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BEHAVIORAL BIASES AND INVESTMENT DECISION MAKING: A SUSTAINABILITY PERSPECTIVE

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ABSTRACT

Purpose *- The purpose of this paper is to study the impact of behavioral bias i.e. overconfidence bias on the investment decisions of the investors and the impact of irrational decision-making on the sustainability of economic growth.*

Design/methodology/approach *- A survey has been conducted to explore the impact of overconfidence bias on investment decision-making with the help of a well-structured close-ended questionnaire. The collected data has been analyzed with the help of ordinary least square regression. Due to time and financial constraints, the target population of the study is the stock market investors, especially those who live in Amritsar city.*

Findings *- The findings of the study posed that overconfidence in investors impacts their investment decisions but the variation shown by overconfidence bias in investment decisions is small. The results posit the positive impact of the overconfidence bias on the investment decisions of the investors.*

Research limitations/implications *- The major limitation of the study is a small sample size of only 95 respondents. The other limitation is the use of non-probability sampling techniques.*

Keywords *- Overconfidence bias, investment decision, regression*

1. INTRODUCTION

Investment is elucidated as acquiring assets with a grail of making profits or appreciation. Many traditional finance devotees give the finance theory that considers the investor

s act rationally when making an investment decision such as expected utility theory, Asset pricing theory, and Capital Asset Pricing Model. Kahneman and Tversky (1979) give the critique of expected utility theory that is prospect theory, which underlines that investors become irrational when they make choices among risky prospects which is inconsistent with the basic tenets of expected utility theory. One criticism has come into picture that the traditional finance theories consider that an individual has unlimited cerebral RAM and make risky investments by taking into consideration all relevant information for the investment and choosing the best option known as constraint optimization. As too much information is difficult for a person to deal with, people find shortcuts to reach a reasonable decision which is called heuristics. Heuristics lead to biases (Ackert and Deaves 83). Therefore, by realizing the need to unveil the impact of biases which have been identified by many modern finance analysts in the behavior of investors while making investment decisions, this study is focused on a most identified bias in the behavior of investors " overconfidence bias" and its impact on investment decision making. Overconfidence is elucidated by (Ackert and Deaves 106) as

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the tendency for people to overestimate the precision of their knowledge. Investment decision can be interpreted as the selecting assets in which one will invest his funds.

Behavioral biases lead an individual to make irrational decisions. Irrationality in decision making not only harm the financial returns of an individual but eventually the economic growth. There had been many instances where the irrational decisions made by the investors has led the financial market in financial distress. Many researchers have posited that behavioral biases in the decision making of the investors became the reason of the collapse of financial institutions one of the instance is subprime crisis 2008. A study by Vasile et al (2011) posited three pillars that were the reasons for global financial crisis. The three pillars were behavioral factors, collapse of ethical behavior and financial institutions opacity in their reporting. The first asset bubble and burst happened in 1636-1637 (the Dutch tulip mania) and many further examples can be given: the crisis of 1825, 1873, 1890 (Baring Crisis), the panic of 1907, which started in the US after the stock market fell close to 40% from its peak (Kamalodin, 2011), the Great Depression (1930s), the Latin American debt crisis (beginning in 1982), the Stock Market Crash (1987), the crisis after the Technology bubble in 2000, the Nordic Financial Crisis (1990s), the European currency crisis (George Soros's speculations against the sterling pound), the Tequila effect (the massive devaluation of Mexican Peso, leading to a bank crisis), the Asian Flu in the second half of the 1990s, the Brazilian fever and the Russian Cold causing LTCM to fill for bankruptcy, endangering the US financial system (1998). The only common denominator of all those events is human behavior. The irrational human behavior and the many events of financial distress cause harm to the sustainability of the economic growth. The present paper makes it important to study the existence of the behavioral biases in the investors, specifically overconfidence bias with the perspective of sustainability.

