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## **DIFFERENCES IN BEHAVIORAL BIASES IN INVESTMENT DECISION MAKING: GENDER AND OCCUPATION PERSPECTIVE**

### **ABSTRACT**

Investments and Investment decision making come a long way in last few decades. The practical deviation from the established norms of conventional finance made the people know that the investors' buying behavior cannot be understood only by conventional finance theories. Studies strongly support the presence of behavioral aspects in the investment decision making process and behavioral finance provides solution to many-a-problems hitherto not answered appropriately by the conventional finance theory. Moreover, it was also propounded that the behavioral biases vary across gender and occupation of the investors. This study provides evidences for the existence of biases and also provides with the evidences that behavioral biases are not affected by the combined categories of gender and occupation.

*Key Words: behavioural finance, investment decision making, biases, investors, prospect theory*

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## INTRODUCTION

Investment is an important activity for people. In countries like India people are by nature conservative and prefer to save something for the future. Therefore in such countries like India, investments and investment decision making, become more important. Industry and academia alike look forward to know how people go about selecting the investment vehicle to park their savings. Researchers look for the factors which are important for selecting a particular mode of investments. The conventional wisdom of finance says that people are rational, logical and analytical, can assimilate and process lots of relevant information and can come to a right conclusion regarding buying the right instrument for putting their savings. Over the period of time it has been found that people are not that rational as was originally thought about them. There are some factors which can be considered as non-rational which were being observed as the decision criteria while making investment choices. In sharp contrast to what financial theory explains in the context of investments and asset pricing, it is observed that asset pricing deviates from the predictions of the theoretical models. This happens because one of the basic premises in finance theory that the investors are rational is not fulfilled in reality and this affects the basic premises on which asset pricing models are formulated. Apart from irrational investor behavior, there can be other factors that can potentially affect asset pricing such as educational background, income and wealth levels, age, family back ground etc. These have opened vistas of opportunity for researchers to explore and find out what are those factors individually or collectively matter to the investors and are supposedly non-rational or behavioral in nature. Important non-rational or behavioral issues which have been much discussed can be summarized as follows.

The availability bias is the inclination of the decision towards the more recent available information than on the total or logical or long-term information (Jahanzeb and Muneer, 2012). The representation biases are related with the faulty judgment due to giving more relevance to something which represents despite presence of many more logical and relevant facts (Kahneman and Tversky, 1972; De Bondt and Thaler, 1990). The extrapolation biases are there which replicate the past which may or may not be the same for the future (Rabin, 1998). The availability biases are related with the events dominate the decision making which easily come to mind (Tversky and Kaheman, 1974). The mental accounting (Thaler, 2008) is referred to putting money in separate accounts and look for things separately and not collectively. The confirmation bias (Devine et al., 1990) is the bias related with looking for only those things which confirm their own belief. The herd behavior relates to following the masses (Jaiswal and Naela , 2012). The risk aversion effect is the

bias which incurred due to avoidance of the most logical decision due to fear of failure (Kahneman, Knetsch, and Thaler, 1990). Disposition effect has been discussed when investors intend to sell rising stock than the losing stocks (Hens and Vlcek, 2011; Grinblatt and Keloharju, 2001; Kaustia, 2010). Gamblers' fallacy is the behavioral bias in which the investors believes that what has happened in the past would not surely be repeated in the future (Barron and Leider, 2010). January effect is the effect on the prices of the securities in the month of January. Due to this effect people buy securities before January and sell and at an appropriate price after January (Keim, 1983). The winners' curse is the bias when the person who wins a bet but in that endeavors pays more than the actual value of what he gets (Thaler, 1988). Endowment Effect is the behavioral bias in which people or investors weigh more importance to things which are possessed by them or owned by them (Maddux et al., 2010; Harbaugh, Krause, and Vesterlund, 2001). One of the important theories propounded in behavioral finance is Prospect Theory. A central theme of the Prospect Theory (Tversky and Kahneman, 1981; Kahneman and Tversky, 1979) is that investors' responses to profit and losses are asymmetrical and in favor of losses more than the gains. The Prospect Theory is in a way combination of anchoring effect, loss aversion, risk aversion and possibility and certainty effect put in to a place. Later on one more generalized theory which is known as Cumulative Prospect Theory was given by Tversky and Kahneman (1992) which is supposedly best known theory for the decision making under uncertainty.

