

## Impact of Cognitive biases on Investment Decisions – A Mediating Role of Emotional Intelligence in relationship between Confirmation bias and Investment Decision

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### ABSTRACT

**Purpose** – The purpose of this study is to understand the combined impact of Emotional Intelligence and cognitive biases of individual investors' behaviour in investing into Indian stock market. It is the Emotional Intelligence that dictates the way people deal with one another and understand emotions. Through analysing previous literature, it is found that emotional intelligence can play mediating role at the time of checking the impact of Availability bias on investment decisions. **Design/methodology/approach** – The data gathered, analysed and tested from 195 respondents. The region of research was the individual investors having basic knowledge about investment from major cities of Gujarat. The convenient sampling was used in this examination. **Findings** – The statistical analysis suggests that among the predictors, risk perception, emotional intelligence, and herding bias are major drivers of individual's investment decisions. Risk Perception, Emotional Intelligence, Confirmation Bias and Herding Bias significantly influence investment decisions. While Anchoring Bias and Financial Literacy was found to be significant in a separate test having indirect relationship with investment decision. Availability Bias did not have direct impact on investment decisions but having indirect relationship with mediating role of Emotional Intelligence. **Research limitations/implications** – The sample selection was based on convenient sampling. The sample was area specific, restricted to Indian stock market and major cities of Gujarat. Therefore, the results of the study cannot be generalized to all the investors investing through other exchanges. The inferences are based on the assumption that the data provided by the investors are true and correct. **Practical implications** – The benefit of this study is that it may help the investors in understanding the subjective part of their cognitive behavior and control their emotions while making investment decisions in stock market options.

**Keywords:** Behavioral Finance, Behavioral Biases, Cognitive Biases, Emotional Intelligence, Investment Decision, Availability Bias



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## INTRODUCTION

Behavioral finance is a study that combines psychology and finance to understand how individuals make financial decisions. The focus of Traditional finance theory was limited to rationality of individuals Markowitz (1952). However, as per Kahneman and Tversky (1979) theory in the field of behavioral finance recognizes that people often make decisions that deviate from rationality due to cognitive biases and emotional factors.

The relationship between cognitive biases and investment decisions is profound and widely studied in the field of behavioral finance. Cognitive biases are systematic process of human brain to deviate from rationality in judgment, whereby inferences about other people and situations may be drawn in an illogical manner. These biases can affect various aspects of decision-making, including those related to investments. Here's how:

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1. Anchoring Bias: Investors tend to rely heavily on the first piece of information they receive (the "anchor") when making decisions. This can lead to suboptimal decisions, such as holding onto a losing investment because the original purchase price was higher.

2. Confirmation Bias: Investors seek out information that confirms their existing beliefs and ignore information that contradicts them. This can lead to a failure to consider alternative perspectives or risks. Chu Xin Cheng (2018) examined the role of Confirmation bias having effect on investment decision making.

3. Herd Mentality: Investors often follow the actions of the crowd, even if it goes against their own analysis or beliefs. This can lead to asset bubbles and market inefficiencies.

4. Availability Bias: Investors tend to overestimate the importance of information that is readily available to them, such as recent news headlines, while underestimating the importance of less accessible information.

5. Emotional Intelligence: Emotional intelligence is the ability to understand, use and manage your own emotions effectively, as well as the recognizing or empathizing the emotions of others. Analyzing the psychology of investors is a most to understand the stock market volatility Fan et al. (2009). Bhandari and Deaves (2006) research showed that investor's emotion is a major determinant in decision making process.

These biases can lead to suboptimal investment decisions and contribute to market inefficiencies. Recognizing and understanding these biases is crucial for investors to make more rational and informed decisions.

### **The investor behavior: from the perspective of emotion and rationality**

Based on the rationality assumption, the financial theories were appeared to provide managers and investors many powerful tools to take their financial decisions and provide insights into expected return and risk. For example, the modern portfolio theory (MPT) can be used by investors as a tool to optimize their return to risk ratio. It leads them to apply the diversification between many stocks (either bond) to reduce volatility and obtain the highest return possible. The capital assets pricing model (CAPM) and the arbitrage pricing theory (APT) create other powerful tools. Based on the past information the investors can use these models to evaluate the fair value of the stocks. The theory of efficient market hypothesis (EMH) with its three versions of the efficient market hypotheses (weak, semi-strong and strong) also appeared by Fama, 1970 to help investors to predict the future value of stock based on past information. It has a very important implication because it explains why market prices change and how those changes take place. With the strong appearance of derivatives products, the option pricing model (OPM) and other mathematical models such as binomial option

pricing model, stochastic volatility model, continuous time model and local volatility model came to help the investors to determine the option price of the underlying stock in real-time. At this level of mathematical complications, the quantitative finance and the machine learning theories appeared to support the practical side of the different financial theories.

