A STUDY ON THE IMPACT OF BEHAVIORAL BIASES ON INVESTMENT DECISIONS OF RISK SEEKING INVESTORS IN INDIA

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ABSTRACT--*In the past two and half decade a paradigm shift has taken place in the field of financial economics from standard finance to a new field of finance named as Behavioral Finance. Behavioral Finance enriches the standard finance theories or models by giving insights from psychology, neuroscience, sociology, organisation behaviour and law and explains how the cognitive errors and emotions of investors influences their decision making process. Behavioral Finance is an emerging field that combines the understanding of behavioural and cognitive psychology with financial decision making process. It is the fastest growing area in the field of academic research in finance. This investigates whether behavioral biases are evident among Indian risk seeking Investors or not and which bias is most prominent among risk seeking investors.*

Keywords-- *Behavioral Finance, Herding, Over Confidence, Cognitive Dissonance, Regret Aversion, Loss Aversion.*

I. INTRODUCTION

Behavioral Finance is an emerging field that combines the understanding of behavioural and cognitive psychology with financial decision making process. It is the fastest growing area in the field of academic research in finance.

The field of finance has been dominated by the traditional finance theories or standard finance theories or classical financial theories since the mid of 18th century. These central pillars of these theories were developed by Modigilani and Miller Arbitrage Principles, Markowitz Portfolio Theory, Sharpe's Capital Asset Pricing Model and Black Scholes Option Pricing theory. The similar assumptions of these theories were markets are efficient, investors make rational decisions, all the market information are included in the stock prices. But later these assumptions were challenged by the psychologists who argued that financial decisions are influences by emotional biases and cognitive errors which influences investors to act in an irrational manner. This paper investigates whether behavioral biases are evident among Indian Investors or not and in the Indian Stock market or not? For the study this paper analyses biases affecting risk seeking investors of India, for which the data has been collected on online and offline mode from investors directly and from stock brokerage firms namely, Sharekhan ltd, Karvy ltd, Zerodha etc. through a structured questionnaire dealing with the demographic profile and investment profile

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of the respondents as well as dealing with the biases affecting the risk seeking investors of India. The data has been collected from the investors belonging to those states which have higher per capita income as compared to other states of that region as per the economic survey report 2017-18.(Ministry of Finance. 2018).

Behavioral Biases

A bias is a tendency towards making judgemental errors. Individuals do not necessarily act rationally and consider all the available information in the decision making process because they may be influenced by behavioral biases.

Regret Aversion

Under conditions of uncertainty, people fear that the decisions will turn out to be wrong, so people try to display regret aversion and try to minimise future regret.

Overconfidence

It is a form of self-deception, due to overconfidence people over estimate their knowledge and abilities, underestimate risk, exaggerate their ability to control things and often display over optimism as they believe themselves to be better than the average and conduct excessive trading.

Cognitive Dissonance

It occurs when investors believe something about themselves and do something against their belief and feel discomfort due to holding the two conflicting thoughts in the mind at the same time.

Loss Aversion

The pain of a loss is three times more than the pleasure of an equal amount of gain. Investors are not risk averse or else they would not enter into the market but they are loss averse.

Herding

Investors tend to follow or get into groups and blindly believe others advise to ensure safety. They generally follow others advice and believe in friend advice.

II. LITERATURE REVIEW

De Bondt, (1998), conducted a study on *'A portrait of the individual investor'* in order to outline on the prior research done in the field of Behavioral Finance and to examine the process of trading stocks by small individual investors and about their equity holdings. The findings were the Fox Valley investors are overoptimistic and predicted return and predicted skewness in risk perceptions are inversely connected.

Prosad, Kapoor and Sengupta, (2013), studied on *'Behavioral biases of Indian investors: a survey of Delhi-NCR region'* in order to examine the presence the behavioral biases in Indian investors specifically, overconfidence, excessive optimism (pessimism), herd behaviour and the disposition effect and the role of demographics and investor sophistication in influencing the biases. The findings were Overconfidence affects male

of 31-60 years who, mostly invest in new companies on an intraday basis, Optimism is observed in men of 51-60 years annual income of 2-4 lakhs, Herd behavior is seen in relatively old investors of age 51-60 years who invest in new companies with high growth, The disposition effect influences men and women equally, The mean responses of intraday traders and those trading with a frequency of zero to three months differ significantly from the responses of investors who trade on yearly basis or once in three years, 44.6 per cent of respondents are slightly optimistic toward the outlook of the Indian equity market.