Existence of these biases and investment buying behavior of different people categorized on the basis of their demographics vary, has been the main motivations for doing this study. Research in the field of behavioral finance has been undertaken to investigate a wide range of issues such as bounded rational choices, investment patterns and choices, overconfidence, competency and trading frequency, gender influences, demographic, socio-economic and lifestyle influences, influence of investor expectations, perception, sentiments, personality traits and psychological factors and other issues. With this kind of research literature in this field, it was decided to investigate investment buying behavior and impact of behavior biases for a particular set of investors. The scope of such a research arises because of the social changes that are taking place in terms of occupational choices of individuals between doing a salaried job or operating one's own business and the increasing number of women either joining a job or starting own business. Doing a job that offers a regular salary or operating a business where income are uncertain, are just two

different ways of earning income, with each offering its own potential in the generation of income and savings (given the expenditure level of the individual). Each characterized by its own riskiness in terms of the stability or the lack of it, in the earning of livelihood. Gender influences on risk taking, investment decision making and investment choices have been already recorded in the previous research studies in the field of behavioral finance. But combining occupation and gender and creating new categories for the purpose of studying behavior biases for investment buying behavior is less found in the literature.

The behavioral patterns differ from place to place and from category to category. There have been many studies done by different authors on this topic before. But with this combined set of categories of occupation and gender, this paper is a leading study on the topic. This paper is also different in the sense that it is being done on the Investors of Jaipur, Rajasthan. Jaipur is part of Rajasthan and very rich in their cultural quotient. People here have different pattern of Investments. Here Investors do not have dearth of disposable income to invest, but the problem is lack of conviction for available modes of investments. Investments. Here people are relatively calm, relaxed and materialism seem to be less. Lack of modernity (but not lack economic development) is boom in disguise for the people in Rajasthan. It is expected that biases and preferences are going to be different in Rajasthan as compared to relatively more developed places in India which is another motivation for doing this study here.

The main implication for the output of the study would be for the marketers to design strategies for promoting the financial products. Knowledge of the behavioral biases and other limitations of the conventional finance can provide a good insight for designing a long term selling strategy for the sale of the financial products. In India still financial penetration is relatively low and that in turn describes the existence of huge untapped market. Behavioral issues are now part of the selling strategy of all the marketers of the financial products not only one region but all the regions. Promotion and distribution strategies are now based upon these behavioral issues. This study is going to give a good understanding for the behavioral pattern of the investors. The knowledge acquired can be replicated to other parts of the nation for the benefit of understanding the investors and selling them the financial products.

This paper has further been discussed in seven sections. Next section describes the theoretical framework used in the paper. The third section describes review of literature. The fourth section discusses the methodology followed by fifth section discusses results

and analysis. The sixth section has discussion on the finding and last and seventh summarizes the paper in concluding observations.

## **THEORETICAL FRAMEWORK**

In this paper following six behavioral biases have been studied. The overconfidence (De Bondt, 1998; Bhandari and Deaves, 2006) bias is present due to overreaction or overestimation of anything. Self-attribution bias is a bias in which people attribute the success to their own decisions whereas failures are attributed to some external causes (Mittal and Vyas, 2009; Mittal, 2010). Overreaction bias is the behavioral bias in which overreaction to news or any other thing impact the decision making especially in the stock market where this is also in the violation of the market efficiency hypothesis (Jaiswal and Naela, 2012; Mittal, 2010). The framing effect is that effect due to which any situation can be made or seem to be part of another event which can be termed as frame and the situations can be framed in that way (Kahneman and Tversky, 1979). The anchoring and heuristic biases are those in which first or the reference point becomes more important than the facts or logics for decision making (Tversky and Kaheman, 1974). One of the reference point used by the investors in the stock market is the purchase price. The further decision of the holding the share or disposing-off depends upon this reference point of the purchasing price. Regret or Loss aversion is the bias in the behavior when investor becomes risk-seeker when faces losses and becomes risk-averse when faces gains (Gill and Prowse, 2012).

