

DOES FINANCIAL LITERACY INFLUENCE INVESTOR BEHAVIOR IN THE SECONDARY EQUITY MARKET?

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Abstract : The financial literacy level of the investor plays an important role in determining and shaping his/her behavior. This study examines the financial literacy level of the secondary equity investors residing in Chennai using a sample size of 436 respondents. The financial literacy level was categorised as low, average and high. The financial literacy level of the investors was analysed against the demographic and financial variables using ANOVA. Using cross tabulation, the majority of the highly financially literate investors in each category were identified. Eight behavioral biases, namely, Mental Accounting, Anchoring, Gambler's fallacy, Availability, Loss Aversion, Regret Aversion, Representativeness and Overconfidence were measured and using the ANOVA test, the category of investors more prone and less prone to exhibit the behavioral biases were identified. Finally, the highly financially literate investors were analysed with respect to the demographics. Financial advisors could use the results of this study to identify the literacy level of their clients (the investors) and advice them according to the biases they are likely to exhibit.

Index Terms - Financial Literacy, Behavioral Finance, Behavioral Biases, Mental Accounting, Anchoring, Gambler's fallacy, Availability, Loss Aversion, Regret Aversion, Representativeness, Overconfidence, Secondary Equity Market, Equity Investors' Behavior

I. INTRODUCTION

The Indian stock market is characterized by several anomalies recorded in literature by several researchers. Some of these random patterns include: Short term momentum, where the stock prices continue to follow the same direction resulting in repetitive moves, thereby leading to momentum in the market; Long term reversal, where the stock prices reverse their direction in the long run; Weekend effect, where the stock returns are mostly negative on Mondays because of the negative returns on Fridays; Value premium anomaly, where the value stocks (stocks trading at prices lower than the fundamentals and hence considered undervalued) generating more returns than the growth stocks (stocks of successful companies whose prices are usually overvalued). These stock market anomalies have led to certain stocks being undervalued or overvalued.

Classical financial theories failed to explain these anomalies and hence Behavioral Finance adopted psychological principles to explain the emotions which led to the anomalous behavior in the stock market. Behavioral biases which stem out of the heuristics employed by investors cause the irrationality in the market.

Financial literacy which includes awareness about the biases exhibited would help to reduce the behavioral biases and lead to a more healthy and rational stock market environment. This study analyses the financial literacy of secondary equity investors residing in Chennai and makes an attempt to understand the concept of financial literacy in terms of the demographics and the financial variables and the behavioral biases exhibited. The profile of investors with high financial literacy is also studied in detail.

II. LITERATURE REVIEW

Lusardi and Mitchell (2014) defined financial literacy as, "peoples' ability to process economic information and make informed decisions about financial planning, wealth accumulation, debt, and pensions" (p.6).

Hastings et al. (2013) explained how financial literacy has been used to cover several concepts as "financial literacy has taken on a variety of meanings; it has been used to refer to knowledge of financial products (e.g., the definition of a stock and a bond, the difference between a fixed and an adjustable rate mortgage), knowledge of financial concepts (inflation, compounding, diversification, credit scores), mathematical skills or numeracy necessary for effective financial decision making, and engagement in certain activities such as financial planning." (p.349).

Altman (2012) defined financial literacy as "having the knowledge, skills and confidence to make responsible financial decisions." He argued that financial literacy would not prevent investors from exhibiting biases as they are hard-wired in the brain. He also argued that poor financial decisions were a result of the financial environment characterised by poor education, asymmetric and incomplete information and false information. Hence the financial decisions could be improved by enhancing the financial environment by making quality information more accessible and by providing good financial education. Guiso and Jappelli (2008) documented that financial literacy was one of the major reasons for poor portfolio diversification. Bucher-Koenen and Ziegelmeyer (2011) showed that households with low financial literacy were less likely to invest in the stock market. Hence they do not reap the benefits of the equity premium. Households with high financial literacy react in a better way to financial crisis compared to the

households with low financial literacy. Gaudecker (2015) showed that financial literacy played a major role with respect to household investments. Households which depend on expert financial advice or those which have high financial literacy levels achieve better returns on investment in comparison to the households which make their own investment decisions with below average financial literacy levels.