However, many psychologists and researchers have considered that investors are affected by psychological factors and due to their behaviours, they cannot forecast the stocks values without violate the rationality assumption of financial theories. Moreover, the using of machine learning system can lead the investors to take non optimal decisions during some circumstances especially after filtering and shortcutting some psychological and emotional information.

Some researchers are realizing now the importance of investors' investment behavior besides the traditional financial theories. They consider the financial decision as a complex sequence of four steps (input, process, output and feedback) in which emotions play a crucial role. During the first step all the facts of stocks and other data such as politics, economics and market emotion tendency are used to overcome uncertainty.

The prospect theory (Daniel Kahneman and Amos Tversky, in 1979) has confirmed how people take decision involving high level of uncertainty. Based on this theory, the investors frame their financial decisions in term of potential value of losses and gains rather than outcomes. When investor buys one stock instead of selecting others, he is essentially making an intuitive prediction about positive and negative context. In general, he prefers the low risk option in case of positive frame and the high-risk alternative in case of negative frame. Even he uses the machine learning system as a tool for his fundamental analysis his reaction can be different and influenced by his mood based on his losing and winning frames.

The risk perception is considered as a mediator which is essential for establishing the common factor between behavioral finance, risk perception, and investment decision (S. U. Ahmed et al., 2022).

### **OBJECTIVE OF THE STUDY**

- To analyze the impact of behavioural biases on investment decisions
- To examine the investment behaviour of individual investors of Gujarat in relation to Indian stock market

### **RESEARCH METHODOLOGY**

#### **Population and sample and procedure**

When analysing data, people often tend to give more importance to recent patterns while disregarding the underlying characteristics of the population that generated the data (Fama, 1998). In this study, the

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population consists of investors who are directly or indirectly involved in trading stocks in Indian stock market. The aim is to assess the overall level of investment behaviour within this population and evaluate the presence of behavioral biases in the equity market. The sample size of the study is questionnaires which were given to circulated to 250 individuals who have knowledge and experience of investment in the Indian equity market, only 219 questionnaires were completely filled out by the respondents and considered for analysis and out of this, only 195 responses are considered as reliable and accurate for the statistical testing.

Convenience sampling is a simple and easy way for research. But it should be known that when to use it and when not to. Hence, in this study, convenient sampling is employed to gather data from investors investing in the Indian stock market with special reference Gujarat. The data on investors are obtained personally through physical copies of questionnaire as well as through online google form.

### Research Instrument

The questionnaire used in the study contained 43 questions designed to receive information on various variables that may influence investment decisions. The questions were divided into two main categories: demographic information (Table 1) as well as investment information (Table 2) and behavioral factors scaling the investment decisions. The demographic section included questions on gender, education, occupation, percentage of saving invested in stock market and portfolio size. The investment behavioral factors section contained Likert scale-based questions understanding about Risk Perception, Financial Literacy, Emotional Intelligence, Herding Bias, Anchoring Bias, Confirmation Bias, Availability Bias and Investment Decision of individual investors. Out of 38, 34 were specifically aimed at measuring the behavioral factors influencing investment decisions. The remaining 4 questions were focused on measuring the investment decision behaviour itself.

The Likert scale used in this study contains the dimensions ranged from 1= strongly disagree to 5 = strongly agree (Pompian, 2011). The collected data were tabulated and tested using SPSS software. Once normality of the data was confirmed, advanced analysis has been done using Multiple Regression with SPSS software. Structural Equation Modelling (SEM) to test the hypotheses of the conceptual framework.

### Hypothesis Framing

Bashar Yaser Almansour, Sabri Elkrghli & Ammar Yaser Almansour (2023) study found that Behavioral finance factors, along with risk perception influence investment decisions, which suggest that these factors play a crucial role in investment decision making. Therefore, the study can have following hypothesizes:

H1: There is a significant effect of Risk Perception on investment decision

H2: There is a significant effect of Financial Literacy on investment decision

H3: There is a significant effect of Emotional Intelligence on investment decision

H4: There is a significant effect of Herding Bias on investment decision

H5: There is a significant effect of Anchoring Bias on investment decision

H6: There is a significant effect of Confirmation Bias on investment decision

H7: There is a significant effect of Availability on investment decision

H8: Emotional Intelligence is significantly moderate the relationship between confirmation bias and investment decision