Obamuyi,(2013), examined on *'Factors influencing investment decisions in capital market: a study of individual investors in Nigera.'* in order to identify and prioritise the factors influencing investment decisions of investors in the Nigerian Capital Market, to investigate the effect of socio-economic characteristics of investors on any of the most affecting factors. The findings were the most influencing factors of investors' investment decisions in the Nigerian capital market in order of importance are: (i) past performance of the company's stock, (ii) expected stock split/capital increases/bonus, (iii) dividend policy, (iv) expected corporate earnings (v) get-rich-quick. On the other hand, the five least infuencing factors include: religions, rumours, loyalty to the company's products/services, opinions of members of the family and expected losses in other investments. The socio-economic factors have significant influence statistically on the investment decisions of investors in Nigeria.

Sahni, studied about *'Behavioral Finance: Testing Applicability on Indian Investors'* to give a glimpse to behavioral finance, describes the background, aim and objectives of the paper. It begins with a description of standard as well as behavioral finance, which often contradicts the modern financial theories. To test the applicability of Behavioral Finance theories on Indian Investors. To study the concept of behavioral finance and various theories associated with it. To prove the loss averse nature of investors. The major findings were majority of investors prefer stable returns, irrespective of the fact that they may be lower. Information from companies as a basis for Fundamental Analysis has greatest importance for majority of respondents, while investing. Historical Performance and Professional's forecasts are also considered well before making investments.The investors would prefer to gamble and hold on to the loosing stock in the hope that the prices will increase. This shows investors are risk lovers when confronted with losses. The investors chose to sell a winning stock early, which shows their risk aversion in gains.

Bhatt and Chauhan(2014),examined on *'Behavioral Finance: A New Paradigm of Finance.'* in order to identify behavioral factors which have influence on investment decision of the investor and to understand behavioral finance as new paradigm of finance and to identify various behavioral factors influencing the decision of investor in stock market. Various Behavioral Factors were: Overconfidence, Representativeness, Herding, Anchoring, Cognitive Dissonance, Regret Aversion, Mental Accounting, Hindsight, Availability Bias, Conservatism, Investors not always act in rational manner due to the Cognitive and Psychological errors they have to deal with. The behavioral factors are important in financial markets because they influence the investors who make the financial decisions.

Ricciardi and K. Simon, (2000), studied on '*What is Behavioral Finance?*gave a general overview of behavioral finance along with some major themes and concepts, a general overview on the concepts of over confidence, Prospect Theory, Financial Cognitive Dissonance and Theory of Regret and How can investors take into account the biases inherent in the Rules of Thumb which they often find themselves using it.

Singh, (2010), studied on *'Behavioural Finance Studies: Emergence and Developments'* in order to highlight the developments in the area of behavioural finance and the building block owingly? How Can Investors "know themselves better" so that they can develop better Rules of Thumb? The findings were to maintain an "investment record" so that overtime it will assist an investor in evaluating investment decisions and understanding their mistakes, and controlling their "emotional impulses." It enables them to trade less and implement a simple "buy and hold" strategy.

Kim and Nofsinger (2008), studied on *'Behavioral finance in Asia'* and discuss behavioral finance in general and why behavioral finance in Asia is an important topic worth studying, even the researcher describes the papers published in this special issue, and placing the papers within the appropriate context of the growing literature on behavioral finance. The findings were the behavioral finance paradigm for explaining how agents behave and how their behaviour might affect financial and the Asian financial markets represent a fruitful testing ground for behavioral finance researchers.

III.   RESEARCH OBJECTIVES

The specific objectives are:

1.   To examine the role of demographic variables on behavioral biases.

2.   To find out the various factors leading to behavioral biases

3.   Which bias is most pronounced in the context of India?

4.   Is there any inter relationship among biases?

Sample size and Sampling

A total of 385 respondents have filled up the questionnaires. The respondents are mostly the people who have directly or indirectly invested their money in stock markets, data has been collected with the help of stock brokerage firms The primary data has been from risk seeking investors preferring investment in market related instrument like mutual fund and stock market, directly or online basis and from stock brokerage firms like sharekhan, karvy, zerodha, motilal jaiswal, kotak securities, hdfc bank from around 30 branches in India.

