Effect of Behavioural Biases on Investment Decisions of Individual Investors: An Empirical Study

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Abstract

The study aims to explore the influence of behavioural biases on investors' investment decisions in Indian states like Chhattisgarh and Odisha. Structural Equation Modelling (SEM) is used as a tool in this study to evaluate the impact of various behavioural biases like 'optimism', 'overconfidence', 'disposition', 'herding', and 'anchoring' on the decisions of individual investors. Data of individual investors is obtained through a structured questionnaire based on survey-based research design. A total of 200 sample data is considered for the study after due scrutiny. The result revealed that optimism, herding, and anchoring biases positively influence investors' investment decisions, with beta values of 0.37, 0.05, and 0.73 respectively. However, it is found that 'overconfidence' and 'disposition' biases have negative effects on investors' investment decisions. The findings of this study will enable investors to make more rational and informed investment decisions by recognizing, anticipating, and mitigating the influence of behavioural biases and their consequential effects on investment outcomes. It will also be helpful to the policymakers to identify the anomalies in the financial market and will develop the appropriate strategies to overcome/eliminate their adverse effects.

Keywords: Behavioural Biases, Individual Investors, Investment Decisions, Structural Equation Modelling

Introduction

Behavioural finance is that part of finance that gives more importance to the behaviour of the investor than other factors which influence the financial market. The behaviour of human beings is diverse and can even be different in a particular situation. Behavioural finance attempts to understand the behavioural patterns of investors, and the research identified some biases that do not go hand in hand with traditional finance, which contradict the 'Efficient Market Hypothesis (EMH)' and other traditional models like the 'Capital Assets Pricing Model (CAPM)'. These models are helpful to investors in calculating expected returns and making decisions accordingly. EMH argues that the price of

the stocks reflects all the information regarding the stocks (Mohanty et al., 2025). In contrast, behavioural finance offers alternative perspective, producing outcomes/results that often contradict the predictions of traditional financial models.

Behavioural finance explores the nuanced aspects and relationships within the human brain when confronted with the uncertainty of economic decision-making. The traits that humans exhibit most frequently (such as anger, fear, selflessness, and greed) put a great deal of weight on the choices we make regarding money and investment. Intellect (understanding a situation), reason (reflecting on long-term ramifications of the action taken), and emotion (weighing a potential course of action) are all interconnected; they are the motivations behind human choices. Human behaviour is typically more reactive than proactive; thus, making predictions very challenging. Although behavioural finances can provide a relatively straightforward explanation for why a person has made a particular choice, they struggle to quantify the impact of that choice on the individual (Oprean-Stan & Tanasescu, 2014; Pandey & Mohapatra, 2017). However, the behaviour of investors can lead to a change in the price of the underlying. Therefore, assessing the behaviour is very important to understand the volatility and behaviour of the market.

There is enormous number of literatures that has identified several biases that impact the decision-making of investors (Bagchi et al., 2022). The prominent biases are herding, anchoring, overconfidence, disposition, optimism, etc. Herding is the bias that arises when individual investors believe that the decisions of others are more accurate than their own. Investors follow the trend of others because of human psychology, and when there is a large change in the average price dispersion it appears (Christie & Huang, 1995). Herding is a behaviour where people follow the instinct of others even when it conflicts with their own decision (Caporale et al., 2008).

Optimistic buyers choose a risky portfolio to invest in over a less risky portfolio (Balasuriya et al., 2010). The expected return of a portfolio is over-estimated (under-estimated), and the risk is under-estimated (over-estimated) (Germain et al., 2006). So, there can be a loss to the optimistic investors, and the pessimistic investor may not take advantage of the situation. Disposition is a situation where the trader takes profit as pride and loss as regret (Chen et al., 2007). Disposition theory is one of the inferences of the prospect theory of Kahneman and Tversky (1979). As per this theory, people imply risk aversion in the area of gains, and risk seeking at the time of losses (Mohapatra et al., 2024). People think they are better than what they are, is the concept of overconfidence described by Trivers et al. (1991). It is one of the outcomes of heuristic simplification, which says that people behave as if they have a greater ability than they possess.

Various psychological and cognitive factors drive individuals to make investment decisions in uncertain situations. It treats preference as a function of 'decision weights', assuming that these weights do not always align with probabilities. Additionally, it indicates that decision weights are inclined to give excessive weight to small probabilities while giving insufficient weight to moderate and high probabilities.