### Demographic Information and Investment Information Analysis and Interpretation

Table 1: Demographic Information

| Criteria   |                         | Number | %      |
|------------|-------------------------|--------|--------|
| Gender     | Male                    | 122    | 55.71% |
|            | Female                  | 97     | 44.29% |
| Total      |                         | 219    | 100%   |
| Education  | High School             | 3      | 1.37%  |
|            | Graduate                | 32     | 14.61% |
|            | Post-Graduate           | 125    | 57.07% |
|            | Professional Degree     | 45     | 20.55% |
|            | Doctoral Degree         | 14     | 6.39%  |
| Total      |                         | 219    | 100%   |
| Occupation | Government Employee     | 10     | 4.57%  |
|            | Private Sector Employee | 98     | 44.75% |

|       |                            |     |        |
|-------|----------------------------|-----|--------|
|       | Professional / Businessman | 30  | 13.7%  |
|       | Retired                    | 8   | 3.65%  |
|       | Student                    | 59  | 26.94% |
|       | Other                      | 14  | 6.39%  |
| Total |                            | 219 | 100%   |

Table 2: Investment information

| Criteria                                       |                       | Number | %      |
|------------------------------------------------|-----------------------|--------|--------|
| Percentage of savings invested in stock market | a) Less than 10%      | 91     | 41.55% |
|                                                | b) Between 10% - 20%  | 65     | 29.68% |
|                                                | c) Between 20% - 30   | 34     | 13.68% |
|                                                | d) Between 30% - 40%  | 18     | 15.53% |
|                                                | e) Above 40%          | 11     | 5.02%  |
| Total                                          |                       | 219    | 100%   |
| Portfolio Size                                 | (in ₹)                |        |        |
|                                                | a) Less than 2 lakhs  | 150    | 68%    |
|                                                | b) Between 2-5 lakhs  | 42     | 19.18% |
|                                                | c) Between 5-10 lakhs | 7      | 3.2%   |
|                                                | d) Above 10 lakhs     | 20     | 9.13%  |
| Total                                          |                       | 219    | 100%   |

As per the above two tables, we can see that almost 58 percentage investors are male and the rest are female. As far as education is concerned, majority respondents are having post-graduation degree (57.07%) followed by professional degree holders. Almost 15 percentage of investors are graduates and the rest have high schooling and doctoral degree.

Here, as shown in table 1, almost 45% of the respondents are private sector employees. As I have used convenient sampling method, around 25 percentage of the investors are students which currently acquiring post-graduation degree.

We can see from Table 2, that almost 41.55% of the investors have less than 2 lakhs as their portfolio size. Apart from that, majority investors are having portfolio size of less than ₹2 Lakhs.

## REVIEW OF LITERATURE

- P. LAKSHMI, S. VISALAKSHMI, N. THAMARASELVAN AND B. SENTHILARASU (2013) finds that Behavioral biases and prospects are abundant in financial markets especially emerging markets like India. Local investors lack the analytical tools and are prey to rumours. This paper offers an additional reason: There is a higher degree of overconfidence, Herding, Social Contagion and Representative. Further, as the degree of risk aversion, disposition effect and Cognitive Dissonance becomes sufficiently large, the investment decision tends to become long term. Behavioral finance has investigated many aspects of investors' behaviour, and we can apply this groundwork to understand the perspectives of local investors. Considering the behavioral traits can lead to some approaches that investors should put into practice when investing in financial markets. The interrogation of what effects other behavioral aspects might have on investor preferences is commendable of future research.
- Malabika Deo and Vijayalakshmi Sundar (2015), finds that Investment decisions are influenced by certain identified factors. The important factors like financial requirements, advice and recommendations, firm's image, share price, dividend attraction, analysis, maximizing return and sector performance are significantly influenced by gender, age, marital status and educational qualification of investors in the Indian capital market. The investment decisions relating to certain factors differ based on the gender differences. The results of this study can be used by developing-country policymakers to promote an enhanced investment ecosystem.
- Jhansi Rani Boda and Dr. G. Sunitha (2018) studied in their article the investor's psychology in investment decisions, focusing on the investor's irrationality by trying to analysing psychological and emotional factors that affect investments. The study finds that the investor's mood and sentiment is also having the importance in predicting the market movements as much of the empirical studies have supported experimented and concluded the same. Research study have explained the irrational behaviour of the investors and focused on the cognitive or behavioral biases that have explained the anomalies and the mental errors of the investors. This study regards to behavioral finance reviews and categorized the investments as affected by the aspects of heuristics, framing, emotions and market impact. The concept of heuristics has been interpreted as acceptable rules of thumb that help reducing the cognitive resources to solve a problem.
- Ritika and Nawal Kishor (2020), the paper studied 13 biases under two main causes of behavioral biases. The first second-order dimension