IV.   FACTOR ANALYSIS OF BEHAVIORAL BIASES AFFECTING RISK SEEKING INVESTORS

The process applied in this part of study is a data reduction technique which removes the redundant variable. In this study the duplicated investors biases are removed through Factor Analysis. The respondents were allowed to answer on a five point likert scale where 1 represents 'strongly disagree' and 5 represents 'strongly agree'. Then the data was analysed through principal component analysis under Factor Analysis in SPSS 21 and result shows Over confidence to be the most prominent bias among risk seeking investors, then herding bias, then cognitive dissonance regret aversion, then loss aversion. The results are shown in table 1.

Table 1 : Factor Analysis of Risk Seeking Investors

Factor	Variable		Croanbach's Alpha	Loading	Eigen Value	% variance	Cumulative variance	KMO - 0.831, Bartlett's TestDf -120 Sig-0.00
Over Confidence	I think by Dec 2019, sensex will go beyond 60000 and nifty will go beyond 20000.	Forecast sensex and nifty well in advance.	0.843	0.782	3.455	16.582	16.582	
	I feel that on an average I can forecast the future share prices more accurately than others.	Forecast share prices more accurately.	0.845	0.673				
	The last loss in my investment was of my bad luck than of my poor judgement.	Loss was more of a bad luck.	0.844	0.547				
	I follow others view while selecting the stocks for investing.	Follow others view while selecting stocks.	0.844	0.633				
Herding	I normally trade taking into consideration the trade opinion of others in order to keep my reputation intact.	Take opinion of others to keep reputation intact.	0.852	0.821	1.322	10.262	26.844	
	When market crashes, I follow the stock analyst suggestion regarding my investment completely.	Follow the stock analyst suggestion completely.	0.845	0.756				
	I follow others view while selecting the stocks for investing.	Follow others view while selecting stocks.	0.844	0.633				
	Market stress compels me sometimes to follow group mentality for investment.	Market stress make me follow group mentality.	0.843	0.607				
Cognitive Dissonance	While investing, I usually face conflict with my beliefs and my actions.	Face conflict with my beliefs and my actions.	0.844	0.754	1.217	9.158	36.002	
	I prefer to exit early (buy or sell early) in order to be at a safer side than waiting for a further higher return.	Exit early on safer side	0.841	0.638				
	I always wish to be a long term buy and hold investor but I trades too often on impulse.	Wish a long trader but generally trades on impulse	0.842	0.614				

Regret Aversion	I have made an investment decision to buy or sell a stock but somehow I still regret to make that decision.	After making decision still regretting	0.844	0.737	1.067	8.651	44.653
	I think about the worst possible outcome of various investments and then choose that investment in which the regret would be minimum.	Decision on the basis of worst possible outcome.	0.842	0.688			
	In my portfolio, I have chosen few stocks but I regret when it does not perform well as compared to growth of the overall market.	My stock not performing well compared to market performance.	0.843	0.661			
Loss Aversion	I have held shares which were of losing value for quite a long time and still I have them just with the hope that they will eventually improve.	Hold losing value shares.	0.852	0.731	1.031	7.919	52.572
	I trade excessively as a result of which I sell the winner stocks	Trade excessively as I sell the winner stocks.	0.853	0.616			
	When the markets go down, I shift from stock market securities to fixed income securities	Make a shift to fixed securities from market securities.	0.850	0.588			
	When markets are highly volatile I never enter a trade due to fear of incurring loss	Highly volatile market I never enter a trade.	0.849	0.513			

V.   RELIABILITY TEST

The questionnaire was gone through a reliability test using Cronbach's Alpha scale . The reliability value of all the 20 items taken for the study is 0.881 which shows that all the statement are consistent. The results of the all individual items in the questionnaire indicate that they varied from 0.841 to 0.849. Thus, it can be concluded that the individual items are reliable.

The above table represents table, variables, each variables reliability scores, its factor loadings with its eigen value, % of variance and cumulative variance with the kmo value of the entire variables. From the above analysis five factors has been extracted having eigen value more than 1 with a total variance of 58.962. The individual eigen value of factors are 3.455, 1.322, 1.217, 1.067 and 1.031. The factors derived namely, Herding, Regret Aversion, Cognitive Dissonance, Loss Aversion and Over Confidence which are briefly explained below:

Factor Analysis of risk seeking investors
Factor analysis was employed and it was found that

1. Over Confidence Bias

It is a form of self-deception, due to overconfidence people over estimate their knowledge and abilities, underestimate risk, exaggerate their ability to control things and often display over optimism as they believe themselves to be better than the average and conduct excessive trading. (i)Forecast sensex and nifty well in advance, (ii) Predict share prices more accurately, (iii) Loss was more of a bad luck, (iv) Follow others view while selecting stock were the major variables for Over Confidence Bias with factor loadings of 0.822, 0.773,0.647 and 0.633 respectively.