Literature Review

Early research works in the area of behavioural finance adopted experimental approaches, viz., solving calculus problems and examining the skills of respondents in the selection of risky assets such as lottery tickets. Yields were tested by throwing a die with ten-sided and three-sided faces. Results revealed that two-thirds of investors exhibited overconfidence bias (Dittrich et al., 2005) in their investment decisions. Individual investors' investment behaviour is influenced by a variety of cognitive, behavioural, economic, and demographic factors. Behavioural scientists advocating the utility theory argued that a combination of utility and behavioural factors have a significant influence on investment decisions (Nagy & Obenberger, 1994). Optimistic bias is widely investigated among various behavioural biases. Studies revealed that investors are unrealistically optimistic about the future (Balasuriya et al., 2010; Weinstein, 1980), and optimistic investors are willing to take riskier portfolios than non-optimistic investors.

The systematic reviews on behavioural finance (Kumar & Goyal, 2015) confirm that behavioural factors and behavioural biases matter not only theoretically, but also outside the lab; and even more when the investment is at stake. Literature reviews on behavioural finance (Shiller, 1998) and its influencing variables revealed that behavioural level mediators' effect on investment decisions of individual investors (Misra et al., 2018).

Qualitative research works on behavioural finance (Spindler, 2011) explored the legal rules for investor protection and countries like Germany and Europe exhibited a concrete faith in market instruments and information related to investors. Shiller (1998) concluded in his article that the association between behavioural finance and traditional finance has led to a good knowledge of the financial market. The overreaction of investors leads to financial anomalies, and these anomalies disappear with time or with the arrival of new, corrective information. Among many behavioural biases, financial markets like Karachi and Islamabad are dominated by a higher intensity of herd behaviour among investors' investment decisions (Hayat & Anwar, 2016). This may be due to lower per capita income and lower income levels among individuals. Traces of overconfidence bias are not evident in these markets.

Table 1: Behavioural Biases

S. No.	Authors	Behavioural Biases	Output
1	Verma & Verma (2018)	Examined disposition effect and house money effect in pension funds	Research disclosed the presence of disposition effect in pension funds.
2	Gakhar (2019)	Optimism (pessimism) and demanded biases were examined on transaction costs of investors.	Biases influence investment decisions.
3	Quddoos et al. (2020)	Investment decisions were influenced by availability prejudice and representative bias.	Investment decisions are affected by biases.
4	Ray (2009)	Investigated how student investors' investing choices during a speculative bubble (2008 market crisis) were impacted by behavioural finance biases.	Investor behaviour is irrational during speculative bubbles, and portfolio compositions are also modified. The investors exhibited various heuristics and herd behaviour characteristics.
5	Isidore & Christie (2019)	Younger and older investors' behavioural biases were investigated to know their investment patterns.	Demographic variables such as annual income levels play a vital role in investment decisions, along with behavioural biases.
6	Mittal & Vyas (2011)	Risk aversion and risk perception behaviours of male and female investors were examined in the study.	Gender-wise differences are examined in the investment styles and information processing areas in terms of the presence of cognitive fit.
7	Ellouz (2011)	Examined overreaction and under reaction on the French stock market.	Overreaction is evident in one test period of 36 months, and under reaction is evident in the short-run.

Sources: Compiled by authors

The analysis of the existing literature shows that the decision-making process of investors is impacted by psychological and behavioural biases. The existing literature has widely analysed individual biases such as overconfidence, loss aversion, anchoring, and herding, which have been shown to significantly affect investment decisions. Nevertheless, despite the increasing number of studies in the field of behavioural finance, there is a need for context-specific and integrated analysis that investigates the impact of these biases on different groups of investors. Taking into consideration the research gaps, this study aims to achieve specific objectives that will empirically analyse the impact of behavioural biases on investment decisions of individual investors in Indian states like Chhattisgarh and Odisha.

Objectives and Hypotheses of the Study

Objectives of the Study

On the basis of the extant literature and the identified research gap, the study focuses on the following objectives:

- To examine the effect of behavioural biases on the investment decisions of individual investors.
- To analyse the influence of specific behavioural biases—optimism, overconfidence, disposition, herding, and anchoring—on individual investment decision-making.