“Cognitive Biases” consisted of eight sub-dimensions or biases, namely “representativeness bias,” “confirmation bias” and “conservatism bias,” “self-attribution bias,” “anchoring bias,” “mental accounting,” “availability bias” and “herding bias.” Another second-order dimension “Emotional Biases” consisted of five biases, namely “regret aversion bias,” “loss aversion bias,” “status quo bias,” “self-control bias” and “overconfidence bias.” The financial behaviour of investors is affected by flaws caused due to their irrational thinking and emotions. The present study confirmed that thinking and calculation abilities have an impact on the decision-making of investors, also their emotions have a larger impact on the investment decisions. Availability bias manifested itself as a strong indicator of cognitive biases shows that people want to avoid the hassles and pain associated with investment decisions. Regret-aversion bias showed a strong correlation with emotional biases, indicating that people compromise their investment returns in order to save themselves from the regret of making bad investment decisions.

- Gokul Bhandari and Khaled Hassanein (2010), “An agent-based debiasing framework for investment decision-support systems” researchers agree on the role of psychological forces on individuals’ decision-making. In the research, researchers identifies the primary characteristics of major biases influencing investment decisions, they proposed a taxonomy to categorise them as cognitive, affective or conative. Cognitive biases are information-processing biases. Affective biases involve general moods and emotions. Conative biases are relatively stable personality traits such as overconfidence and inertia. Researchers then outlines debiasing strategies for each of these bias categories and identify decision-support characteristics.
- Hani El-Chaarani, (2016), “Exploring the impact of emotional intelligence on portfolio performance: an international exploratory study”, The research was done through questionnaire to 197 investors indicated that investors characterized by high emotional intelligence have more capacity to manage their portfolios than investors with low emotional intelligence level. Additional analysis revealed that the most powerful dimensions of emotional intelligence are the capacities to manage and control the personnel emotions. Consequently, the investors have to trust on their thoughts, manage their over feelings and control their involuntary emotions. Oppositely, the results revealed a non-significant impact of Emotional identification (EI) dimension. According to this study, understanding of market emotion is important only if the investor will use it to manage and control their emotions.

- Costa et. al. (2019) studied on “BEHAVIORAL ECONOMICS AND BEHAVIORAL FINANCE: A BIBLIOMETRIC ANALYSIS OF THE SCIENTIFIC FIELDS”, in order to conduct bibliometric analysis in the major areas of behavioral economics & its subset areas of Behavioral Finance, Author conducted survey on 2617. The was collected using Web of Science database & it was found that the area of behavioral economics is more broad-ranging than behavioral finance which in turn is by-product of behavioral economics.
- Renuka Sharma, 2020, the study was done to check the impact of behavioural biases on the risk tolerance of individual investors. Research was conducted on 600 individual investors of Haryana. In that survey, researcher prepared structured questionnaire that includes 64 behavioural dispositions statements. The individual investors hold attitudes towards making investment decisions and such attitudes are identified by grouping them into the eight dispositions. On the basis of multiple discriminant analysis, the researcher has determined three types of investors group namely a) risk tolerant investors b) conservative moderate investors and c) rational confident investors.

## PRELIMINARY ANALYSIS

The following table shows Normality Test of the data. As, in the Kolmogorov-Smirnov Test, the test statistic does not exceed the critical value for a given significance level of 0.05. similarly, the test results of Shapiro-Wilk test are significant (Sig. is less than 0.05), it indicates that the data follows a normal distribution.

Table 3: Normality Test

| Tests of Normality                    |                                 |     |      |              |     |      |
|---------------------------------------|---------------------------------|-----|------|--------------|-----|------|
|                                       | Kolmogorov-Smirnov <sup>a</sup> |     |      | Shapiro-Wilk |     |      |
|                                       | Statistic                       | df  | Sig. | Statistic    | df  | Sig. |
| RP mean                               | .079                            | 195 | .005 | .982         | 195 | .011 |
| FL mean                               | .098                            | 195 | .000 | .982         | 195 | .013 |
| EI mean                               | .151                            | 195 | .000 | .924         | 195 | .000 |
| HB mean                               | .122                            | 195 | .000 | .958         | 195 | .000 |
| AB mean                               | .126                            | 195 | .000 | .972         | 195 | .001 |
| CB mean                               | .136                            | 195 | .000 | .958         | 195 | .000 |
| AVB mean                              | .182                            | 195 | .000 | .922         | 195 | .000 |
| ID mean                               | .160                            | 195 | .000 | .951         | 195 | .000 |
| a. Lilliefors Significance Correction |                                 |     |      |              |     |      |

Table 3 presents the Cronbach’s alpha coefficients for checking the level of reliability for each of various behavioral biases used in this research in Indian stock market investors.