2. Herding Bias

In herding investors tend to follow or get into groups and blindly believe others advise to ensure safety. (i) Take opinion of others to keep reputation intact, (ii) Follow the stock analyst suggestion completely (iii) Follow others view while selecting stocks (iv) Market stress make me follow group mentality, were the major variables for Herding Bias with factor loadings of 0.821, 0.756, 0.634, 0.607 respectively.

3. Cognitive Dissonance Bias

It occurs when investors believe something about themselves and do something against their belief and feel discomfort due to holding the two conflicting thoughts in the mind at the same time. (i) Face conflict with my beliefs and my actions, (ii) Exit early on safer side (iii) Wish a long trader but generally trades on impulse were the major variables for Cognitive Dissonance Bias with factor loadings of 0.754, 0. 638 and 0.614 respectively

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4. Regret Aversion Bias

Under conditions of uncertainty, people fear that the decisions will turn out to be wrong, so people try to display regret aversion and try to minimize future regret. (i) After making decision still regretting, (ii) Decision on the basis of worst possible outcome and (iii) My stock not performing well compared to market performance were the variables of regret aversion bias with factor loading of 0.737, 0.688 and 0.661 respectively.

5. Loss Aversion Bias.

Investors feel the pain of a loss is three times more than the pleasure of an equal amount of gain. Investors are not risk averse or else they would not enter into the market but they are loss averse. (i) Hold losing value shares, (ii) Trade excessively where I sell the winner stocks (iii) Make a shift to fixed securities from market securities, (iv) In Highly volatile market I never enter a tradewere the major variables for Loss Aversion Bias with factor loadings of 0.731, 0.616, 0.588, 0.513 respectively.

VI. DEMOGRAPHIC VARIABLES AND BEHAVIORAL BIASES OF RISK SEEKING INVESTORS.

The Paired Sample t test and One way ANOVA test has been applied to find out the significant difference between demographic variables and behavioral biases of risk seeking investors. The demographic variables

includes gender, age, region, qualification, occupation and income. The behavioral biases includes over confidence bias, herding , cognitive dissonance,, regret aversion and loss aversion.

H_o1: There is no significant difference between demographic variables variables (gender, age region, qualification, occupation and income) and behavioral biases(over confidence, herding, cognitive dissonance, regret aversion and loss aversion) of risk seeking investors.

H_11: There is a significant difference between demographic variables variables (gender, age region, qualification, occupation and income) and behavioral biases (over confidence, herding, cognitive dissonance, regret aversion and loss aversion) of risk seeking investors.

Table 2: Demographic Variable and Behavioral Biases of RISK SEEKING Investors.

Sl. No.	Demographic Variables		Over Confidence	Herding	Cognitive Dissonance	Regret Aversion	Loss Aversion
1	Gender	t statistics	32.563	32.066	32.729	34.882	32.250
		Sig.	0.000	0.000	0.000	0.000	0.000
2	Age	F statistics	1.383	2.353	1.176	2.251	4.968
		Sig.	.029	.039	.020	.048	.000
		Levene Statistics	2.798	1.147	1.522	1.702	2.141
		Sig.	.076	.334	.181	.132	.059
3	Region	F statistics	.891	.314	1.857	1.112	4.565
		Sig.	.046	.004	.010	.353	.000
		Levene Statistics	.665	.559	1.574	2.428	.703
		Sig.	.650	.732	.165	.034	.622
4	Qualification	F statistics	.494	.306	.308	.287	1.278
		Sig.	.687	.821	.820	.835	.281
		Levene Statistics	.181	2.667	1.475	2.399	1.129
		Sig.	.910	.047	.220	.067	.337
5	Occupation	F statistics	2.317	1.687	1.429	.525	2.250
		Sig.	.042	.136	.212	.758	.048
		Levene Statistics	.401	2.048	.506	.388	2.008
		Sig.	.848	.070	.772	.857	.076

6	Income	F statistics	4.342	2.426	.960	2.527	1.576
		Sig.	.002	.047	.429	.040	.179
		Levene Statistics	2.639	.658	.932	1.149	1.287
		Sig.	.063	.621	.445	.332	.274

The Table 2 analyses the relationship of demographic variables with behavioral biases of risk seeking investors.

