



Are the investors biased? An Empirical Study of Financial Market.

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Abstract:

The stock market is a crucial aspect of India's financial market and the world's economy, which results in massive investment performances. In the fast-moving financial scenario, traditional finance is incapable of explaining the irrationality of an investor. The investors are irrational and are influenced by irregularities in the financial market. The current research focuses on the effect of behavioural biases on the investment decision-making process among individual investors in India. This article is driven by conducting a survey on 540 individual investors of India who participate in one or the other form in the Indian stock market. An empirical study by nature, the analysis of the study supports evidence establishing the adverse nature of behavioural biases affecting investment analysis and further their decision-making. The research implies a statistically significant association between behavioural biases and investment-related decisions. The results revealed a substantial impact of the behavioural biases affecting the investment decisions of the individual investors, namely, Loss aversion bias, Status quo bias, and Optimism bias. The results also exhibited that Loss Aversion bias had the maximum impact on the investment decision-making of an Indian individual investor.

Key-words: Investment, individual investor, decision-making, behavioural biases, behavioural finance

Key-takeaways:

1. Emergence of behavioural finance.
 2. Existence of behavioural biases among individual investors.
 3. Effect of behavioural biases in investment decision-making.
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INTRODUCTION

Emotions and feelings significantly influence investment decision-making (Dowling & Lucey, 2017). According to the Forbes (2016) report, investors' biggest investment decision-making mistakes are behavioural in nature. The primary reason for complexities in the investment decision is the presence of varied emotions and behavioural patterns exhibited by the individual investors (Zahera & Bansal, 2018). Individual investors perceive investments/stocks as a source of return and associate personal beliefs with it. Thus, investors' irrationality in the form of recurring patterns, illogical interpretation, and inaccurate judgment is known as behavioural bias (Ahmad et al., 2017; Gill et al., 2018; Reynolds et al., 2021).

Behavioural biases have their origin in human psychology (Barber & Odean, 2013) often in the form of systematic errors in judgment (Gill & Bajwa, 2018). A systematic error corresponds to any inaccuracy that does not occur randomly but is introduced due to inaccuracy of observation or measurement by the investors. Investors commit mistakes due to these biases in their investment-related decisions (Sahi, 2017). They make unwanted, non-optimum choices when confronted with problematic and unclear decisions (Subrahmanyam, 2008). They tend to overestimate the growth prospects of companies (Cornell & Damodaran, 2020), and allow themselves to be driven by hopes and fears rather than facts.

In the investment world, investors are assumed to have made judicious investment decisions (Sachs et al., 2019), and this remains an extensively discussed phenomenon in traditional finance. Conventional finance emphasizes the activities of investors trying to opt for careful investment choices, trying to amplify their profits/ gains (Rahman & Gan, 2020), and selecting the best investment alternative (Kumar & Goyal, 2015). The traditional investment/market theories anticipated that a particular investor is the wise decision maker and takes into account every accessible information while making investment decisions. Shareholders and financial market analysts employed several financial simulations for forecasting stock prices (Mohan et al., 2019). For example, behavioural portfolio theory (BPT) expected utility theory (EUT), and prospect theory provide sufficient evidence that investors do not behave

rationally while making investment decisions (Rupande et al., 2019) and there exist anomalies. However, traditional finance models built on the pillars of the portfolio construction principle (Markowitz, 1952), arbitrage principles (Miller & Modigliani, 1958), capital pricing theory (Sharpe, 1964), and option pricing theory (Black & Scholes, 1973) do not capture such anomalies.

Such occurrences have drawn the attention of researchers and put forward questions such as:

Are financial markets and their investors efficient?

Or are the individual investors irrational, are they bout by anxiety, sentiments, or desire for abnormal returns?

Does such irrationality lead to bad investment decisions?