Kumar and Kasilingam (2017) found that the major determinants of financial literacy were monthly income, current grade, community, religion, age and gender. Female investors were found to have lower financial literacy compared to the male investors, older investors above the age of 35 years had higher financial literacy, higher income group investors with more than Rs.50,000 monthly had higher financial literacy and investors with higher investment experience of more than 6 years had higher financial literacy. Graham et al. (2009) showed that the competent investors, who perceive themselves as knowledgeable, trade more frequently in the stock market and also hold internationally diversified portfolios. They also documented that the male investors and investors with better education and larger portfolios tend to perceive themselves as more knowledgeable and hence more competent in comparison with the female investors and investors with lesser education and smaller portfolios.

Beal and Delpachitra (2003) surveyed the students in the Australian university and found that their knowledge about insurance and their decision making skills were limited. Financial literacy was found to improve with income and work experience. Those with more experience in financial management were also found to be more risk tolerant. The research concluded that the students had poor financial literacy. Van Rooij et al. (2011) documented that individuals with low financial literacy were less likely to make stock market investments. Stock market investments contribute to a major share in the welfare of the country. Hence the low financially literate individuals need to given appropriate financial education and also encouraged to invest in the stock market. The study also showed that financial literacy varied with gender, age and education. For important financial decisions, the individuals referred to professional financial advisors.

Josef and Vera (2017) tested if the sensitivity to behavioral biases like status quo effect, cognitive dissonance, risk aversion, illusion of control, availability and overconfidence is influenced by financial literacy levels. The results showed that the cognitive dissonance bias has a negative relationship with the financial literacy level. This implied that the propensity to exhibit the bias is lower for those with higher financial literacy levels. However, the availability bias and overconfidence bias have a positive relationship with the financial literacy level. This implied that the propensity to exhibit the bias is higher for those with higher financial literacy levels. The biases: risk aversion, illusion of control and status quo were found to be independent of the financial literacy level.

West (2012) suggested revision of financial literacy programs by including educative programs which would create awareness about the behavioral biases and limitations that humans were bound to exhibit. The financial products also needed to be regulated and made less complex so that they were not ambiguous for the consumers.

III. OBJECTIVE OF THE STUDY

The main focus of this study is to determine if the financial literacy of the investor played an important role with respect to the behavioral biases namely, mental accounting, anchoring, gambler's fallacy, availability, loss aversion, regret aversion, representativeness and overconfidence exhibited by the secondary equity investors residing in Chennai.

IV. SAMPLE AND METHODOLOGY

The population for the study are the secondary equity investors residing in Chennai. The samples selected for the study are the members of the Tamil Nadu Investors Association (TIA) and the clients of a popular financial services company, Integrated. The data was collected via the questionnaire survey method. TIA was selected as it was the only formal body which allowed access to collect data from its members. Integrated was selected as it was the only company which allowed access to collect data from its clients. The total valid questionnaires collected were 436 and hence the total sample size was 436.

V. RESULTS AND DISCUSSION

The financial literacy was measured by asking the respondents to rate their equity investment knowledge by choosing one the options: (1) very little knowledge (2) some investment knowledge (3) good knowledge (4) very good knowledge (professional investor) and (5) business investor. Respondents with responses as "very little knowledge" were labelled as low financial literacy level investors contributing to 24.8% of the total sample. Respondents with responses as "some investment knowledge" were labelled as average financial literacy level investors contributing to 40.6% of the total sample. The rest of the respondents who belonged to the higher end were labelled as high financial literacy level investors. The coding for financial literacy was done by dividing the responses as low financial literacy, average financial literacy and high financial literacy. The frequency distribution among the various literacy levels are given in Table 5.1.