Hypotheses Development

Behavioural factors often influence individuals' financial decision-making process, and they apply psychological and economic principles to generate excess returns (Olsen,1998). Modern finance established the effect of human behaviour on investment decisions, and cognitive psychologists recognized the influence of various behavioural finance paradigms (Shiller, 1998). These paradigms include overconfidence (Griffin & Tversky, 1992; Kahneman & Riepe, 1998; Oden et al., 1998; Hsu & Shiu,2010), mental accounting, regret, representativeness (Kahneman & Tversky, 1979; Mokoaleli-Mokoteli et al., 2009), conservatism, herd behaviour, speculative bubbles etc., (Ray, 2009).

Behavioural scientists argue that investors often experience a conflict between conservatism bias and representativeness bias due to multiple changes in a short period. Behaviours such as herding, which originates from the limbic system of the brain, are responsible for emotional decisions and create 'emotional changes at a mass level of investors', leading to uncontrollable investment decisions (Singh et al., 2021). People's investment choices differ in many ways; even for a similar financial decision, they will make different choices, which leads to the framing effect (Tversky & Kahneman,1981).

Many researchers explored the influence of demographic factors such as age, education, marital status, income, wealth, and life cycle-related variables (Riley & Chow, 1992; Fama & French, 1992; Shefrin & Statman, 1985) on investment decisions of individual investors in relation with behavioural biases. These factors influence the risk tolerance levels and their aversion to realized losses. Behavioural bias cannot be viewed in isolation, and each bias is a function of several external and internal environmental factors. These biases highlight the deeper involvement of mental processes in financial decision-making. They influence intermediate outcomes—such as illusion of control and validity, and aggressive trading reactions—which subsequently translate into final outcomes, including sub-optimal portfolio performance, lower risk-adjusted returns, and the emergence of market anomalies.

Hence, it was found that behavioural biases are linked to the investment decisions of individual investors, and therefore further empirical investigation is required. The prominent behavioural biases that are considered in the study are 'optimism', 'overconfidence', 'disposition', 'herding', and 'anchoring'. Based on the objectives of the study, the following hypotheses are formulated:

H1: There is a significant influence of optimism bias on the investment decisions of individual investors.

H2: There is a significant influence of overconfidence bias on the investment decisions of individual investors.

H3: There is a significant influence of disposition bias on the investment decisions of individual investors.

H4: There is a significant influence of herding bias on the investment decisions of individual investors.

H5: There is a significant influence of anchoring bias on the investment decisions of individual investors.

Research Methodology

It is a descriptive primary study. Data of individual investors are collected through a structured questionnaire based on survey-based research design. The respondents are from the states of Chhattisgarh and Odisha, India. A total of 200 sample data is considered for the study after the data cleansing and quality scrutiny. The survey instrument i.e. the questionnaire uses a five-point Likert scale. Respondents are asked to rate their answers on a scale of 1 (strongly disagree) to 5 (strongly agree) to various scenario-based questions. The AMOS-20 is used to analyse the data. The validity and reliability of the data have been examined. Structural Equation Modelling (SEM) is used in the study to assess how behavioural biases affect individual investor's investment choices (Abrahim et al., 2019). The five prominent behavioural biases considered in the study are 'optimism bias', 'overconfidence bias', 'disposition bias', 'herding bias', and 'anchoring bias'.

Results and Findings

The study examines the effect of key behavioural biases on the investment decisions of individual investors based on a sample of 200 respondents, employing Structural Equation Modelling (SEM). The collected data are systematically analysed, and the results derived from the analysis are presented herewith to validate the hypotheses.