This paper finds out whether the behavioral biases are present in Investors buying behavior of Investors or not. Besides that finding out how different category of people on the basis of their occupation and gender, has different investment decision making process. This paper is a study on the difference of Investment decision making by these categories of investors. Four such categories have been developed for this purpose. These categories are Male-Service, Male-Business, Female-Service and Female-Business. The presence of the behavioral biases and exploring of the difference in the biases with respect to combined categories of gender and occupation of the investor, is the main theme of the paper which adds to already existing knowledge of the behavioral finance.

## **REVIEW OF LITERATURE**

The review of literature has been divided in four parts in this paper. The first part belongs to the conventional finance theory regarding investors buying behavior. The second part

consists of criticism on the conventional finance theory and introduction of the behavioral theory for investor buying behavior. The third part of the review of literature consists of evidences in support of the behavioral finance for investment decision making. The fourth part consists of biases and other approaches which are tested and researched in the earlier studies in the investment decision making.

The first set of the review of literature in this paper has been on the conventional finance theory on the investors buying behavior. Simon (1955) proposed that human mind is equivalent to computers and said that human mind can process large information and take decision regarding those things which require high computation abilities. Simon (1955) has formulated a behavioral model of rational choice which defines explicitly what is meant by rational behavior and what decision maker require to make a choice. He also discussed the approaches on the basis of which a rational individual can arrive at a rational choice. In conventional finance it is believed that investors are rational and they take decisions on the basis of Expected Utility Theory (Neumann and Morgenstern, 1944) or Subjective Utility Theory (Savage, 1954). According to these theories investors are rational and in case of uncertainties they always prefer to go for that choice which gives them higher utility. Plous (1993) developed some assumptions on the basis of Expected Utility Theory, Subjective Utility Theory and conventional finance approaches. The important assumptions are ability to rank alternatives, investor's rankings are continuous, investors care about outcomes, payoffs along with their probabilities etc. Barberis and Thaler (2003) had extended the idea of Plous (1993) further that investors are fully capable of clubbing all the information, doing the analysis and come out with the best alternative for the investments.

The second set of the literature is on criticism of the conventional finance theory for investor buying behavior. It is logical and practical to understand that a normal human being is not that perfect to follow the complexities as elaborated in expected utility theory or in the assumptions set by Plous (1993). The rationality approach is theoretically correct but on the practical aspects, it has been observed that people are not always rational or logical. These are many studies which flout the theory and assumptions of the conventional finance theory related with the investors' buying behavior. Initially this was brought forth by Tversky and Kahneman (1974) and Kahneman and Tversky (1979) where they described that investors' are not fast enough like machines in updating the information and their preferences are not as good as a perfectly rational investors would have been. There are many studies done on this aspect on the mismatch of the behavioral aspect of the investors' decision making which cannot be explained by the conventional or classical finance theory.