Table 5.1: Frequency distribution among the financial literacy levels

Financial Literacy	Frequency	Percent	Valid Percent	Cumulative Percent
Low Financial Literacy Level	108	24.8	24.8	24.8
Average Financial Literacy Level	177	40.6	40.6	65.4
High Financial Literacy Level	151	34.6	34.6	100.0
Total	436	100.0	100.0	

5.1 ANOVA results of Financial literacy vs Demographic/Financial variables

The demographic and financial variables of the 436 respondents were tested against the financial literacy using the Independent sample t – test and the ANOVA test. The results are tabulated in the Table 5.2 given below.

Table 5.2: Test Results of Financial Literacy versus Demographic/Financial Variable

	Demographic/Financial Variable	Count	Mean	t/F	p value
Gender	Male	322	2.14	1.892	0.0295
	Female	114	1.98		
Age	Young Investors	168	1.99	4.967	0.007
	Middle Aged Investors	137	2.26		
	Senior Investors	131	2.06		
Marital Status	Single	120	1.88	4.922	0.002
	Married	292	2.18		
	Widow/Widower	18	2.17		
	Divorced	6	2.33		
Education	SSLC/ Plus 2	53	1.96	7.225	0.000
	Bachelor's Degree/Diploma	186	1.93		
	Master's Degree	119	2.21		
	Professional Degree	72	2.43		
	Others	6	2.33		
Occupation	Business	88	2.32	4.655	0.000
	Service	90	2.21		
	Professional	52	2.15		
	Homemaker	17	2		
	Salaried	100	1.83		
	Retired	89	2.06		
Annual Income	Low Income Group	155	1.79	36.899	0.000
	Middle Income Group	167	2.08		
	High Income Group	114	2.54		
Experience in the Stock Market	5 years or less	173	1.77	25.938	0.000
	5.01 - 10 years	120	2.08		
	10.01 - 15 years	65	2.49		
	15.01 - 20 years	30	2.17		
	Above 20 years	48	2.75		
Risk Tolerance Level	Level 1	70	1.77	7.239	0.000
	Level 2	71	1.96		
	Level 3	169	2.12		
	Level 4	66	2.36		
	Level 5	60	2.3		
Actual Return	0% and below	56	1.84	8.718	0.000
	0.01 - 5%	118	1.84		
	5.01 - 10 %	79	2.09		
	10.01 - 15%	70	2.21		
	15.01 - 20%	43	2.3		

	20.01 - 25%	30	2.37		
	Above 25%	40	2.62		

The gender was tested using the Independent sample t – test and found that the means of the financial literacy of the investors divided in terms of the gender were different. The t value 1.892 was significant at 0.0295 and the mean of male investors was higher than the mean of the female investors indicating that the male investors were more likely to have higher financial literacy compared to the female investors.

The age was tested using the ANOVA test and found that the means of the financial literacy of the investors divided on the basis of the age were different. The F value 4.967 was significant at 0.007 and the mean of the Middle aged investors was higher than the mean of the other age groups indicating that the Middle aged investors were more likely to have higher financial literacy compared to the other age groups.

The marital status was tested using the ANOVA test and found that the means of the financial literacy of the investors divided on the basis of the marital status were different. The F value 4.922 was significant at 0.002 and the mean of the divorced investors was higher than the mean of the other marital status groups indicating that the divorced investors were more likely to have higher financial literacy compared to the other marital status groups.

The education was tested using the ANOVA test and found that the means of the financial literacy of the investors divided on the basis of the education were different. The F value 7.225 was significant at 0.000 and the mean of the investors with professional degree was higher than the mean of the other educational groups indicating that the professional investors were more likely to have higher financial literacy compared to the other educational groups.