Behavioural finance answers these questions by challenging such existence of “rational investment decisions” and emphasizing the behavioural aspects of financial decision-making done by investors (Semenov, 2009). The fundamental assumption of the traditional theory is that investors are rational and constantly try to benefit themselves by improving overall wealth (Haryanto et al., 2020), whereas, the truth is investors make investment-related decisions based on their personal experiences apart from applying the knowledge and skills of financial markets possessed by them (Akhtar et. al., 2019). Behavioural finance is a discipline of financial study that describes the irrationality of investors and related biases that are likely to affect investors (Suresh, 2021). This arena of finance links psychological, sociological, cognitive, emotional, and behavioural aspects of finance to describe why investors make irrational decisions and these admirable explanations have gained substantial acceptance in the financial world, especially in stock markets investments (Raut, 2020). Contrasting to traditional finance views, the behavioural approach understands that there are constraints to arbitrage pricing and that investors cannot be completely rational (Peng & Hu, 2020). Behavioural finance concentrates on the way in which investors behave and interpret available data to make investment-related decisions. It is receiving the focus of researchers and industry experts as the key component of every investment-related process due to its trait of dealing with the behaviour and sentiments of investors, who are the nerve of financial markets (Suresh, 2021). Behavioural finance supports investors in making informed decisions and prevents errors in investment decisions (Shanmuganathan, 2020). Although the study and research of finance as a discipline goes back many centuries and decades, theories in

traditional finance consider investors to be rational and make investment decisions with the availability of all necessary information (Qasim et al., 2019), behavioural finance theories confirm that the investor is psychologically biased, and his human behaviour affects his investment decision. All these developments led to behavioural finance being an innovative sector for research (Badola et al., 2022).

Literature Review

Conventional financial concepts are constructed on the inference of rationality of participants and financial markets; they are assumed to be a part of smooth structures where only rational decisions will be made all the time. Prior studies in the domain of standard finance illustrate that investors intend to plan their investment decisions rationally (Jain et al., 2020) and try to apply various models and concepts of standard finance to estimate the risk and expected returns of their investments (Ahmad et al., 2020). However, investors are not always rational and regularly display irrational behaviour (Ahmad & Wu., 2022); they trade excessively (Pertiwi, 2019), buy stocks with no assessment of fundamental values, make their decisions based on past performance (Parveen et al., 2020) and unnecessarily hold loss-making stocks while selling winning stocks (Shah et al., 2018). Behavioural finance scholars believe that investors do not act rationally as traditional finance believes, rather their outcomes are prompted by their own psychological feelings. Of late, significant work in behavioural finance has exhibited a number of behavioural biases in the presence of which investors complete their investment decision (Itzkowitz & Itzkowitz, 2017). According to behavioural finance scholars, inevitable behavioural biases remains with every individual and prevent them from making rational decisions, apart from creating adverse consequences on investors' performance (Ahmad & Shah, 2020) and on market efficiency (Shah et al., 2018).

Behavioural finance is developed as a distinct discipline that tries to work on the causes of stock market anomalies (Zamir & Teichman, 2018) by mitigating them and clarifying them so that investors make informed investment decisions. It moreover, facilitates finding reasons that an investor uses for tailor-made investment solutions depending on his age, income, education, gender, information about security, and peer behaviour (Badola & Joshi, 2022).

Rationality in investment decision making.

Behavioural finance as an advanced discipline of finance differs from the notion of perfect rationality (Sharma & Kumar, 2020) and observed investment decisions as a continuous

process with the reflection of cognitive and emotional biases. It also seeks to explain why and how investors act beyond the boundary of perfect rationality (Leković, 2020) and why investors oppose their actions against what they are supposed to perform. Ideally, it is challenging to make a rational decision due to the availability of restricted information, insufficient timelines, and human constraints. Therefore, Herbert Simon in 1956 realized and replaced the term “rationality” with the concept of “bounded rationality”.

The rationality of investors also became questionable when standard finance theories were unable to deliver adequate explanations of financial market anomalies (Hon et al., 2021), as they adopted the assumption that investors’ activities always amplify their return. Recent studies have revealed that investors are not always logical when making financial decisions (Sattar et al., 2020), as they are inclined toward emotional factors rather than logic (Kartini & NAHDA, 2021). Furthermore, markets are not always efficient (Costa et al., 2019). Ambiguity around an investment decision causes humans to become doubtful (Calzadilla et al., 2021). Behavioural finance discusses the reasons beyond these irregularities and tries to answer the questions pertaining to unexpected decisions of individual investors and their impact seen on the financial markets.

Behavioural Biases

Behavioural biases are assumed to have an explicit influence on investment decisions (Baker et al., 2019; Metawa et al., 2019), which eventually leads to lower investment gains in the stock market. These cognitive and emotional biases are due to the lack of ability of investors to foresee market developments (Al-Dahan et al., 2019), and press them towards biased investment decisions (Berthet, 2021). Unnecessary information and emotional concerns play a major role in individual investor’s decisions (Banerjee, 2011). In fact, more often, the investor considers the rule of thumb rather than long and laborious mental calculations to make conclusions that can lead to suboptimal options and can create friction in the financial market.

