive manner by the illusion of control bias. In situations when investors experience a high amount of illusion of control bias, they are more inclined to make decisions on their investments. As the situation becomes more challenging, they put their faith in their instincts and rely on them to lead them to a victorious finish. A person is said to have control bias when they have an illusion of being able to predict the result of a situation, even when in fact they are unable to do so. The illusion of control is something that investors should be aware of, particularly when it comes to making choices, according to a number of experts. This is due to the fact that investors often have the specious belief that they can influence or exert control over occurrences that they really cannot. The results of this study indicate that investors who are subject to the illusion of control bias are more prone to make frequent decisions about their investments. The manifestation of this bias may be seen in the perception that an individual's capabilities are incredibly valuable and productive, as well as in their self-assurance in their capacity to make great decisions even when they are under pressure.

Conclusion

The findings of this study offer valuable insights into the significant role that cognitive biases and emotional factors play in influencing investor behavior. Through a bibliometric review and empirical analysis, this research highlights how biases such as overconfidence and illusion of control shape investment decision-making processes, often leading to suboptimal financial outcomes. The study reinforces that investor psychology is a critical determinant in financial markets, affecting everything from individual stock selection to broader portfolio management strategies.

this study emphasizes the profound impact of cognitive biases and emotional factors on investor behavior. By identifying key behavioral tendencies and their implications, this research contributes to the broader discourse on behavioral finance. Understanding the psychological underpinnings of financial decision-making can help investors make more rational choices, leading to improved financial well-being and more efficient market functioning. As financial markets continue to evolve, integrating behavioral insights into investment strategies will remain crucial for achieving long-term success and stability.

Future research in this area should explore additional cognitive and emotional biases that may impact investment decisions. While this study focused on overconfidence and illusion of control, other biases such as loss aversion, herding behavior, and anchoring effects warrant further investigation. Additionally, expanding the scope of research to include diverse investor populations across different geographical regions can provide a more comprehensive understanding of behavioral finance dynamics on a global scale.

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