i) Gender and Behavioral Biases

The Table 5.10 analyses the relationship of demographic variables with behavioral biases of regret seeking investors. In order to test the significant difference of gender with behavioral biases t test analysis has been done. From the above table we can find that p value for all the biases is less than 0.05, hence null hypothesis is rejected and alternate hypothesis is accepted stating that there is a significant difference between age and overconfidence bias, herding , cognitive dissonance,, regret aversion and loss aversion with the t statistics as 32.563, 32.066, 32.729, 34.882 and 32.250 respectively.

ii) Age and Behavioral Biases

In case of Age, Anova test has been applied along with levene statistics in order to check the significant differences between the variables and the equality of variances among the variables. It has been found that the p value in levene statistics for all the variables is more than 0.05, hence satisfying the equality of variance principle among all the variables. The F statistics of age for and overconfidence bias, herding bias, cognitive dissonance bias, regret aversion bias and loss aversion bias are 1.383, 2.353, 1.176,2.251 and 4.968 with significant value of 0.029, 0.039, 0.020, 0.048 and .000 respectively. This states that the null hypothesis is rejected stating that there is a significant difference between age and behavioral biases overconfidence bias, herding , cognitive dissonance, regret aversion and loss aversion.

iii) Region and Behavioral Biases

In case of Region, Anova test has been applied along with levene statistics. The F statistics of region and overconfidence bias, herding , cognitive dissonance,, regret aversion and loss aversion are 0.891, 0.314, 1.857, 1.112 and 4.565with significant value of 0.046, 0.004, 0.010, 0.353 and .000 respectively. stating that overconfidence bias, herding bias cognitive dissonance bias and loss aversion bias have significant differences with the region and regret aversion bias is not affected by the region. The p value of levene statistics for all the variables is more than 0.05, hence satisfying the equality of variance principle among all the variables.

iv) Qualification and Behavioral Biases

In case of Qualification, Anova test has been applied along with levene statistics in order to check the significant differences between the variables and the equality of variances among the variables. The p value in

levene statistics for all the variables is found to be more than 0.05, hence satisfying the equality of variance principle among all the variables. The F statistics of qualification and overconfidence bias, herding bias, cognitive dissonance bias, regret aversion bias and loss aversion bias are 494, .306, .308, .287 and 1.278 with significant value .687, .821, .820, .835 and .281 respectively. This states that the null hypothesis is accepted stating that there is no significant difference between age and behavioral biases overconfidence bias, herding , cognitive dissonance,, regret aversion and loss aversion.

v) Occupation and Behavioral Biases

In case of Occupation, Anova test has been applied along with levene statistics. The F statistics of occupation and overconfidence bias, herding bias, cognitive dissonance bias, regret aversion bias and loss aversion bias are 2.3171.687 1.429 .525 and 2.250 with significant value .042, .136, .212, .758 and .048 respectively stating overconfidence bias and loss aversion bias have significant differences in case of occupation and that herding , cognitive dissonance, and regret aversion bias are not affected by the occupation. The p value of levene statistics for all the variables is more than 0.05, hence satisfying the equality of variance principle among all the variables.

vi) Income and Behavioral Biases

In case of Income, Anova test has been applied along with levene statistics has been applied. The F statistics of income and overconfidence bias, herding , cognitive dissonance,, regret aversion and loss aversion are 4.3422.426, .960, 2.527 and 1.5760 with significant value .002, .047, .429, .040 and .179 respectively stating that overconfidence bias , herding and regret aversion bias have significant differences with the income. Cognitive dissonance bias and loss aversion are not affected by the income. The p value of levene statistics for all the variables is more than 0.05, hence satisfying the equality of variance principle among all the variables.

VII.   MEAN REPRESENTATION OF THE DESCRIPTIVE STATISTICS OF RISK SEEKING INVESTORS

The table 3 represents a detailed analysis of demographic variables with their mean value.

