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The Influence of Overconfidence and Loss aversion factors in Investment Decision Making: Evidence on Stock Investors in India

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Abstract
The aim of this research is to investigate the influence of several prominent behavioral finance variables discussed in the financial literature, such as loss aversion and overconfidence, on the decision-making process when investing in stocks. Furthermore, the study aims to determine the relative significance of these variables. The value of this study originates from the fact that local studies focused on the subject of behavioral finance are rare and so, the researchers believe that such study will enrich awareness in this domain.
The study consisted of 100 individual investors who were active in the trading halls at Indian Stock Market during the research period. The data were collected through a questionnaire prepared for the purpose of research and were analyzed by applying statistical tests (Multiple regression analysis) and by using statistical software (SPSS) after approving the reliability and validity of the questionnaire.
The results showed that there was an impact of the behavioral finance on Stock market investment decision represented by two behavioral factors affecting the investment decisions of the individual investors which were: overconfidence and loss aversion, the study found that overconfidence and loss aversion biases have significant positive impact on objective of Stock market investment of individual investors. Overconfidence: $R^2 = 0.404$, $p = 0.000$ and loss aversion: $R^2 = 0.203$, $p = 0.003$). The research provided somerecommendations for investors trading at Indian Stock Market to adopt scientific bases in making stock investment decisions, and suggested to conduct further research to study the impact of behavioral finance on the different types of risks and yields at Indian Stock Market.

Keywords: Behavioral Finance, Stock Investment Decisions, Loss Aversion and Overconfidence.

1. Introduction

Financial theories and research have been studied over the past few decades in an effort to better understand the financial markets by employing models that describe investors as "rational." This statement suggests that all financial decisions, particularly those involving buying of stocks, include some degree of risk and return trade-off.
Many financial theories made the assumption that because investors are knowledgeable, cautious, a nd consistent; they have little difficulty in making decisions when investing in stocks. Among the most significance financial theories were two theories: Modern Portfolio Theory and Capital Asset Pricing Model (CAPM) which revealed that investors were not confused by the way they get information which was not controlled by their behavioral finance factors. Applied research conducted in competent global capital markets have revealed that numerous phenomena related to stock investment decisions remain unexplained. Meanwhile, behavioral finance had been growing specifically because of the fact that investors rarely behave according to the assumptions suggested in these financial theories.

In order to help investors select a better stock investment decision-making policy, the field of behavioral finance aims to better understand and explain how financial behavioral aspects influenced decision-making regarding stock investments.
The main objective of this study is to confirm the significant variables that could influence stock investment decision-making at the Indian Stock Market. The results of applied research had varied in determining which of those variables had the most impact on stock investment decision-making. The following factors have been identified by multiple studies: overconfidence (over-estimate investors' knowledge, under-estimate risks, and overstress their ability to control events) and loss aversion (avoiding losses is more important than acquiring gains).

1.2 Statement of the Problem

Conventional financial theory prescribes that investors should be rational,wealth-maximizing agents who follow to the laws of contemporary finance theory. Modern Portfolio Theory and Capital Asset Pricing Theory are the two most influential theories in stock investment decision-making. However, the findings of multiple empirical studies conducted in a variety of financial markets suggested that investment decisions were not always made on the basis of contemporary financial theories; consequently, behavioural finance studies gained significance in the decision-making process related to stocks. Behavioral finance was developed to explain investor behavior when traditional financial theory provides no sufficient explanations.
Research in this contemporary field has not been able to answer the question of which of the following factors—overconfidence and loss aversion—is most crucial when making stock investment decisions. The primary goal of the research problem is to provide answers to the following sub questions.
Thefirst main questionis:

"Is there an impact of behavioural factors on stock investment decision-making in Indian Stock Market?"

Thisquestion issub-divided intothefollowingsub-questions:

1. Doesoverconfidencehaveimpactonstockinvestmentdecision-makingat Indian Stock Market?
2. Does loss aversion have an impact on stock investment decision-making at Indian Stock Market?

1.3 Objectives of the Study

Theresearchfocuses onachievingthe followingobjectives:

- To know the impact of overconfidence on the investors decision making process.
- To know the impact of loss aversion on the investors decision making process.

1.4 Hypotheses of the Research

Themajorhypothesisissub-dividedintothefollowingsub-hypotheses:
(H0)1-1: Thereisno impactofoverconfidenceonstockinvestmentdecision- making atIndian Stock Market.
(H0)1-2: Thereisnoimpact of lossaversion onstockinvestmentdecision-makingatIndian Stock Market.