Campbell (2000), Hirshleifer (2001), Barberis and Thaler (2003), Baker, Ruback, and Wurgler (2006), Campbell (2006), Benartzi (2001), Barber and Odean (2000), all the studies have found evidences which implies that conventional finance theory cannot fully explain the behavioral aspects of the Investors. There are various studies which accept that predicting of the stock or bond pricing are depended upon behavioral sentiments of the investors besides other things (Cremers, 2002; Avramov, 2004). Deviations from the Capital Asset Pricing Model (CAPM) is also another area where there are evidences that conventional financial theory is getting violated by the behavioral aspects of the investors. Banz (2000) have found that CAPM is mis-specified in some cases and the size effect would have had earned high returns as well. Barberis, Huang and Santos (2001) in their study have described that the asset prices are being influenced by the prospect theory. Mehra and Prescott (1988) gave appropriate explanation to equity premium puzzle which was hitherto unexplained by conventional finance theory. This puzzle was proposed by Mehra and Prescott (1985) in their paper which poses the problem of difference in the return by equity more than the bonds in the long term which seem not to be explained by conventional finance theory. The equity premium puzzle was further reinforced by latest data by Mehra (2003) in their study on the US market. The disposition effect also have such situation which cannot be explained by the conventional financial theory and behavioral finance and prospect theory has been put to use to defend the disposition effect (Hens and Vlcek, 2011). The disposition effect deals with the situation of selling the winning investments and holding the losing investments which is in itself a unique condition and found no meaningful explanation in the conventional finance. Wood (1997) has explained the financial risk of different types and emphasized that the risk due to flaws in preferences and perceptions cannot be explained by the conventional finance theory. Peteros and Maleyeff (2013), Haliassos and Bertaut (1995), Vasile, Radu, and Ciprian (2010), Fama (1998), Hodnett and Heng-Hsing (2012), Frankfurter and McGoun (2000), and Hirshleifer (2001) have presented that the capital marker inefficiency and other market anomalies cannot be explained well by conventional finance but can be explained with the help of behavioral finance theory.

The third set of literature is in support of behavioral finance theory and gives evidences for that. Barber and Odean (2000) in their remarkable work supported the premises of behavioral finance and argued that the passive investment strategies are better than the active investment strategies due to overconfidence behavioral biases in investment

buying behavior and proposed this as one of the reasons for losing money in the market by investors. Statman (1995) is a landmark paper in the field of the behavioral finance. This paper becomes more important because it proposes two things together. It talks about behavioral biases and other issues in the investment decision making and side by side deals with how impactful these behavioral biases are in impacting the asset prices. In another important study done by Shefrin and Statman (2000), it is proposed that the people do not necessarily go by maximization of the value of their investments rather they look for many other goals and many of such goals are behavioral in nature. Even this has been described by some studies (Jaiswal and Naela, 2012) that they propose to substitute the CAPM from the behavioral finance perspective. Shefrin and Statman (2000) was indeed a breakthrough in the field of behavioral finance as it put question mark on the sanctity of some of the much acclaimed theories in the conventional finance like Modern Portfolio Theory, Arbitrage Pricing Theory besides CAPM. There are many studies which have found strong evidences in support of the behavioral finance theory like Olsen (1998), Froot, Scharfstein, and Stein (1992), Hong and Stein (1999), Lin and Lee (2004), Mukherjee (2007), Shollapur and Kuchanur (2008), and Krishnan and Beena (2009).

The fourth part of the review of literature deals with the behavioral biases and other irrational behavioral patterns for Investment buying behavior which has been studied earlier. Review of literature in this part can further be divided into three themes. The first theme covers studies done for the Investment buying behavior exclusively (Kathuria and Singhania, 2012; Praba, 2011; Lloibl and Hira, 2011; Mittal and Vyas, 2011; Verma, 2008). The second theme covers studies done for behavioral biases along with Investment behavior for some demographic variable(s) mainly gender and occupation. The main studies done under this theme are Jaiswal and Naela (2012), Mittal (2010), and Barber and Odean (2001). The third theme covers the studies done for behavioral biases in investment decision making and their explanation given by behavioral finance. The main studies are Jahanzeb and Muneer (2012), Charlas and Lawrence (2012), Bhandari and Deaves (2006), Barber and Odean (2000), Dungore (2011), Mittal and Vyas (2009), Kahneman (2003), Hens and Vlcek, (2011), and Chandra and Sharma (2010).

Having gone through the review of literature, it was observed that there is dearth of studies of behavior biases in investment buying behavior in Indian context. The second gap was identified for studies on investment buying behavior for behavioral biased but not on the combined categories of gender and occupation. India and people in India are having transition in terms of more disposable income and having both earning partners in the

families (Balakrishnan, 2014). This changed framework of the Indian societies motivated the author to do the study on the combined categories of gender and occupation. This was expected to bring new insight into the investment buying behavior by people. On the basis of gaps identified in the review of literature following hypotheses have been framed for further analysis.