Table 3: Descriptive Statistics of Risk Seeking Investors

Variable	Over Cofidence	Herding	Cognitive Dissonance	Regret Aversion	Loss Aversion
Male	**4.87**	3.63	**3.75**	**3.91**	3.45
Female	2.81	**3.75**	3.75	3.90	**3.54**
less than 25	3.90	3.48	3.90	3.80	3.40
25-35	3.82	3.69	**3.93**	3.88	3.51
35-45	3.83	**3.76**	3.70	3.88	3.48
45-55	**3.93**	3.72	3.84	**4.03**	3.53

55-65	3.91	3.60	3.84	3.93	**3.70**
above 65 years	3.60	3.50	3.65	3.55	3.45
East India	3.87	3.66	3.71	3.82	3.47
West India	3.78	3.60	**3.79**	3.76	3.51
Central India	3.85	**3.80**	3.77	**4.01**	**3.50**
North India	**3.94**	3.74	3.78	4.00	3.47
South India	3.81	3.69	3.71	3.95	3.46
Noth East India	3.80	3.62	3.78	3.85	3.65
Under Graduate	4.00	3.52	3.92	3.98	3.66
Graduate	3.89	3.62	**3.94**	3.84	3.47
Post Graduate	3.82	3.69	3.73	**3.99**	**4.48**
Doctorate	**4.02**	**3.88**	3.80	3.87	3.63
Other Professional Degree	3.85	3.69	3.75	3.90	3.50
Business	3.95	3.67	3.93	**4.01**	3.52
Govt. Service	3.78	3.69	**3.96**	3.83	3.48
Private Sector	**4.86**	**3.91**	3.78	3.94	**3.50**
Housewife	3.88	3.60	3.79	3.03	3.49
Student	3.19	3.81	3.19	3.94	3.38
Any other Profession	3.89	3.59	3.67	3.67	3.64
Less than 5 lakh	3.91	3.62	3.79	3.90	3.41
5 lakh -10 lakh	3.83	3.75	**3.99**	3.94	3.49
10 lakh -15 lakh	3.84	3.62	3.66	**4.13**	**3.58**
15 lakh -20 lakh	3.69	**3.81**	3.25	3.94	3.31
more than 20 lakh	**3.92**	3.69	3.90	3.23	3.23

1. *Over Confidence Risk Seeking Investor*

It is found that male risk seeking investors are more overconfident than female investors. Overconfidence bias is seen more in North India among investors between 45 – 55 yrs of age, having Doctorate degree and among govt service professionals having salary more than 20 lakh.

2. *Herding Risk Seeking Investor*

It is found that female investors herd more than male investors. Herding bias is seen more in Central India among investors between 35 – 45 yrs of age, having Doctorate degree and among private service professionals having salary between 15lakh - 20 lakh.

3. *Cognitive Dissonance Risk Seeking Investor*

It is found that male risk seeking investors have more Cognitive Dissonance than female investors. Cognitive Dissonance bias is seen more in West India among investors between 25 – 35 yrs of age, having graduate degree and among govt service professionals having salary between 5 lakh - 20 lakh.

4. *Regret Aversion Risk Seeking Investor*

It is found that male are more Regret Averse than female investors. Regret Aversion bias is seen more in Central India among investors between 45 – 55 yrs of age, having post graduate degree and among businessmen having salary between 10 lakh – 15 lakh.

5. *Loss Aversion Risk Seeking Investor*

It is found that female risk seeking investors are more loss Averse than male investors. Loss Aversion bias is seen more in Central India among investors between 55 – 65 yrs of age, having post graduate degree and among private service professionals having salary more than 20 lakh.

VIII.   CORRELATION OF BEHAVIORAL BIASES AND INVESTMENT DECISION OF RISK SEEKING INVESTORS.

Pearson correlation is employed to find the degree of association between the five biases and with the investment decision.

$H_0 2$: There is no significant relationship between behavioral biases (over confidence bias, herding , cognitive dissonance,, regret aversion and loss aversion) and investment decision

$H_1 2$: There is a significant relationship between behavioral biases (over confidence bias, herding , cognitive dissonance,, regret aversion and loss aversion) and investment decision.

Table 4: Correlation Table

		OC2	HD2	CD2	RA2	LA2	Investment Decision
OC2	Pearson Correlation	1	-.054	-.013	.030	.014	.222**
	Sig. (2-tailed)		.169	.738	.440	.722	.000
	N	645	645	645	645	645	645
HD2	Pearson Correlation	-.054	1	.067	.045	.064	.029**
	Sig. (2-tailed)	.169		.088	.255	.542	.005
	N	645	645	645	645	645	645
CD2	Pearson Correlation	-.013	.067	1	.250	.069	.109**
	Sig. (2-tailed)	.738	.088		.089	.078	.006
	N	645	645	645	645	645	645
RA2	Pearson Correlation	.030	.045	.250	1	.124	.069*
	Sig. (2-tailed)	.440	.255	.089		.062	.042
	N	645	645	645	645	645	645
LA2	Pearson Correlation	.014	.064	.069	.124	1	.107*

	Sig. (2-tailed)	.722	.542	.078	.062		.077
	N	645	645	645	645	645	645
Investment Decision	Pearson Correlation	.222**	.029**	.109**	.069*	.107*	1
	Sig. (2-tailed)	.000	.005	.006	.042	.077	
	N	645	645	645	645	645	874

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

The degree of association between all the behavioral biases like over confidence, herding, cognitive dissonance, regret aversion and loss aversion is not significant as the sig. value is more than 0.05.But there exist a significant and positive relationship between investment decision with all other biases.