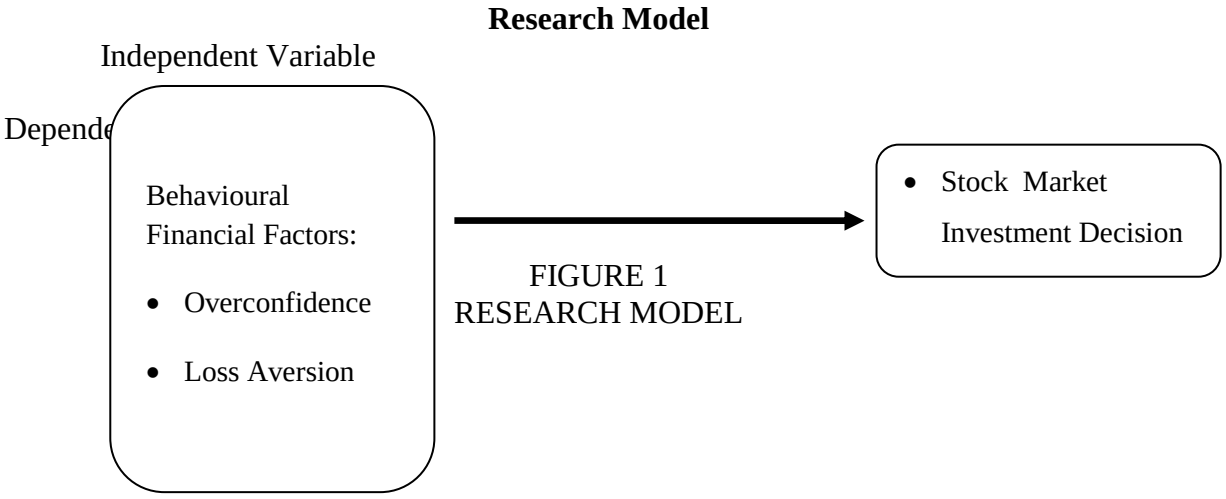

FIGURE 1
RESEARCH MODEL

1.5 Research Terminology/Definitions

Behavioral finance: According to (Banerjee, 2011) "Behavioral Finance is becoming an integral part of decision-making process because it heavily influences the investors' performance." This concept will be measured through this study by overconfidence and loss aversion (Figure 1).

Stock investment decision-making: The decision to employ allotted resources in order to increase revenue or production output in the future. In other word, it's investing in something with the expectation that it will increase in value or produce income in the future. In the world of finance, investing in stocks is the act of purchasing a financial asset with the expectation that it will increase in value over time or provide income before being sold at a better price. The following factors will be utilized to determine how well stock investment selections are made: Expected rate of return, satisfaction with sales and purchases, risk diversification, holding stock time period and selection of stock types and bulks (Rachna, 2014).

1.6 Significance of the Study

- The goal of the study is for it to become one of the pioneering local and regional studies in the field of behavioral finance.
- It is beneficial for investors to understand how behavioral financial factors influence stock investment decision-making.
- This study helps to understand the existence of the behavioral biases in the financial decision taken by investors

2. Literature Review

Behavioural Finance

Behavioral finance study is expanding with time. Researchers are trying to find out the impact of heuristics and behavioral biases on investors' stock market returns. According to the involvement of numerous investors, markets have become more significant and complex. Therefore, making decisions only based on intuition can result in losses and known errors**(Hirshleifer, 2015)**. There is a growing use of heuristics, and this can be seen in research by Santos and Rosati S. Parveen et al. / Borsa _ Istanbul Review 20-3 (2020).

The works of Tversky and Kahneman, who are recognized as the founding fathers of behavioral finance, provide the best explanations for their respective periods.They presented a critique of Expected Utility theory in 1979. They found empirically that people tend to undervalue outcomes that are only probable when compared to outcomes that can be obtained with certainty. They also found that people tend to ignore factors that are common to all of the prospects they are

considering. Prospect theory replaces probability with choice weights and assigns value to gains and losses as opposed to final assets. A unique fourfold pattern of risk attitudes is predicted by the theory, which they validated through experimentation: risk aversion for profits of moderate to high probability and losses of low probability, and risk seeking for gains aversion for profits of moderate to high probability and losses of low probability, and risk seeking for gains of low probability and losses of moderate of high probability.