*Hypothesis 1: People do not have behavioral biases for Investment decision making.*

*Hypotheses 2: On the basis of combined categories of gender and occupation people do not differ on their behavioral biases for investment decision making.*

## DATA AND METHODOLOGY

A convenient sample of 300 respondents (Investors) from Jaipur, Rajasthan, India has been used for this study. The study was carried out during April-June 2013. The sample frame has been defined as any householder who pays taxes and invests in the stock market.

**Table 1. Categories made up of gender and occupation**

Categories	Number	%
Male_Service	87	29.0%
Male_Business	111	37.0%
Female_Service	76	25.3%
Female_Business	26	8.7%
<b>Total</b>	<b>300</b>	<b>100%</b>

To collect the data a questionnaire has been used. Mittal (2010) has done his study for behavioral biases. Mittal (2010) did his study in Indore (Madhya Pradesh, India) and for the purpose of study on the different behavior biases he used the occupation as the category. The duration of the study was year 2006. This present study is done on the Investors of Jaipur (Rajasthan India) during April-June 2013. Moreover the categories used for the study of difference in behavioral biases in this study are gender, occupation and a combination of both. The questionnaire used in the study have taken inputs from the Mittal (2010) and have been suitably modifies to serve the purpose for this study. The data analysis in the study has been done in four stages. The first stage deals with finding whether the behavioral biases undertaken for the study is present in the sample data or not. The second stage is testing

done for four categories made up of the combination of gender and occupation variables. Four categories have been made - Male\_Service, Male\_Business, Female\_Service and Female\_Business (Table 1). The second stage is done only when the bias is present in the sample data. In second stage it has been tested whether the bias concerned differs with respect to the four categories of the combination of gender and occupation. In the third and fourth stage, the biases have been tested for gender and occupation separately, whether they differ for the bias or not. The sample data has highest number of respondents belonging to Male\_Business category (37%) and least number goes to Female\_Business (8.7%). This distribution among category can be justified in the sense that business people have surplus cash which is a fit situation for the Investments purpose. Finding out of female who invests that too a business women in India is still a relatively rarity therefore having 8.7% respondent from the Female-Business category is justified. The descriptives have been reported in Table 2. In terms of the age maximum number of the respondents belongs to 26-35 years bracket and lowest number of the respondent belongs to 46-55 age brackets. The distribution of respondents for income is maximum of 50.33 % for the middle income group of 5-10 lakh per annum. Smallest numbers of respondents are for less than 5 lakh income groups (37.33 %) and for 10-15 Lakh income group (12.33%). This distribution seems to be justified as middle income group happens to be most available group as compared to higher or lower income group for the investments. In education related data, it has been found that among respondents maximum number of respondents is Graduate (49.33%).

**Table 2. Descriptives**

Variable		Male_ Service	Male_ Business	Female_ Service	Female_ Business	Total
Age	0-25	10	16	18	8	52
	26-35	61	60	47	16	184
	36-45	12	30	10	2	54
	46-55	4	5	1	0	10
Income	Less than 5 Lakh	34	41	31	6	112
	5-10 Lakh	46	55	35	15	151
	10-15 Lakh	7	15	10	5	37
Education	Less than Graduate	3	16	3	1	23
	Graduate	43	58	32	15	148
	Post Graduate	38	35	38	10	121
	PhD	3	2	3	0	8
	Professional	1	4	0	4	9

Main analytical tools used in this study are One-way ANOVA and Chi-Square tests to establish the association between variables.

## RESULTS AND ANALYSIS

In the first stage, the biases undertaken for the study have been tested for their existence. The analysis has been done for the biases in the sequence starting with the overconfidence bias.