2.LITERATURE REVIEW

Investment means putting your money in a project or buying any commodity or purchasing securities (Equity, Bonds, Futures etc.) which will yield future and current benefits to the investor. There are a number of prominent theories of finance and economics which establish how individuals make their investment decisions. Theory of Neoclassical economics says, individuals are self-interested agents who make decisions to the best of their ability in the face of constraints in resources (Ackert and Deaves 4). Expected Utility theory assumes that individuals behave rationally while making decisions in uncertainty (Ackert and Deaves 4). Both of the above theories assume that individuals are rational. But there are some significant contradictions to the predictions of conventional theories, one of them is the very famous prospect theory by Kahneman and Tversky. (Kahneman and Tversky, 1979) criticizes the traditional finance theory of expected utility theory. The theory assumes that the investors take investment decisions under uncertainty after considering all the relevant information and the best option. But the prospect theory criticizes this assumption. The study says that people underweight the outcomes which are more probable than the outcomes with uncertainty. Allais paradox is the contradiction to the Expected Utility theory which observes departure of individuals while making decisions in uncertainty (Ackert and Deaves 4). Capital Asset Pricing Model and Efficient Market hypothesis are the prominent theories of modern finance. According to the Capital Asset Pricing Model, rational investors hold market portfolios with risk free securities in order to diversify the risk. Efficient Market Hypothesis posits that the asset prices reflect the information so that consistent returns cannot be earned on a consistent basis (Ackert and Deaves 4). But the predictions by these theories are highly debated as proponents of behavioral finance posits that investors irrationally impact the market outcomes. The studies on behavioral finance posits that individuals' decisions are far away

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from rationality due to various behavioral traits such as overconfidence bias, familiarity bias, framing bias, mental accounting, home bias, availability bias etc. As too much information is difficult for a person to deal with, people find shortcuts to reach a reasonable decision which is called heuristics. Heuristics lead to biases (Ackert and Deaves 83). Most people most of the time are overconfident as per psychology literature (Ackert and Deaves 106). Various studies have documented that the most prevalent bias is overconfidence bias which impacts the investment decisions of the individuals. (Bhandari and Deaves, 2010) says that demographics are considered as an important factor for overconfidence. Variables such as age, education, gender, marital status, investment experience, income and wealth can influence the degree and existence of overconfidence. Results say that males are more overconfident than females. Highly (formal) educated people are more overconfident. Investors who have formal education do not know more about investments, but they think they do, thus they are overconfident. (Kansal and Singh, 2018) posits contradictory results to the (Bhandari and Deaves, 2010), which says that females are more overconfident than males. (Kansal and Singh, 2018) posits that overconfidence manifests four dimensions: better than average, self-attribution, positive illusions and planning fallacy. (Metawa et al, 2018) analyzed the demographic factors of the investors which can impact the investment decisions of the investors. The study revealed that Age, level of education, gender have a significant effect on the investment decision but experience does not significantly impact the investment decision. (Trejos et al, 2018) posits that overconfidence is linked to disposition effect. Investors exhibiting disposition effects are more prone to be overconfident. (Tabassum, 2021) stated that the positive impact of over / under-reaction & financial literacy on investors' decision making, and the insignificant impact of investor sentiment, overconfident, and herd behavior in investors' decision-making behaviour. Vasile (2011) concludes the need of integrating biases of human behavior into regulations in order to make them more effective and people become less financially vulnerable. Paun et al, 2019 posited that the financial sector development is linked with the sustainable economic growth.

3.OBJECTIVE OF THE STUDY

The study of overconfidence bias is important in today's volatile world. The overconfidence in investors has serious implications in the stock market as posited by many researchers. Researchers have posited that overconfidence investors become the reason for the many suboptimal results, which ultimately lead to financial crisis and harms the economic growth.

The purpose of this paper is to study the impact of overconfidence in investors on their investment decisions. For this purpose the questionnaire was filled by 95 individual investors who have ever invested in the stock market. The first section briefly discusses the survey instrument and research methodology. Then the next section discusses the conclusion and future perspective.

3.1 **Hypothesis for the study**

Ho = Overconfidence bias does not impact the investment decision of the investors

H1 = Overconfidence bias have a significant impact on the investment decision of the investors

4. RESEARCH METHODOLOGY AND SURVEY INSTRUMENT

The study is based on primary sources as data have been collected from the questionnaires filled by respondents. The target audience for the study was investors who have invested once in their life and the sample was taken from Amritsar City. The research followed non-probability sampling techniques, especially the convenience sampling technique.

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4.1Questionnaire and Scale

The questionnaire was divided into three sections. Section 1 consisted of one qualifying question which asked "Are you an investor?" Section 2 consisted of 11 statements about two variables such as overconfidence bias and investment decision. Both of these variables were measured by collecting responses from investors on 5 Point Likert Scale. The respondent had to respond from Strongly Disagree (SD) to Strongly Agree (SA). The third Section 3 consisted of Demographic variables which includes Gender, Age, Investment experience and completed education.

The statements used in the questionnaire for measuring overconfidence bias and investment decision were taken from (Gill et al., 2018).