Influence of Overconfidence in Stock Market Investment Decision

People are poorly calibrated in estimating probabilities and usually overestimate the precision of their knowledge and ability to do well and about good things happening in future than bad. This theory summarizes how people form beliefs under uncertainty. The overconfidence bias which is related to the self- attribution bias is the tendency of an individual to attribute his success to his own talent and ability while blaming 'bad luck' for his failure, making himself overestimating his talent.
Kahneman and Tversky (1979), While primarily on prospect theory, this foundational study indirectly highlights how overconfidence influences risk preferences in decision-making. **De Bondt and Thaler (1985)**, this seminal work identifies overconfidence as a critical behavioral bias that drives investors to overreact to private information and under react to public data. **Odean (1998)**, the study demonstrates that overconfident investor's trade excessively, which reduces their net returns. Overconfidence stems from overestimating one's knowledge or underestimating risks. **Shefrin (2001),** Overconfidence biases lead investors to overestimate their ability to predict stock movements, causing misjudgement in decision-making. **Baker and Nofsinger (2002),** their research illustrates how overconfident behavior among retail investors influences market volatility, often leading to inefficiencies. **Statman, Thorley, and Vorkink (2006)**, Overconfidence drives higher market turnover, particularly among individual investors, as they misinterpret their ability to beat the market. **Lai and Teo (2008)**, this study finds that overconfident investors are more likely to engage in high-risk investments, often underestimating potential losses. **Kim and Nofsinger (2008)**, the study explores gender differences, revealing that men's overconfidence in financial literacy significantly affects their trading behavior. **Grinblatt and Keloharju (2009)**, the study links overconfidence to herding behavior in stock markets, where individuals follow perceived market leaders without thorough analysis. **Hoffmann and Post (2017)**, Investors with high levels of overconfidence are less likely to diversify their portfolios adequately, increasing exposure to specific risks.

Summary:

Each of these studies underscores how overconfidence, as a cognitive bias, significantly affects investor behavior, often resulting in suboptimal investment outcomes. This phenomenon is linked to excessive trading, risk-taking, and deviation from rational decision-making, impacting both individual portfolios and broader market dynamics.

Influence of Loss aversionin Stock Market Investment Decision

It means that investor is risk seeker when faced with respect of loss, but becomes risk averse when faced with the prospects of enjoying gains. Khaneman has said that investors are "Loss aversion". This 'Loss Aversion' means that people are willing to take more risks to avoid loss than to realize gain.

Kahneman&Tversky (1979), Introduced **Prospect Theory**, establishing loss aversion as a key behavioral bias where losses loom larger than gains in decision-making under uncertainty. **Shefrin & Statman (1985)**: The disposition effect, driven by loss aversion, explains why investors hold losing stocks too long and sell winning stocks prematurely. **Thaler & Johnson (1990)**: Found that loss aversion's influence on risk-taking is moderated by prior outcomes, leading to path-dependent

investment decisions. **Kahneman (1992),** Extended Prospect Theory to include cumulative risk assessments, demonstrating how loss aversion affects preferences over uncertain outcomes. **Wakker & Tversky (1993)**, Explored the nonlinear weighting of probabilities, showing how loss aversion affects decision-making under uncertainty. **Benartzi & Thaler (1995)**, the loss aversion hypothesis links frequent evaluation of investment performance to conservative portfolio choices and an aversion to equities. **Weber & Camerer (1998)**, Experimental evidence shows that loss aversion leads to risk-averse behavior in low-stake investments and risk-seeking in high-stake scenarios. **Barberis, Huang, & Santos (2001)**, Loss aversion impacts asset pricing, leading to excess volatility and the equity premium puzzle, where investors demand higher returns to compensate for perceived risks. **Genesove & Mayer (2001),** loss aversion influences housing market participants, paralleling its effects in stock market decisions, where reluctance to sell at a loss distorts pricing. **Grinblatt & Han (2005)**, Loss aversion impacts stock returns through the disposition effect, causing delayed price adjustments to new information.**Abdellaoui, Bleichrodt, &Paraschiv (2007),** empirically validated loss aversion in the financial domain, highlighting its pervasive role in shaping investment choices. **Fischbacher, Hoffmann, &Schudy (2017),** loss aversion contributes to overtrading in experimental settings, as investors attempt to recover prior losses.

Summary

Loss aversion, a concept central to behavioral finance, describes the tendency of investors to prefer avoiding losses rather than acquiring equivalent gains. This phenomenon significantly influences investment behavior, risk tolerance, and market dynamics.

Sample of the Study

Non-probability random sampling will be used in this study as the sample is decided on the basis of two criteria; 1) Sample selected must be from the geographical area of North Gujarat State. 2) The Sample must be such an investor who had made investment in stock market. The researcher's aimed to make his study distinguished by generalizing its results. So they selected the random sampling approach but when the researchers started to distribute the questionnaires, the found that there was a lack of cooperation from the investors. Thus, they selected a more convenient sampling technique although some studies do not recommend this technique which depends on applying a probability sampling technique.