### Overconfidence

The overconfidence has been studied with the help of "better than average" measure (Mittal, 2010). For this the respondents were asked to rate their driving skills over others on the scale of 10. The above average score (score more than 5) means, the respondents are overconfident. The t-test results have been reported in Table 3, which is coming out to be significant. It implies that the score on driving skills is significantly higher than "5" or people have overconfidence bias.

The means are not different among categories made up of combination of Occupation and Gender. The result is further corroborated by the ANOVA test where F test is not significant with the null hypothesis of no difference of means among the combined categories of occupation and gender (Table 3). Besides this, the analysis was also

done on the basis of gender and occupation on the behavioral biases of "overconfidence" separately. The results are also coming out to be insignificant for both gender as well as occupation taken up separately. This implies that the investment buying behavior bias of "overconfidence" is statistically not different for both categories of gender (for male and female) and the same results have been found for occupation (for service and business) and for the categories of the combination of the gender and occupation.

**Table 3. Overconfidence**

<b>For Overconfidence</b>	<b>Mean</b>	<b>Std. Deviation</b>
Male_Service	7.7701	1.00812
Male_Business	7.7838	1.07370
Female_Service	7.8816	1.07042
Female_Business	7.7308	1.04145
<b>Total</b>	<b>7.8000</b>	<b>1.04737</b>
<b>t-test for overconfidence</b>		
<b>Test Score=5</b>	<b>t-value</b>	<b>Sig. (p-value)</b>
Driving skills	46.304	.0000
<b>One way ANOVA results</b>		
<b>Categories</b>	<b>F</b>	<b>Sig.</b>
Categories on the combination of gender and occupation	.222	.881
Gender	.262	.609
Occupation	.385	.681

### Self-attribution bias

This bias is related with the tendency to put the blame on luck for failures. To test this bias a hypothetical situation of failure was created and respondent asked to account this failure on bad luck or mistake on their part. Table 4 reports the result in descriptive form. This shows that the respondents have put the blame on mistake more than the bad luck which reflects that there seem not to be any self-attribution effect found in the study. Chi-square test has been used to establish this fact. The result rejects the null hypothesis of equality rating to both the categories of bad luck and mistake. By looking at the data it is found that the 224 (75%) respondents have attributed the cause to "mistake" and only 76 (25%) respondent have gone for "bad-luck." This implies that respondents have exhibited no self-attribution bias because despite chi-square being significant, respondents have gone for mistake as the cause not the bad-luck. Therefore no further analysis has been done for different behavior on the basis of occupation or gender categories.

**Table 4. Self-attribution bias**

<b>Self-attribution bias (cross tabulation)</b>			
	Mistake	Bad Luck	Total
Male_Service	63	24	87
Male_Business	84	27	111
Female_Service	59	17	76
Female_Business	18	8	26
<b>Total</b>	224	76	300

  

<b>Chi-square test</b>			
<b>Pearson Chi-square</b>	<b>Value</b>	<b>Dof</b>	<b>Significance</b>
For presence of self-attribution bias	73.01	1	.000

### Overreaction

The overreactions bias has been studied with the help of an experiment based question in which respondents were asked the question to rate the hypothetical experiment of tossing of the coin for several number of times. Two set of results were shown. First set of results were showing a systematic pattern of the results (HHHTTT) and another set of output was given as random outcome (HTHTHT) of the experiment of tossing of the coin . In normal case the probability of selection of both the choices should be same. If the respondents go for selecting the random outcome more than the systematic outcome, this proves that Overreaction is present (as discussed by Mittal (2010)). The test results for overreaction effect is significant (Table 5). The chi-square results for the equality of both the choices are rejected which implies that the presence of the overreaction bias is there. In other Chi-square test it has been explored whether the Overreaction bias is different in different categories made up of combination of gender and occupation, occupation separately and gender separately or not. All the other chi-square tests are coming out to be insignificant. It means that there is no difference in the Overreaction biases on the basis of occupation, gender and the combination of the both.