Emotional Bias

Emotions affect decisions directly and indirectly (Nguyen, 2020); an emotionally biased person gives prejudiced value to alternatives based upon their unreasonable principles (Venkatraman & Wittenbraker, 2020). An emotion can be understood as an impulsive response instead of a deliberated thought process arising due to thoughtless decisions. Such biases are generally

too rigid to be corrected as they stem out of intuition, so, even if an investor wishes to regulate or resist them, largely, it cannot be done (Badola & Joshi, 2022).

A detailed description of all three emotional behavioural biases is stated here:

2.3.1 Loss aversion bias

The concept of loss aversion bias was coined by Kahneman and Tversky (1979). Investors react differently to losses and profits (Koszegi & Rabin, 2006). Some individuals overreact when they incur a loss; hence, they focus more on avoiding losses than observing profits (Ainia & Lutfi, 2019). This bias leads to investors sticking to unprofitable investment avenues (Akinkoye & Bankole, 2020). Investors inclined toward loss aversion bias are concerned regarding the losses suffered (Rashata, 2022) and, at times, even avoid investments (Khan, 2017). Investors are subjected to loss aversion bias when decisions are about investments (Bashir et al., 2013). The researchers concluded that there was a significant impact of loss aversion on investment decisions (Areiqat et al., 2019). Loss aversion bias affects different investors differently when making financial decisions (Gachter et al., 2021). Rostami and Dehaghani (2015) supported a significant association between loss-aversion bias and investment. Researchers exhibit a significant positive level of the relationship existing between loss aversion bias and investment decisions (Sukanya, 2015; Subash, 2012).

H1a: Loss Aversion Bias (LA) affects the investment decision of Indian individual investors.

2.3.2 Optimism bias

Optimism can be defined as the overestimation of the occurrence of positive events (Hennefield & Markson, 2022) and the undermining of the probability of bad events (Marwan & Sedeek, 2018). Many investors are likely to look at the financial market situations with unnecessary optimism. Many investors are overly optimistic (Beaudry & Willems, 2022), thinking that bad investments won't happen to them (Banerji et al., 2020); it will only bother others. As a result, investors tend to be excessively positive regarding the financial system and its pleasant performance. Optimism bias influences investment decisions (Brahmana et al., 2012). The moderate occurrence of optimism bias is found to positively impact investors while they make investment decision-making (Akinkoye & Bankole, 2020). Abreu and Mendes (2020) found a positive effect of optimism bias on investment trading and decision-making.

H1b: Status Quo Bias (SQB) affects the investment decisions of individual Indian investors.

2.3.3 Status Quo Bias

Samuelson and Zeckhauser (1988) underlined the presence of status quo bias in investment decision-making. In case of this bias, investors prefer to continue the existing investment situation (Hofmann, 2022) and avoid making changes in their portfolios (Banerji et al., 2020). Investors realize the difficulty in making financial decisions and decide to put them on hold (Filiz et al., 2018). Many investors try to trade securities for higher yields but cannot accomplish them due to stagnant portfolios (Brown & Kagel, 2009). This bias influences an investor's financial decisions (Filiz et al., 2018). Male investors exhibit less status quo bias than their female counterparts (Tekçe & Yılmaz, 2016). Researchers have also emphasized no significant relationship between status quo bias and investment decision-making (Akinkoye & Bankole, 2020).

H1c: Optimism Bias (OP) affects the investment decision of Indian individual investors.

Statement of the Problem:

The decisions of investors on the stock market play an important role in defining market trends (Barber & Odean, 2013) and consequently influence the economy as there is a positive correlation between the stock market and the economy (Barber et al., 2009; Kumar et. al. 2023). Exploring various behavioural factors that affect the decisions of individual investors and finding their impact on investment performance will provide a better understanding and explanation of the notion of investors' decisions (Kumar, 2020). Investors and investment firms can further utilize this understanding of common behaviour to optimize their objectives, i.e., investors can justify their reactions for better returns and security organizations to accurately forecast and give better recommendations to their customers.

Thus, stock price will reflect its true value market becomes the yardstick of the economy's wealth and helps enterprises to raise capital for production and expansion.

Identification of Variables

After the pretesting and exploratory analysis based on expert views, and reliability analysis following variables have been identified and are presented in the following table.