Figure 1: Measurement Model

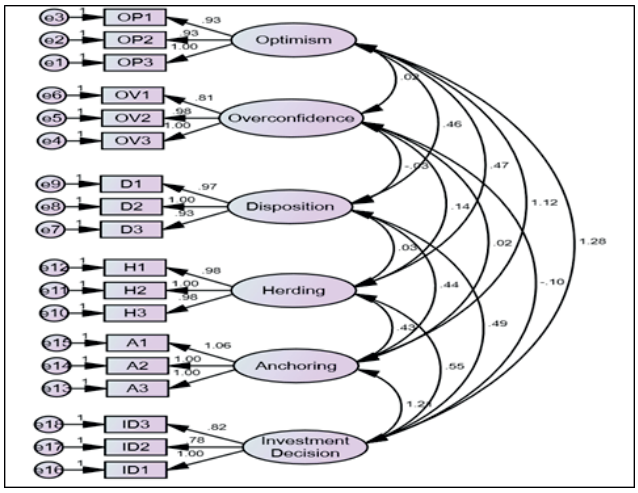


Table 2: Model-fit Summary of the Measurement Model

Indices	Observed values	Threshold values	References
CMIN/DF	1.82	0> CMIN/DF<5	Wheaton et al. (1997), Tabachnick & Fidell (2007)
RMSEA	0.043	<0.08	Hu &Bentler (1999)
GFI	0.920	>0.9	Gerpott et al. (2001), Baumgartner & Homburg (1995)
AGFI	0.90	>0.9	
NFI	0.946	>0.9	
CFI	0.952	>0.9	Hu & Bentler (1999)
SRMR	0.03	<0.05	Byrne (1998)

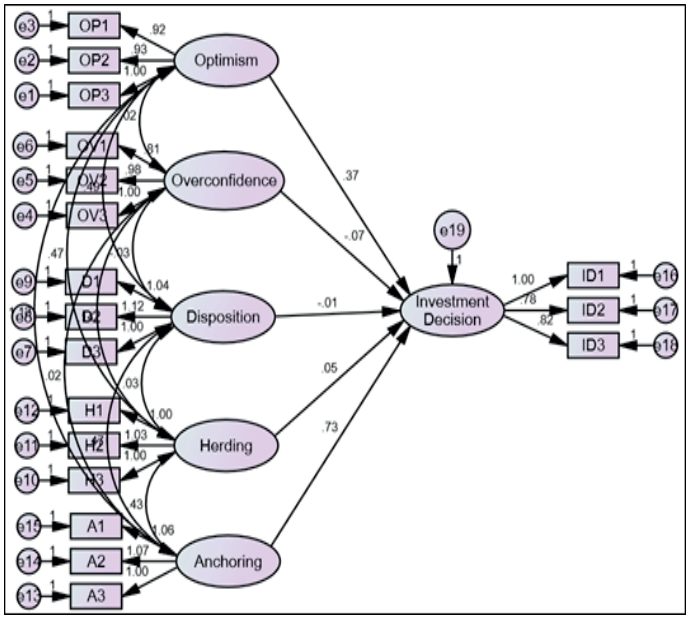
A good model-fit is defined as having a $\chi 2$ to degrees of freedom (df) ratio of less than 2.5, as well as GFI, i.e., goodness of fit index, NFI i.e., normed fit index, and CFI i.e. comparative fit index values that all surpass a threshold value of 0.9; and also root mean square error of approximation (RMSEA) of less than 0.08 (Gerpott et al., 2001; Hair et al., 2006). A good model fit is indicated by the measurement model's summary (Table 2), which shows that $\chi 2$/df is 1.82 <5, RMSEA is 0.043<0.08, and the values of GFI 0.920>0.9, NFI 0.946>0.9, and CFI 0.952>0.9. Tested of structural relationships demonstrates that the model achieves an adequate level of fit, thereby ensuring the reliability and validity of the latent constructs (Baumgartner & Homburg,1995; Teo, 2011).

Table 3: Construct Validity

Constructs	CR	AVE	MSV
Optimism	0.801	0.791	0.212
Overconfidence	0.920	0.795	0.003
Disposition	0.930	0.815	0.158
Herding	0.925	0.806	0.145
Anchoring	0.914	0.781	0.144
Investment Decision	0.944	0.849	0.848

Convergent and discriminant validity, which is listed in Table 3, are used to establish construct validity of the measurement model. Convergent validity was assessed through standardized factor loadings (Figure 1) and composite reliability, which are recommended to exceed the threshold of 0.7 to indicate adequate convergence among the indicators measuring each construct (Hair et al., 2006). The factor loadings for most indicators are found to be high, which suggests that the items are good representations of their respective constructs. High loadings imply strong convergent validity of the items designed to measure their intended latent constructs. This supports the reliability of the measurement model; and indicates that respondents answered these grouped items consistently.