4.2Participants and their demographic profile

The target audience for the study was investors who had even invested once in the stock exchange. For the purpose of the study, an investor was defined as "'An Investor is a person who invests their money in any stock market product, such as equity, indices, mutual funds, derivatives, currency derivatives, commodity derivatives, interest rate derivatives, ETFs, IPO etc." The questionnaire was distributed to a total 140 individuals out of which only 95 respondents qualified the Section 1 "Are you an investor?" So the total sample for the study was 99. Out of 99 respondents 4 responses had standard deviation of 0, so these questionnaires were not included in the study with an intent of keeping the data relevant. Out of total respondents, 33 were females and 62 were males. 67% of the respondents were lying under the age of 18-30 years. 44% of the respondents had an experience of investing for less than 1 year and 38% of the respondents had an experience of investing for 1 - 5 years. 55% of the respondents had a Master's degree and 29% were bachelor's degree and the rest were 12th pass and some did not have any formal education.

4.3**Variables and Measurement**

The objective of the research was to analyze the impact of overconfidence bias on the behavior of individuals. The variables under study were overconfidence bias and investment decisions. The variables were basically qualitative in nature as the responses were collected on Likert Scale but for the purpose of analysis the responses were converted into quantitative form.

Total statements in the questionnaire were 11 out of which 7 statements were used to measure the overconfidence variable such as "I am confident about my own ability to do better than others", "I am confident about time to enter in the stock market and exit from stock market"," I possess specific skills and experience for making investments", "I possess complete knowledge about various investment avenues", "I am satisfied regarding past investing decision making", "I believe that my investment will pay higher dividends as compared to other investments", "I make riskier investments for maximum gain," and 4 statements were used to measure the manner of investment decision making of the investors are "I consider levels of risk associated with particular stocks before investing", "I would like to realize the gain as soon as the stock increases in price", "I make sure that my investment in stocks has a high degree of safety", "In my opinion, it is safe to invest in local stocks rather than to buy foreign stocks".

In the first step of analysis, the reliability and validity of the questionnaire was checked which states that the questionnaire is reliable as the Cronbach's alpha for both the variables is 0.785 and for overconfidence bias and investment decision making is 0.804 and 0.740 respectively which is in acceptable limit.

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4.4 Reliability analysis

Reliability refers to how dependably or consistently a test measures a characteristic. The Cronbach's alpha for all 11 statements is 0.785. The Cronbach's alpha for the statements for overconfidence bias is 0.804 and for investment decision is 0.740, which means the questionnaire is reliable. The table below represents the same:

Table 1 Reliability Test

Sr. No.	Variables	Cronbach's alpha	Items
1.	All Variables	0.785	11
2.	Overconfidence bias	0.804	7
3.	Investment decision	0.740	4

4.5 Validity test

Questionnaire is an instrument to collect data from the respondents. To check whether the question is measuring what it is supposed to measure we need to check the validity of the question or statement. Validity is measured by running the correlation test on the statements and total of the responses of each respondents for each statement. First the significant value is compared with 0.05, if the statement has a significant value more than 0.05 then it is valid otherwise invalid. Item-Item questionnaire that significantly correlated with total score indicates the items are valid.

For our research, the questionnaires' validity had been checked for each statement and total. All the 11 statements are valid except the 7th statement "I believe that my investment will pay higher dividends as compared to others' investment". So the statement was deleted for further analysis. Then the further analysis is run on a total of 10 statements as the 7th statement is deleted due to invalidity.

4.6 Factor analysis

The factor analysis was run to obtain values for running regression test. The KMO which is a measure of sampling adequacy is 0.718 which is closer to 1, so the sample is adequate for further analysis. The table given below represents the same:

Table 2 KMO and Bartlett's Test

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.718
Bartlett's Test of Sphericity	Approx. Chi-Square	102.227
	df	21
	Sig.	<.001

Bartlett's Test of Sphericity also gives significant results. In the Anti image correlation table, the values for sampling adequacy for 5th and 7th statement is less than 0.05, so these

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statements were deleted for further analysis. Then I rerun the factor analysis with statements 1,2,3,4,6 as represented in the below table:

Table 3 KMO and Bartlett's Test

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.808
Bartlett's Test of Sphericity	Approx. Chi-Square	84.976
	df	10
	Sig.	<.001

KMO value has increased to .808 and Bartlett's test of Sphericity is significant. The Anti image correlation is also showing all the sampling adequacy values more than 0.5. Then the factor analysis test was run for the statements of the variable "investment decision". The KMO for these statements were .756 and Bartlett's Test of Sphericity was also significant.

The further analysis was run on with 9 statements as 2 statements were deleted because of lower value of sampling adequacy.

Factor scores were saved for running Regression as the study examined the impact of overconfidence bias on investment decisions of investors.