Table 1- List of constructs

	Construct	References
1	Loss Aversion Bias	Baker et al. (2019); Jain et al., 2019; Areiqat et al., 2019; Alrabadi et al., 2018; Usman, 2018
5	Status Quo Bias	Akinkoye & Bankole (2020); Alrabadi et al., 2018.
6	Optimism Bias	Pompian 2011
7	Investment Decision Making	Ogunlusi & Obademi, 2019; Nyamute, 2016; Qureshi, 2012; Pasewark & Riley, 2010.

The following conceptual framework (Maxwell, 2013) has been designed for the present study from literature reviews to find the impact of behavioural factors on investment decisions.

Research Questions:

The present research tries to answer the following research questions:

RQ1. Do individual investors make rational investment decisions?

RQ2. Are investment decisions of individual investors affected by behavioral biases?

RQ3. How can we measure behavioral biases among individual investors?

RQ4. How do behavioral biases affect the investment decisions of individual investors?

Objectives of the Study:

This study has been conducted with below mentioned basic objectives:

1. To explore the rationality among individual investors in investment decision-making.
2. To identify the behavioral biases (emotional) existing among individual investors that affect their investment decision-making.
3. To measure the behavioral biases (emotional) among individual investors.

4. To measure the effect of emotional biases on investment decision-making among individual investors.

Research Design and Sampling:

An empirical design was performed for pre-testing the questionnaire and establishing its reliability and validity. Referring to Malhotra (2010) for gathering structured data, a formal questionnaire was formulated and questions were asked in a prearranged order.

Personal interviews were carried out in order to collect data at the exploratory stage, and for pretesting, selective respondents and researchers were gathered at a single facility for discussion and other processes. The exploratory study started with pre-testing of the set of items and questions to record various variables of the study. A total of 540 responses from individual investors were taken for this stage.

The study also used descriptive research design to describe the characteristics of a particular group of stock market investors.

The population for this study consists of all the individual investors from India who have invested in the Indian stock market at least once.

Looking at the broad definition of individual investors (Lawrence, 2013; Barber & Odean 2013; Seasholes & Zhu, 2010; Legum, 2006), the population is considered to be infinite, and to maintain randomness in sample selection, each element selected comes from the defined population and each element is selected independently of other samples (Lee & Peters, 2015).

The purposive sampling is used to select individual investors as respondents. A close-ended structured questionnaire was then administered to the respondents during October 2022 and April 2023. A total of 614 respondents were contacted to fill out the required questionnaire. Out of which, 540 responses were received back. The final responses taken into the study were 540 (87.4%) excluding 74 responses eliminated due to non-submission of responses, missing values, or inappropriate details.

For the purpose of sample size determination, the ten times rule (Hair et al., 2016) was applied, which indicates that the sample size should be equal to the larger of ten times the largest number of formative indicators used to measure a single construct.

Reliability Analysis

The results of Cronbach’s alpha for the pilot study which was performed on 540 respondents are shown in the below table:

Table 2: Case Processing Summary

		N	%
Cases	Valid	540	100.0
	Excluded	0	0
	Total	540	100.0

Table 3: Reliability Statistics	
Cronbach's Alpha	N of Items
0.901	15

The result shows a high value for the reliability of the questionnaire to be acceptable for further analysis (Hair et al, 2016).

Data Analysis

Demographics

A detailed demographic analysis of the respondents is done, and it is found that about 84% of respondents are below the age of 30 years and only 1.58% are above 45 years of age. As far as the income of individual investors is concerned, about 67% of respondents have an annual income of less than Rs. 6.0 Lacs and only a minor percentage of respondents belong to the higher bracket of income. Trading experience in the stock market plays a pivotal role in investment decision making and the analysis mentions the majority to be falling into the category of 1-5 years of trading experience (36.6%), while others have an experience of more than 5 years (30.5%) and 24.4% respondents have recently started trading in the stock market. Another demographic factor that is explored in this study is the occupation of the respondents. The service class investors, both private and public, consist of about 69% of

respondents and the remaining portion represents investors from self-employed and other occupations.

Principal Component Analysis (PCA)

Principal component analysis (PCA) is used to lower a dataset's dimensionality to create analytical models and for exploratory data analysis. The extractions attained through SPSS are given in Table 3 explains the commonality, which is the sum of the squared component loadings up to the number of components that are extracted.

Table 4: Communalities

	Initial	Extraction
OP1	1.000	.776
OP2	1.000	.794
OP3	1.000	.775
OP4	1.000	.797
LA2	1.000	.957
LA3	1.000	.909
SQ1	1.000	.796
SQ2	1.000	.877
SQ3	1.000	.871
IDM1	1.000	.717

IDM2	1.000	.716
IDM3	1.000	.727
IDM4	1.000	.701
IDM5	1.000	.733
IDM6	1.000	.757

Extraction Method: Principal Component Analysis.