Table 4: Reliability Statistics

| Reliability Statistics |                                              |            |
|------------------------|----------------------------------------------|------------|
| Cronbach's Alpha       | Cronbach's Alpha Based on Standardized Items | N of Items |
| .774                   | .778                                         | 8          |

| Item-Total Statistics |                            |                                |                                  |                              |                                  |
|-----------------------|----------------------------|--------------------------------|----------------------------------|------------------------------|----------------------------------|
|                       | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
| RP mean               | 22.40483618                | 13.387                         | .266                             | .164                         | .784                             |
| FL mean               | 22.14192106                | 12.253                         | .381                             | .278                         | .769                             |
| EI mean               | 22.33776138                | 12.513                         | .494                             | .351                         | .747                             |
| HB mean               | 22.54007604                | 12.904                         | .463                             | .290                         | .753                             |
| AB mean               | 22.41129375                | 11.422                         | .662                             | .469                         | .717                             |
| CB mean               | 22.49308957                | 11.464                         | .529                             | .316                         | .740                             |
| AVB mean              | 22.52568489                | 12.075                         | .548                             | .360                         | .738                             |
| ID mean               | 22.25133065                | 12.101                         | .506                             | .295                         | .744                             |

As we can see here in Table 4, The Cronbach's alpha coefficients for Emotional Intelligence, Financial Literacy and Investment Decisions is greater than 0.7 which is reliable. The scale of all the biases are reliable

enough to gauging the desired constructs. Reliability Statistics indicates that the variables assessed were accurate and consistent for the research.

## REGRESSION ANALYSIS

**Table – 5: Descriptive statistics**

| Descriptive Statistics |             |                 |                   |                   |                |             |                          |                    |                    |            |                    |            |
|------------------------|-------------|-----------------|-------------------|-------------------|----------------|-------------|--------------------------|--------------------|--------------------|------------|--------------------|------------|
|                        | N Statistic | Range Statistic | Minimum Statistic | Maximum Statistic | Mean Statistic | Std. Error  | Std. Deviation Statistic | Variance Statistic | Skewness Statistic | Std. Error | Kurtosis Statistic | Std. Error |
| RP mean                | 180         | 3.742492536     | 1.007507464       | 4.750000000       | 3.287541708    | .0551224821 | .7395457023              | .547               | -.342              | .181       | -.356              | .360       |
| FL mean                | 180         | 3.849920484     | .9000795163       | 4.750000000       | 3.286944886    | .0552634455 | .7414369253              | .550               | -.361              | .181       | -.280              | .360       |
| EI mean                | 180         | 3.992492536     | 1.007507464       | 5.000000000       | 3.314511405    | .0493558141 | .6621777320              | .438               | -.154              | .181       | .033               | .360       |
| HB mean                | 179         | 4.000000000     | 1.000000000       | 5.000000000       | 3.220670391    | .0549017530 | .7345353938              | .540               | -.241              | .182       | -.292              | .361       |
| AB mean                | 179         | 3.500000000     | 1.250000000       | 4.750000000       | 3.300279330    | .0539310518 | .7215482964              | .521               | -.244              | .182       | -.623              | .361       |
| CB mean                | 179         | 4.000000000     | 1.000000000       | 5.000000000       | 2.852886406    | .0631103769 | .8443592959              | .713               | .852               | .182       | .695               | .361       |
| AVB mean               | 179         | 3.500000000     | 1.250000000       | 4.750000000       | 3.300279330    | .0539310518 | .7215482964              | .521               | -.244              | .182       | -.623              | .361       |
| ID mean                | 179         | 3.400000000     | 1.600000000       | 5.000000000       | 3.510055866    | .0564445429 | .7551765157              | .570               | -.143              | .182       | -.773              | .361       |
| Valid N (listwise)     | 179         |                 |                   |                   |                |             |                          |                    |                    |            |                    |            |

In Table 5, it shows the descriptive statistics of eight variables measured in the study.

**Central Tendency (Mean):** The means for all variables range between approximately 3.22 and 3.51, suggesting that most responses were around the mid-point of the scale used in the study. **Standard deviation (SD)** shows how much the responses vary from the mean. The highest SD is for Confirmation Bias (CB mean) at 0.844, indicating higher variability in responses. The lowest SD

is for Emotional Intelligence (EI mean) at 0.662, suggesting more consistency in responses.

**Skewness:** Most variables have skewness values close to “Zero”, indicating that the data is approximately symmetrical. Most variables have kurtosis values close to zero, that means distributions are fairly normal.