**Table 5. Overreaction**

<b>Overreaction (cross tabulation)</b>			
	HHHTTT	HTHTHT	Total
Male_Service	20	67	87
Male_Business	32	79	111
Female_Service	18	58	76
Female_Business	9	17	26
<b>Total</b>	79	221	300

  

<b>Chi-square test</b>			
<b>Pearson Chi-square</b>	<b>Value</b>	<b>Dof</b>	<b>Significance</b>
For presence of Overreaction effect	67.213	1	.000
On Combination of Occupation and Gender	2.052	3	.562
Gender	.002	1	.969
Occupation	.008	2	.996

### **Framing effect**

To test the framing effect same situation was given in two different environments presented one after another. The first environment is of profit and another environment is of loss and in both the situations, same output was given and respondents were asked to express their choices. It was recorded that how many have changed their position in negative sense. Movement of choices from sure to risky alternative from profit to loss situation, is the cases of framing effect. The chi-square test for framing effect has been significant at 5% level of significance (Table 6). Having tested for the framing effect, the difference in behavior has been tested for different categories of occupation and gender. The results of chi-square test for all the categorical variables, four combinations of gender and occupation, gender and occupation tested separately have given non-significant results. This implies that that the framing effect does not have difference due to gender, occupation and with respect to the combination of the two.

**Table 6. Framing effect**

<b>Framing Effect (Cross Tabulation)</b>				
	Shift from Sure to risky alternative	Unchanged	Shift from risky to Sure alternative	Total
Male_Service	20	61	6	87
Male_Business	22	75	14	111
Female_Service	14	54	8	76
Female_Business	5	18	3	26
<b>Total</b>	61	208	31	300
<b>Chi-square test</b>				
Pearson Chi-square	Value	Dof	Significance	
For presence of framing effect	1238.145	2	.000	
On Combination of Occupation and Gender	2.150	3	.905	
Gender	.287	2	.866	
Occupation	3.413	4	.491	

### **Purchase price as reference point**

To test this reference point bias a situation is provided to the respondents of two set of people. First set of people bought the share at a higher rate and another set of people who bought the share at the lower rate. The current stock price is higher for those who bought cheap and the current stock price is lower for those who bought dear. A question was asked that who would be more upset. The people who would bought cheap or the people who bought dear. Answer for the latter implies the presence of the bias (Purchase price as reference point). Chi-square test result for the presence of the reference point bias is significant (Table 7). Besides that the difference in the behavior of respondent for different category of all the three set of categorical variable taken in the study are insignificant. It implies that the reference point bias, though present among the respondents, does not have significant difference among categories of combinations of gender and occupation and gender and occupation when taken separately as well.

**Table 7. Reference point bias**

<b>Purchase price as reference point</b>			
	who bought at 100	who bought 200	Total
Male_Service	14	73	87
Male_Business	23	88	111
Female_Service	12	64	76
Female_Business	2	24	26
<b>Total</b>	51	249	300

  

<b>Chi-square test</b>			
<b>Pearson Chi-square</b>	<b>Value</b>	<b>Dof</b>	<b>Significance</b>
For presence of Reference Point effect	130.68	1	.000
On Combination of Occupation and Gender	2.815	3	.421
Gender	1.174	1	.278
Occupation	1.195	2	.550

**Regret/loss avoidance**

Regret/Loss avoidance is a situation in which people sell those share which are selling at profit and holding those shares which are selling at losses. To test this, a hypothetical situation was given to the respondents where it has been asked that they have two set of shares. One is selling in profit and other is selling at loss. The respondents were asked for their choice for preference for selling immediately. Chi-square test for the presence of Loss/Risk aversion is significant (Table 8). The difference in Risk Aversion bias among the categories of the three categorical variables has also been tested using chi-square test. Among the three categorical variables, the chi-square test came to be marginally significant at five percent level for occupation. It implies that the Risk aversion bias is different for business and service class of respondents.