Table 3 explains the communalities of the items under study and values of more than 0.6 indicate a high extent to which the variable under study is explained by the components. Majority of communalities signify a high value and provide empirical support to the variables identified from the literature review.

Table 5: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.784	37.631	37.631	9.784	37.631	37.631	4.344	16.706	16.706
2	2.508	9.645	47.276	2.508	9.645	47.276	3.153	12.127	28.833
3	1.994	7.669	54.944	1.994	7.669	54.944	2.881	11.081	39.914
4	1.843	7.09	62.035	1.843	7.09	62.035	2.785	10.71	50.624
5	1.707	6.566	68.601	1.707	6.566	68.601	2.69	10.345	60.969
6	1.525	5.867	74.468	1.525	5.867	74.468	2.57	9.886	70.855
7	1.465	5.635	80.102	1.465	5.635	80.102	2.404	9.247	80.102
8	0.589	2.267	82.369						
9	0.524	2.015	84.384						
10	0.432	1.661	86.045						
11	0.406	1.562	87.607						
12	0.371	1.426	89.033						
13	0.357	1.373	90.406						
14	0.304	1.17	91.576						
15	0.287	1.102	92.678						

Extraction Method: Principal Component Matrix Analysis

A total of seven components have been saved. These seven components explain 80.10% variance in the data.

Rotated Component Matrix

The loadings of components are presented in following table 5. The loadings show strong correlations among the components and the variables. The rotated component indicates that component 1, has a high degree of correlation with investment decision-making factors. Similarly, other components 2, 3, 4, 5, 6, and 7, have a high degree of correlation with endowment bias, self-control bias, loss aversion bias, regret aversion bias, optimism bias and status-quo bias respectively.

Table 6: Rotated Component Matrix^a							
	Component						
	1	2	3	4	5	6	7
SQB1							.757
SQB2							.862
SQB3							.863
LA1				.892			
LA2				.913			
LA3				.884			
OB1						.844	
OB2						.891	
OB3						.884	
IDM1	.786						
IDM2	.774						

IDM3	.800						
IDM4	.724						
IDM5	.803						
IDM6	.800						
Total Variance Explained (Cumulative %)	16.706	28.833	39.914	50.624	60.969	70.855	80.102
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.							
a. Rotation converged in 6 iterations.							

Table 7: Hypothesis Testing

		Estimate	S.E.	C.R.	P	Label
IDM	<---LA	0.676	0.053	11.21 1	***	
IDM	<--- SQ	-0.141	0.033	- 3.038	0.002	
IDM	<--- OP	0.122	0.039	2.597	0.009	

*** represents a value of 0.000.

Findings and Discussion

The p values for null hypotheses are below 0.01, indicating that behavioral biases influence individual investors' investment decision-making. Loss aversion bias, Optimism bias, and Status quo bias are found to have a substantial influence on the investment decision-making

of individual investors. When making investment decisions in the presence of factors like uncertainty and risk, emotions are found to have a substantial role (Zaleskiewicz & Traczyk, 2020). The risk inclinations of the investors are influenced by several biases (Parmitasari & Syariati, 2022). It is pivotal for investors to control their emotional biases in order to maximize their returns. Finance professionals need to be informed about these biases in order to understand the investors (Kishor, 2022). The current article is expected to be valuable for policymakers and institutions who intend to encourage people to invest. They will further be able to comprehend that not just cognitive ability, but emotional capability also ensures successful decision making. The analysis of this study is expected to benefit investment consultants, individual investors, regulators, and several stakeholders who are associated with the preparation of investment strategies, maybe for their own purposes or for others. The consequence of emotions is vital to comprehend as it is a complicated factor to deal with. Improved identification of the client's choices and priorities in investment will prepare the advisors to take care of various irrationalities that can occur.

Limitations and Scope of the study

The sample size used in the study is comparatively higher (N = 540) and satisfies the necessities of statistical methods; however, it is recommended to have a larger sample size in future research to reflect better on the situation of Indian stock markets. Apart from the emotional biases studied in this research, studies can also be conducted on cognitive biases among investors. The demographic variables used were analyzed only for the purpose of descriptive statistics, they can further be used to find an association with biases or can also be used as a mediation or moderation tool (Srivastava & Cheema, 2019).

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