The correlation of investment decision with overconfidence bias is 0.222 with is positive and significant. The r value of investment decision with herding bias is 0.029 with is significant. The association of cognitive dissonance bias with investment decision is 0.109 is positive and significant, the association of investment decision with regret aversion is 0.069 is positive and significant and finally the association of investment decision with loss aversion is 0.107 is positive and significant.

IX.   ANOVA

In order to analyze whether investment decisions of risk seeking investor is affected by behavioral biases ANOVA technique is used. The results are shown in Table 5.

Table 5: ANOVA

	Model	Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	91.403	5	18.281	147.305	.000^b
	Residual	335.431	868	.386		
	Total	426.834	873			

a. Dependent Variable: Investment Decision

b. Predictors: (Constant), LA2, HD2, OC2, RA2, CD2

Hence from Table 5, we can reject the null hypothesis and conclude that Investment decision of risk seeking investors is affected by behavioral biases, as the sig. value is less than 5% with f value of 147.305.

Regression Model summary table.

The regression model summary table is used to determine the R^2 which explains what percentage of dependent variable is explained by independent variable.

Table 6 : Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.763[a]	.714	.696	.62164

a.Predictors: (Constant), LA2, HD2, OC2, RA2, CD2

The regression model summary is shown in table 6, where the dependent variable is investment decision of risk seeking investors and the independent variables are the different behavioral biases. The table summarizes R^2 is 0.714 and adjusted R^2 is 0.696 which means 71 % variation of investment decision is explained by behavioral biases of risk seeking investor.

Test of Multi Collinearity

Multicollinearity checks whether there exist a very high inter correlationship among independent variable with the help of tolerance value and VIF value (variance inflation factor) as shown in table 5.3.

$H_0 3$: There is no significant difference in the inter biases variation of investor's attitude of risk seeking nature.

$H_1 3$: There is a significant difference in the inter biases variation of investor's attitude of risk seeking nature.

Table 7: MultiCollinearity Statistics

Model		Collinearity Statistics	
		Tolerance	VIF
1	(Constant)		
	OC2	.984	1.016
	HD2	.982	1.019
	CD2	.938	1.066
	RA2	.949	1.054
	LA2	.970	1.031

a. Dependent Variable: Investment Decision

b. Predictors: (Constant), LA2, HD2, OC2, RA2, CD2

From table 7 we can see that the VIF value ranges from 1.016 to 1.066, as all the values are less than 10 hence indicating non collinearity among independent variables and the tolerance value is nearer to 1 indicating no presence of multicollinearity.

Multiple Linear Regression

Regression table explains what is exact impact of independent variable on dependent variable in this study independent variable is Investment Decision and dependent variable are the risk seeking investor biases.

$H_0 4$: There is no significant impact between investment decision and behavioral biases affecting Indian investors risk seeking nature.

$H_1 4$: There is a significant impact between investment decision and behavioral biases affecting Indian investors risk seeking nature.

Table 8: REGRESSION TABLE Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.060	.021		143.559	.000
	OC2	.288	.021	.412	13.579	.000
	HD2	.027	.022	.037	1.226	.021
	CD2	.083	.023	.112	3.596	.000
	RA2	.020	.024	.026	.841	.401
	LA2	.070	.023	.093	3.029	.003

a. Dependent Variable: Investment Decision

Regression Model

Y = □□□□□□x1 + □□x2 + □□x3□□□□□x4□□□□□x5□□□□

Independent Decision = □□□□□□□□□□□□□Over Confidence □□□□□□□Cognitive Dissonance + 0.70Loss Aversion□□□□□□□□Herding□□□□□

Statistical significance of independent variable over dependent variable is shown in table 8 where the independent variable are the biases influencing investment decision where behavioral biases like Over confidence, Cognitive Dissonance, Loss Aversion, herding and investment decision is the dependent variable. The table summarizes unstandarised beta coefficients, t statistics and sig. value. From the above table we can find that all the biases are statistically significant except regret aversion in case of risk seeking investors. The significant beta value for overconfidence bias is 0.412, cognitive dissonance bias is 0.112, herding bias is 0.97, loss aversion is 0.37. Hence concluding that among risk seeking investors the bias found most prominent is over confidence then cognitive dissonance then herding and finally loss aversion.