Figure 2: Structural Model



The regression weights (Table 4) and structural model (Figure 2) indicate that the proposed structural model is statistically significant and adequately explains the relationship among the variables. Anchoring bias has the strongest positive effect on investment decision ($\beta \approx 0.73$). This suggests that investors who rely heavily on initial reference points or prior information tend to let those anchors strongly shape their final decisions. Optimism shows a moderate positive effect ($\beta \approx 0.37$). This suggests that investors with a generally positive outlook are more likely to make active or confident investment decisions. Herding has a small positive coefficient ($\beta \approx 0.05$). While the effect is weaker than anchoring or optimism, it still implies that some investors look to others' actions when deciding to invest. Even a small herding effect can contribute to bubbles or rapid price movements when many investors behave similarly.

In contrast, overconfidence has a slight negative effect ($\beta \approx -0.07$). This is interesting because overconfidence is often assumed to increase trading. Here, the negative sign may indicate that excessive self-belief could sometimes impair decision quality, perhaps leading to hesitation after losses, that reduce effective decision-making. The disposition bias appears to have a near-zero or slightly negative impact ($\beta \approx -0.01$). This suggests its role in shaping the overall investment decision in this model is minimal or insignificant. However, in real markets, the disposition effect—the tendency to hold losing investments for too long while selling winning investments too early—often affects portfolio performance more significantly than the mere act of deciding whether to invest.

Table 4: Regression Weights

Relationships	Estimate	p-Value	Significance
Investment Decision <--- Optimism	0.37	0.000	Significant at p=0.000
Investment Decision <---Overconfidence	-0.07	0.000	Significant at p=0.000
Investment Decision <---Disposition	-0.01	0.068	Insignificant at p<0.05
Investment Decision <---Herding	0.05	0.043	Significant at p<0.05
Investment Decision <---Anchoring	0.73	0.000	Significant at p=0.000

Overall, the model indicates that among the select biases, anchoring and optimism are the most influential drivers of investment decisions in this study. The measurement indicators show strong reliability, supporting confidence in the constructs. The findings align with behavioural finance theory, which argues that investors are not purely rational but are shaped by cognitive shortcuts and psychological tendencies. For practitioners and educators, the implication is clear: improving investor awareness about anchoring and unrealistic optimism may significantly enhance decision quality. For researchers, the model highlights which biases may deserve deeper focus when studying investor behaviour in similar contexts and cases.

Discussion and Conclusion

The study establishes a relationship/linkage between behavioural biases and investment decisions. Optimism shows a moderate positive effect on investment decision (0.37), and it is very much evident that anchoring has the highest positive effect (0.73); therefore, H1 and H5 are accepted, which is consistent with the findings of Siraji (2019). Waqas and Fatima (2017) also identified a positive relationship between optimism and decisions taken by investors. Hypothesis H2 says about the relationship between overconfidence and investment decisions. In Europe, two-thirds of investors are prone to overconfidence bias, as observed by Dittrich et al. (2005). The respondents of Chhattisgarh and Odisha are also prone to overconfidence bias, and hence the hypothesis is accepted at a 5 per cent (0.05) significance level. Disposition bias includes elements like self-control, regret aversion, mental accounting, and tax consideration, as revealed by Shefrin and Statman (1985). It may happen because of self-regard or investment confidence. The path coefficient for disposition bias is very weak (-0.01), and also relationship is found to be statistically insignificant (p=0.068). Hypothesis H4 is also accepted at a 5 per cent (0.05) level of significance, and it is evident that herd behaviour persists in the market, and it affects investment decisions as well. Tan et al. (2012) also observed herd behaviour in persists in the Chinese market. Herding behaviour influences investment decisions and can be observed in individual investors' choices (Vijaya, 2016), which is consistent with the findings of the present study.

Limitations and Future Scope of the Study

The results of this research cannot be generalized to Indian investors in general, as the research is based on a small sample size from a particular region. Future research studies using a larger sample size and covering a wider geographical and demographic area may produce different or more accurate results. In addition, individual investors, as studied in this research, are not the only ones who are affected by stock market volatility; institutional investors are also affected. Hence, studying the behavioural characteristics of institutional investors would give more insight into the dynamics of investment decision-making. In addition, investment decisions are affected by a variety of heuristics and cognitive biases, which are not included in this research. Therefore, future research studies could include other behavioural biases or different psychological constructs to gain a better understanding of investor behaviour.

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