Most variables have 179-180 valid observations. Listwise valid N is 179, meaning one case was excluded due to missing values. The data appears normally

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distributed with slight variations. Confirmation Bias (CB) shows the highest variance and skewness, indicating greater variation among respondents. Emotional Intelligence (EI) shows the least variability, suggesting respondents had more agreement in their responses.

**Table – 6: ANOVA**

| ANOVA <sup>a</sup> |            |                |     |             |       |                   |
|--------------------|------------|----------------|-----|-------------|-------|-------------------|
| Model              |            | Sum of Squares | df  | Mean Square | F     | Sig.              |
| 1                  | Regression | 25.375         | 7   | 3.625       | 6.786 | .000 <sup>b</sup> |
|                    | Residual   | 100.429        | 188 | .534        |       |                   |
|                    | Total      | 125.804        | 195 |             |       |                   |

a. Dependent Variable: ID mean

b. Predictors: (Constant), AVB mean, RP mean, FL mean, HB mean, CB mean, EI mean, AB mean

- The F-statistic = 6.786 with a p-value < .001, indicating that the regression model is statistically significant overall. This means that the set of independent variables significantly predicts investment decisions.
- $R^2 = 25.375 / 125.804 \approx 0.2016$  (or ~20.16%)  
→ About 20.2% of the variance in investment decision (ID mean) is explained by the 7 predictors collectively. This is a moderate effect size in behavioral sciences.
- So, we can say that the model is statistically significant and ultimately the predictors (various biases, emotional intelligence, and financial literacy) collectively influence investment decisions.

**Table – 7: Coefficients**

| Coefficients <sup>a</sup> |            |                             |            |                           |       |      |
|---------------------------|------------|-----------------------------|------------|---------------------------|-------|------|
| Model                     |            | Unstandardized Coefficients |            | Standardized Coefficients | t     | Sig. |
|                           |            | B                           | Std. Error | Beta                      |       |      |
| 1                         | (Constant) | 1.279                       | .365       |                           | 3.506 | .001 |
|                           | RP mean    | .021                        | .073       | .021                      | .292  | .771 |
|                           | FL mean    | .018                        | .062       | .021                      | .284  | .777 |
|                           | EI mean    | .121                        | .085       | .114                      | 1.430 | .154 |
|                           | HB mean    | .081                        | .103       | .063                      | .782  | .435 |
|                           | AB mean    | .371                        | .089       | .346                      | 4.180 | .000 |
|                           | CB mean    | -.011                       | .071       | -.012                     | -.157 | .876 |
|                           | AVB mean   | .014                        | .088       | .013                      | .161  | .873 |

a. Dependent Variable: ID mean

| Excluded Variables <sup>a</sup> |          |                    |       |      |                     |                                   |
|---------------------------------|----------|--------------------|-------|------|---------------------|-----------------------------------|
| Model                           |          | Beta In            | t     | Sig. | Partial Correlation | Collinearity Statistics Tolerance |
| 1                               | FL mean  | . <sup>b</sup>     | .     | .    | .                   | .000                              |
|                                 | EI mean  | .215 <sup>b</sup>  | 2.668 | .009 | .221                | .899                              |
|                                 | HB mean  | .200 <sup>b</sup>  | 2.605 | .010 | .217                | .997                              |
|                                 | AB mean  | . <sup>b</sup>     | .     | .    | .                   | .000                              |
|                                 | CB mean  | -.037 <sup>b</sup> | -.467 | .641 | -.040               | .998                              |
|                                 | AVB mean | . <sup>b</sup>     | .     | .    | .                   | .000                              |
| 2                               | FL mean  | . <sup>c</sup>     | .     | .    | .                   | .000                              |
|                                 | HB mean  | .204 <sup>c</sup>  | 2.720 | .007 | .226                | .996                              |
|                                 | AB mean  | . <sup>c</sup>     | .     | .    | .                   | .000                              |
|                                 | CB mean  | -.034 <sup>c</sup> | -.437 | .663 | -.037               | .998                              |
|                                 | AVB mean | . <sup>c</sup>     | .     | .    | .                   | .000                              |
| 3                               | FL mean  | . <sup>d</sup>     | .     | .    | .                   | .000                              |
|                                 | AB mean  | . <sup>d</sup>     | .     | .    | .                   | .000                              |
|                                 | CB mean  | -.042 <sup>d</sup> | -.560 | .577 | -.048               | .996                              |
|                                 | AVB mean | . <sup>d</sup>     | .     | .    | .                   | .000                              |

a. Dependent Variable: ID mean  
b. Predictors in the Model: (Constant), RP mean  
c. Predictors in the Model: (Constant), RP mean, EI mean  
d. Predictors in the Model: (Constant), RP mean, EI mean, HB mean

The final model includes RP mean, EI mean, and HB mean as independent variables. All three predictors are statistically significant ( $p < 0.05$  in the "Sig." column). The VIF values are low ( $< 5$ ), so this means that there is no multicollinearity between the variables. Here, as we can see that all included variables significantly impact the dependent variable (Investment Decision Mean) since p-values are below 0.05.