Findings

Table 9: Objective wise findings

Sl. No.	Objective	Methodology	Findings
1.	To investigate the presence of selected behavioral biases among the Indian investors (risk seeking investors).	Factor Analysis	• Yes, biases are present among Indian Investors.
			• Risk Seeking Investors: • Regret aversion bias, Herding bias, Loss Aversion bias, Over Confidence, Cognitive Dissonance.

3.	To examine the role of demographic variables of risk seeking investors on behavioral biases.	Student t test & ANOVA	There is a significant difference between gender and overconfidence bias, herding , cognitive dissonance,, regret aversion and loss aversion
			There is a significant difference between age and overconfidence bias, herding , cognitive dissonance, regret aversion and loss aversion.
			There is a significant difference between region and overconfidence bias, herding , cognitive dissonance, and loss aversion bias.
			There is no significant difference between qualification and behavioral biases
			There is a significant difference between occupation and loss aversion and overconfidence bias.
			There is a significant difference between income and , herding bias, regret aversion and loss aversion
4.	To rank the biases as per the prevalence.	Correlation & Multiple Linear Regression	Risk Seeking Investors: Over Confidence, Cogniitive Disssonance, Herding, Loss Aversion, regret aversion bias.
5.	To find out which bias is most pronounced in the Indian context.	Multiple Linear Regression	Risk Seeking Investors: Over Confidence
6.	To examine the interrelationship that exist between the biases	Multicollinearity	• There exist no presence of multicollinearity (interrelationship) among the biases

X.   FINDINGS AND CONCLUSION

1.   Behavioral Biases are present among Risk Seeking Indian Investors most prominently in the form of Regret aversion bias, Herding bias, Loss Aversion bias, Over Confidence, Cognitive Dissonance.

2.   Among risk seeking investors there is an influence of gender, age, region and occupation on Over Confidence bias; gender, age, region and income on herding bias; gender, age and region on cognitive dissonance bias; gender, age, region, occupation and income on loss aversion bias; gender, age and income on regret aversion biases.

3.   Over Confidence Risk Seeking Investor

It has been found that male risk seeking investors are more overconfident than female investors. Overconfidence bias is seen more in North India among investors between 45 – 55 yrs of age, having Doctorate degree and among govt service professionals having salary more than 20 lakh.

4.   Herding Risk Seeking Investor

It has been found that female investors herd more than male investors. Herding bias is seen more in Central India among investors between 35 – 45 yrs of age, having Doctorate degree and among private service professionals having salary between 15lakh - 20 lakh.

5. Cognitive Dissonance Risk Seeking Investor

It has been found that male risk seeking investors have more Cognitive Dissonance than female investors. Cognitive Dissonance bias is seen more in West India among investors between 25 – 35 yrs of age, having graduate degree and among govt service professionals having salary between 5 lakh - 20 lakh.

6. Regret Aversion Risk Seeking Investor

It has been found that male are more Regret Averse than female investors. Regret Aversion bias is seen more in Central India among investors between 45 – 55 yrs of age, having post graduate degree and among businessmen having salary between 10 lakh – 15 lakh.

7. Loss Aversion Risk Seeking Investor

It has been found that female risk seeking investors are more loss Averse than male investors. Loss Aversion bias is seen more in Central India among investors between 55 – 65 yrs of age, having post graduate degree and among private service professionals having salary more than 20 lakh.

8. The most prominent bias among Risk Seeking Investors is Over Confidence.

9. There exist no presence of multicollinearity (interrelationship) among the biases.

XI. CONCLUSION

Behavioral finance plays a significant role in the present day economics as its usefulness is seen in the fields of academics, advisor, policy design, investor education and client relationship. Taking irrational decisions becomes is very expensive for a middle class or low income group people so it is of utmost necessity that individual take decisions very carefully. Hence before investing if the organisation takes time understand and predict biases of clients based by allowing them to fill a two-minute questionnaire on personality traits can in order to understand client prospective. Governments should also learn about the behavioral patterns so that it can formulate effective policies and can create better financial instruments, services and education.

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