3. Research Methodology

The research adopted quantitative approach to collect data and answer the research questions using statistical analysis, such as means, standard deviation, and inferential statistical models to test hypotheses.

Data on two biases, which serve as independent variables in this research model, has been collected through questionnaire. Questionnaires of over confidence and Loss aversion bias were taken from the previous research conducted by (Awan, Bukhari and Ghufran; 2009) on "understanding investment behavior of individual investors: how they handle investment decisions? Do they act rationally?" The questionnaire consists of 13 items. 120 questionnaires were distributed bur received back 100 with response rate of 84%. The data on dependent variable which is investment decision was taken from questionnaires used by (Awan, Bukhari and Ghufran; 2009) in their research. Regression has been applied to see the impact of these biases on investment decision. Biases and investment decision captured through questionnaire have been quantified through five point Likert scale ranging from strongly disagrees to strongly agree.

4. Reliability Assessment

To gauge reliability of the measures and internal consistency of each construct, Cronbach's Alpha was measured. The following table describes alpha co efficient of the measurement item for each construct. It indicates degree of inter-relatedness among a set of items to measure a single construct (Netemeyer, Bearden & Sharma, 2009).

Table 4.1 Reliability Assessment

Construct	Variables	No. of Items	Cronbach's Alpha
Behavioral Factors	Overconfidence	10	0.983
	Loss Aversion	3	0.735

(Source: Compiled from Primary Data)

The above table shows value of Cronbach's Alpha of Overconfidence was 0.983 and Loss aversion was 0.735, which were greater than acceptable level of 0.6 (Hair, Black, Anderson, & Tatham, 2009).

5. Regression Analysis

Regression analysis is a statistical method that shows the relationship between two or more variables. Usually expressed in a graph, the method tests the relationship between a dependent variable against independent variables. Typically, the independent variable(s) changes with the dependent variable(s) and the regression analysis attempts to answer which factors matter most to that change.

Multiple linear regression analysis is essentially similar to the simple linear model, with the exception that multiple independent variables are used in the model. The mathematical representation of multiple linear regressions is:

$$Y = a + bX_1 + cX_2 + dX_3 + \epsilon$$

Table: 5.1 Multiple regression analysis of psychological biases and stock market investment objectives

Overconfidence and Investment objectives

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.636[a]	.404	.337	.933

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	52.571	10	5.257	6.034	.000[b]
	Residual	77.539	89	.871		
	Total	130.110	99			

Loss aversion and Investment objectives

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.450[a]	.203	.142	1.062

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	26.350	7	3.764	3.338	.003[b]

	Residual	103.760	92	1.128		
	Total	130.110	99			

Above table shows the impact of different psychological factors (Overconfidence and Loss aversion) on objective of Stock market investment of individual investors. The study found that overconfidence and loss aversion biases have significant positive impact on objective of Stock market investment of individual investors.(Overconfidence: $R^2 = 0.404$, $p = 0.000$ and loss aversion: $R^2 = 0.203$, $p = 0.003$).

Conclusion:

The finding shows that overconfidence and loss aversion have a positive significant impact on investors' decision making. This findings consistent with the results from the studies of Qadri & Shabbir (2013), Lim (2012), Qureshi et al. (2012) and Bashir et al. (2013).

It is reasonable to believe that the sample size and the chosen research methodology will be adequate to meet the desired study objectives. But like any other study, this one has a number of underlying problems.One of them is this research has the constraint of only including a sample size of 100 respondents although this sample size of investors satisfies the requirements of statistical methods. Furthermore, as this study only covers areas in major cities of North Gujarat, future studies could extend to cover other areas and states as the investors in other areas may have different views on their decision making**.**

The findings show that overconfidence and loss aversionfactors have significant impacts on the investors' decision making. The results of this research are mostly consistent with the evidences presented in previous studies.

It is anticipated that this study will increase investors' awareness of how psychological factors affect their stock market decision-making, thus increasing the rationality of investment decisions for enhanced market efficiency.

Since behavioral finance is a large and new field, there are many opportunities and problems to be faced. There are a vast number of psychological factors left to be examined. It is possible to do extensive research on other psychological elements like the anchoring effect and regret bias to examine how these affect investors' decision-making. These factors might prove to be important determinants of the investors' risk taking appetite.

Policymakers and stock market authorities will benefit from this paper's findings as it helps them understand the influence that psychological factors have on investors' decision-making. After implementing the necessary policies to improve on the psychological factors and biases, further research could be carried out to investigate the effectiveness of these implementations in making the stock market a more efficient one

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