1. Risk Perception: Standardized Beta; 0.333,  $p < .001$ : has a significant positive impact on ID mean. A one-unit increase in RP leads to a 0.333 standard deviation increase in ID, indicating that individuals' perception of risk plays a key role in investment decisions.- Anchoring Bias ( $B = .278$ ,  $p = .018$ ): This bias also has a positive and significant impact, suggesting that those who fixate on initial information or values are more likely to make particular investment decisions.

2. Financial Literacy: Excluded Variables Table;  $p = .009$ , Tolerance = .000: FL was excluded from the model due to multicollinearity. However, its significance ( $p = .009$ ) in the excluded variables table suggests it plays an essential role in ID mean but was not included in the final model due to strong correlations with other predictors.

3. Emotional Intelligence: Standardized Beta (Model 3); 0.219,  $p = .006$ : EI positively affects ID mean. It means individuals with higher emotional intelligence make more confident or balanced investment decisions.

4. Herding Bias: Standardized Beta (Model 3); 0.204,  $p = .007$ : HB significantly impacts ID mean, implying that people who follow others' investment choices (herding behavior) are more likely to make similar decisions in the market.

5. Anchoring Bias: Excluded Variables Table;  $p =$  Not Significant: AB was also excluded, and its significance level was too high to be considered impactful. This means that anchoring bias does not significantly affect ID.

6. Confirmation Bias: Standardized Beta (Model 3); -0.042,  $p = .577$  (not significant): CB does not have a meaningful impact on ID mean. Since  $p > .05$ , we conclude that investors' tendency to seek confirming information does not significantly alter their investment decisions.

7. Availability Bias: Excluded Variables Table;  $p =$  Not Significant: AVB was excluded due to multicollinearity. The lack of significance suggests that the tendency to rely on readily available information does not significantly affect investment decisions.

## RESULT OF HYPOTHESIS

According to the above analysis, we can conclude that:

H1 is accepted. There is a significant effect of Risk Perception on investment decision

H3 is accepted. There is a significant effect of Emotional Intelligence on investment decision

H4 is accepted. There is a significant effect of Herding Bias on investment decision

On the contrary, H2, H4, H6 and H7 is rejected. So, we can say that according to this study Financial Literacy, Anchoring Bias, Confirmation bias and availability have no significant impact on investment decisions.

## Moderating Role of Emotional Intelligence (EI)

### Moderating Role of Emotional Intelligence (EI)

Y = ID mean, X = CB mean, W = EI mean  
Sample Size: 195

## OUTCOME VARIABLE:

### ID mean: Model Summary

| R     | R-sq  | MS E  | F      | df1    | df2      | p     |
|-------|-------|-------|--------|--------|----------|-------|
| .3162 | .1000 | .5827 | 7.0703 | 3.0000 | 191.0000 | .0002 |

### Covariance matrix of regression parameter estimates:

|          | constant | CB mean | EI mean | Int_1  |
|----------|----------|---------|---------|--------|
| constant | .5526    | -.1701  | -.1526  | .0455  |
| CB mean  | -.1701   | .0587   | .0452   | -.0153 |
| EI mean  | .1526    | .0452   | .0456   | -.0131 |
| Int_1    | .0455    | -.0153  | -.0131  | .0043  |

### Test(s) of highest order unconditional interaction(s):

|     | R2-chng | F      | df1    | df2      | p     |
|-----|---------|--------|--------|----------|-------|
| X*W | .0151   | 3.2065 | 1.0000 | 191.0000 | .0749 |

### Conditional effects of the focal predictor at values of the moderator(s):

| EI mean | Effect | se | t | p | LLCI | ULCI |
|---------|--------|----|---|---|------|------|
|---------|--------|----|---|---|------|------|

|            |           |           |            |           |                |           |
|------------|-----------|-----------|------------|-----------|----------------|-----------|
| 2.454<br>5 | .248<br>8 | .097<br>6 | 2.548<br>5 | .011<br>6 | .056<br>2      | .441<br>4 |
| 3.000<br>0 | .184<br>9 | .074<br>9 | 2.468<br>4 | .014<br>5 | .037<br>1      | .332<br>6 |
| 3.818<br>2 | .089<br>0 | .067<br>1 | 1.326<br>0 | .186<br>4 | -<br>.043<br>4 | .221<br>4 |