**Table 8. Regret/loss avoidance bias**

<b>Regret/loss avoidance</b>			
	buy 100 sell 150	buy 200 sell 150	Total
Male_Service	70	17	87
Male_Business	98	13	111
Female_Service	62	14	76
Female_Business	24	2	26
<b>Total</b>	254	46	300

  

<b>Chi-square test</b>			
Pearson Chi-square	Value	Dof	Significance
For presence of Regret/Loss Aversion effect	144.213	1	.000
On Combination of Occupation and Gender	4.035	3	.258
Gender	.015	1	.903
Occupation	4.948	2	.084

## DISCUSSION

The results of this study are in accordance with the findings of the previous research work in the area. Discussion of the results of this study and the results of the previous research work has been done in four streams. The first stream is on the differences in the Investment buying behavior viz-a-viz gender and occupation of the Investors. In this paper, no significant difference has been identified on the basis of gender. Same results have been reported for the four categories made by the combination of gender and occupation. Only occupation wise in one, out of five cases significant difference have been found. Kathuria and Singhania (2012) proposed in their work that no significant difference have been found between male and female in the study done over the investment buying behavior among bank employees. Praba (2011) and Loibl and Hira (2011), as the contradiction, found significant difference in the investment behavior between male and female. It can be discussed that the study done in this paper has different set of sample and on the basis of behavioral biases undertaken for the study (the six biases), no significant difference have been identified for male and female.

The second stream of discussion is for the results for the existence of behavioral biases in the Investment decision making. In this study except self-attribution bias all the biases undertaken for the study were present. Overconfidence behavioral bias has been found significant by Bhandari and Deaves (2006), Barber and Odean (2000), Mittal and Vyas (2009), and Mittal (2010) in their respective studies. These are in accordance with the

finding of this paper. Self-attribution bias have been discussed by Mittal and Vyas (2009) and Mittal (2010). Mittal and Vyas (2009) have found that this is insignificant in their study whereas Mittal (2010) have reported significant self-attribution bias. This paper has reported insignificant self-attribution bias in accordance with the finding of Mittal and Vyas (2009). The overreaction bias has been reported significant by Mittal and Vyas (2009) and Mittal (2010). This paper has also reported significant overreaction bias in accordance with both the studies. Dungore (2011) and Mittal and Vyas (2009) have reported insignificant framing effect. Mittal (2010) has also reported significant framing effect in his study. This paper has reported significant framing effect which is in the contradiction of some of the previous works on this bias. Purchase price as reference point bias has been found significant by Mittal (2010) and Charlas and Lawrence (2012) in their study. The same result has also been reported by this paper. Regret/loss avoidance bias have been reported significant by Dungore (2011), Mittal and Vyas (2009) and Mittal (2010) and similar finding has been reported by this paper.

The third stream of the discussion is on the differences on the behavioral biases due to gender or occupation. In this paper only Loss/Regret avoidance bias has been found significantly different for the occupation. Barber and Odean (2001) have found significant difference on the overconfidence bias on the gender. Jaiswal and Naela (2012) have reported overconfidence and overreaction biases significantly different on gender. Mittal (2010) reported insignificant (at 5% level of significance) differences on occupation for overconfidence, self-attribution bias, overreaction, framing effect and purchase point as the reference point bias. Mittal (2010) has also reported significant differences for occupation on Loss/Regret avoidance bias similar to this study.

The fourth stream of the discussion is on the evidences of behavioral biases in investment decision making in other countries. The evidences from US markets have been reported by Barber and Odean (2000), Olsen (1998), Avramov (2004). The same evidences from Canada have been reported by Bhandari and Deaves (2006). Gill and Prowse (2012) have shared the evidences from United Kingdom markets.

## **CONCLUSION**

In this paper, six behavioral biases have been tested. Out of six except self-attribution bias, all the five biases were present while making investment decision. The five biases were tested for differences among gender and occupation. The testing was done for gender, occupation and for the combination of the gender and occupation. Out of five biases, only Loss

Aversion bias has been found to be significantly different among categories of occupation. For all the other biases no difference has been reported in the study for gender, occupation and for the combination of gender and occupation.

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