4.7 Regression

The regression is a statistical measure that defines co-relationship or association of two variables. The first table of interest is Model summary table as given below:

Table 4 Model Summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.441[a]	.194	.181	.90523293	.194	14.000	1	58	<.001	2.101

a. Predictors: (Constant), A-R factor score 1 for analysis 1

b. Dependent Variable: A-R factor score 1 for analysis 2

The R value shows the correlation coefficient that is .441. A value greater than 0.4 is taken for further analysis. R Square value depicts 19% variation explained by the independent variable in the dependent variable.

Table 5 Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-2.439E-17	.117		.000	1.000
	A-R factor score 1 for analysis 1	.441	.118	.441	3.742	<.001

a. Dependent Variable: A-R factor score 1 for analysis 2

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The above table 5 shows the positive significant impact of overconfidence bias on the investment decision making of investors. The beta value shows the impact of independent variable on dependent variable that is .441.

5. DISCUSSION AND RESULTS

There are various theories in finance which predict that the investors are rational when making financial decisions. But these theories do not consider the behavioral aspect of the investors which is an important component as behavior makes the investors irrational and can impact the investment decision. Prospect theory given by Kahneman and Tversky (1979) posits that investors become irrational when they make choices among risky prospects which is inconsistent with the basic tenets of conventional theories. There are various biases which impact the decision making of the investors and the most famous is overconfidence bias. The objective of the study is to examine the impact of overconfidence bias on the investment decision of the individuals. The results of the regression test concluded that overconfidence does impact the investors' decision making but the relation between independent variable and dependent variable is very weak and the variation shown by independent variable in the dependent variable is also very low. The results of the study reveal that there is weak correlation between the overconfidence bias and investment decision making. The Alternative hypothesis is accepted as the overconfidence bias has a significant impact on the investment decision of the investors. But due to less sample size the correlation between both of the Independent and dependent variables is low. The variation shown by independent variables in dependent variables is also low, 19.4%. The results are in line with the results of the previous studies but due to a small sample of only 95 respondents the impact is very small. The results of the study state that there is significant impact of the overconfidence bias on the investment decisions of the investors. It posits that the more overconfidence leads to more irrational investment decision making. This irrational behavior of the investors become the reason of the collapse of many financial institutions. Financial institutions are one of the pillars of the sustainable economy. When these financial institutions come into distress, the sustainability of the economic growth gets adversely effected. Sustainable development is very strongly influenced by financial markets and institutions (Paun et al, 2019).

6.PRACTICAL IMPLICATIONS OF THE STUDY

The questionnaires were distributed among 140 respondents out of which only 95 respondents were stock market investors. It depicts that almost 68% of the respondents were non-investors who have not even invested once in their life in the stock market. So, awareness needs to be spread about the stock market and their products among the general public. The respondents were mostly literate with graduate and postgraduate degrees still they do not invest in stock market, so this issue needs to be addressed. The results of the study says that investors are overconfident about their skills and knowledge and it impacts the investment decisions of the investors. The outcome will be loss bearing. So this paper will help the professions to know the reasons for bad investments and they can control their emotions while investing and make decisions rationally. This paper will also assist the officials to improve the sustainability of the economy by identifying these biases and taking corrective measures to eliminate these biases.

CONCLUSION AND FUTURE RESEARCH PERSPECTIVE

The study has been conducted with a view to reveal the impact of overconfidence bias on the investment decisions of the investors with the sustainability perspective. The paper empirically examines the presence of overconfidence bias among investors and descriptively identifies through the literature how the presence of behavioral biases ultimately leads to

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unsustainable economic growth. The target population for the study is stock market investors who have invested in stock market instruments even once. The questionnaire was used to collect the data from the investors. The analysis was run on a total of 9 statements as 2 statements were eliminated during analysis due to their insignificance. The regression analysis was used to reveal the impact of independent variables on dependent variables. The results conclude that overconfidence bias has a significant positive impact on investment decisions of investors, but the variation is very low. Literature also supports the positive significance of overconfidence on decision making. The results are in line with previous studies (Metawa, 2018) but due to small sample size the magnitude of variation and value of r is very low. The presence of behavioral bias makes the stock market inefficient which can lead to financial crisis. The financial crisis makes economic growth unsustainable. The results are contradicting with the results of (Tabassum, 2021). The study has some limitations such as a small sample size of only 95 respondents which is impacting the results of the study. Convenience sampling method is used which also becomes its limitation. Random sampling techniques should be used for the study. For future research, the researcher can take a large sample of active investors. More than one behavioral bias can be taken as independent variables.

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