#### OUTCOME VARIABLE:

#### IDmean

|          | Coef<br>f  | Boot<br>Mea<br>n | Boot<br>SE | BootL<br>LCI    | Boot<br>ULCI |
|----------|------------|------------------|------------|-----------------|--------------|
| constant | .7898      | .7335            | .926<br>3  | -<br>1.216<br>5 | 2.468<br>5   |
| CBmean   | .5365      | .5438            | .304<br>3  | -.0370          | 1.167<br>2   |
| EImean   | .5976      | .6179            | .275<br>1  | .1320           | 1.213<br>7   |
| Int_1    | -<br>.1172 | -<br>.1202       | .084<br>3  | -.2987          | .0388        |

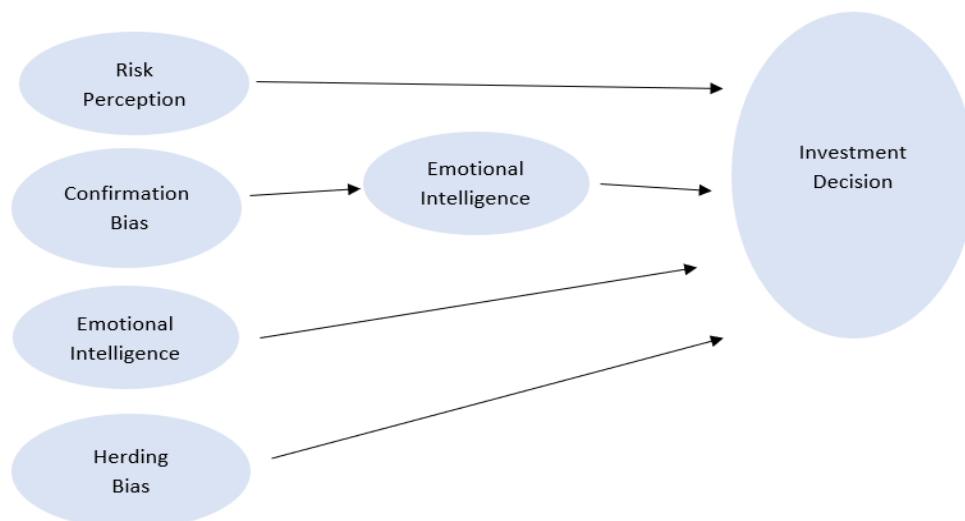
- Level of confidence for all confidence intervals in output: 95.0000
- Number of bootstrap samples for percentile bootstrap confidence intervals: 5000

- W values in conditional tables are the 16th, 50th, and 84th percentiles.

#### Analysis and Interpretation:

- EI weakens the positive relationship between Confirmation Bias and Investment Decisions.
- At low levels of EI (e.g., 16th percentile): The influence of Confirmation Bias on investment decisions is strongest (effect = 0.2488,  $p = .0116$ ).
- Investors low in EI are more likely to let confirmation bias influence their decisions. The negative coefficient suggests that as emotional intelligence increases, the Effect of confirmation bias on the outcome variable decreases.
- At moderate levels of EI (median): The effect of CB is still significant, but weaker (effect = 0.1849,  $p = .0145$ ).
- EI slightly reduces the influence of confirmation bias.
- The effect of CB becomes non-significant (effect = 0.0890,  $p = .1864$ ).
- Investors high in EI are better at managing or suppressing the influence of confirmation bias.

According to the above analysis, we can conclude that Hypothesis “H7: Emotional Intelligence is significantly moderate the relationship between confirmation bias and investment decision” is accepted.



#### CONCLUSION:

The findings highlight that Risk Perception (RP), Emotional Intelligence (EI), and Herding Bias (HB)

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significantly influence investment decisions (ID). Risk Perception has the strongest positive impact, indicating that individuals perceiving higher risk are makes strategic investment choices. Similarly, Emotional Intelligence plays a crucial role, suggesting that emotionally intelligent individuals make more balanced investment decisions. Herding Bias also significantly affects investment choices, showing that people follow market trends and collective behaviours.

While Anchoring Bias was found to be significant in a separate test. Financial Literacy (FL) was also not statistically significant. Confirmation Bias and Availability Bias (AVB) did not have a significant impact on investment decisions, suggesting that seeking confirming information or relying on easily available data does not strongly influence investor behavior.

We can see in the moderation analysis that the Confirmation Bias have significant impact on the investment decisions but only when Emotional Intelligence moderates this relation.

Overall, the results emphasize the importance of cognitive biases and emotional intelligence in shaping investment decisions, with risk perception emerging as the most influential factor.

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