The occupation was tested using the ANOVA test and found that the means of the financial literacy of the investors divided on the basis of the occupation were different. The F value 4.655 was significant at 0.000 and the mean of the business investors was higher than the mean of the other occupational groups indicating that the business investors were more likely to have higher financial literacy compared to the other occupational groups.

The annual income was tested using the ANOVA test and found that the means of the financial literacy of the investors divided on the basis of the annual income were different. The F value 36.899 was significant at 0.000 and the mean of the high income investors was higher than the mean of the other income groups indicating that the high income investors were more likely to have higher financial literacy compared to the other income groups.

The experience in the stock market was tested using the ANOVA test and found that the means of the financial literacy of the investors divided on the basis of the stock market experience were different. The F value 25.938 was significant at 0.000 and the mean of the investors with more than 20 years of experience was higher than the mean of the other experience groups indicating that the investors with the highest stock market experience were more likely to have higher financial literacy compared to the other experience groups.

The risk tolerance level was tested using the ANOVA test and found that the means of the financial literacy of the investors divided on the basis of the risk tolerance level were different. The F value 7.239 was significant at 0.000 and the mean of the investors with level 4 risk tolerance was higher than the mean of the other risk tolerance groups indicating that the high risk tolerance investors were more likely to have higher financial literacy compared to the other risk tolerance groups.

The actual return was tested using the ANOVA test and found that the means of the financial literacy of the investors divided on the basis of the actual return were different. The F value 8.718 was significant at 0.000 and the mean of the investors with actual return of above 25% was higher than the mean of the other actual return groups indicating that the investors who earn higher actual return were more likely to have higher financial literacy compared to the other actual return groups.

5.2 Analysis of Cross Tabulation

Cross tabulation between financial literacy and gender shown in Table 5.3 showed that the male respondents have the highest financial literacy level with nearly 80% of the investors with high financial literacy level were male.

Table 5.3: Cross tabulation of Financial literacy * Gender

Financial Literacy * Gender of the respondent Cross tabulation		Gender of the respondent		Total
		Male	Female	
Financial Literacy	Low Financial Literacy Level	76	32	108
	Average Financial Literacy Level	125	52	177
	High Financial Literacy Level	121	30	151
Total		322	114	436

Cross tabulation between financial literacy and age shown in Table 5.4 showed that the middle aged respondents have the highest financial literacy level with nearly 42% of the investors with high financial literacy level were in the middle age group.

Table 5.4: Cross tabulation of Financial literacy * Age

Financial Literacy * Age Categories Cross tabulation		Age Categories			Total
		Young Investors	Middle Aged Investors	Senior Investors	
Financial Literacy	Low Financial Literacy Level	47	28	33	108
	Average Financial Literacy Level	75	45	57	177
	High Financial Literacy Level	46	64	41	151
Total		168	137	131	436

Cross tabulation between financial literacy and annual income shown in Table 5.5 showed that the high income respondents have the highest financial literacy level with nearly 45% of the investors with high financial literacy level were in the high income group.

Table 5.5: Cross tabulation of Financial literacy * Annual Income

Financial Literacy * Annual Income Cross tabulation		Annual Income			Total
		Low Income Group	Middle Income Group	High Income Group	
Financial Literacy	Low Financial Literacy Level	64	38	6	108
	Average Financial Literacy Level	59	78	40	177
	High Financial Literacy Level	32	51	68	151
Total		155	167	114	436

5.3 ANOVA results of Behavioral Biases vs Financial Literacy

The eight behavioral biases namely Mental Accounting, Anchoring, Gambler's fallacy, Availability, Loss Aversion, Regret Aversion, Representativeness and Overconfidence measured on a Likert scale were normalised and tested against the financial literacy using ANOVA. The results shown in Table 5.6 showed that all the tests were significant except for Regret Aversion and Representativeness. The means of the financial literacy were different when the investors were divided based on the behavioral biases exhibited except for Regret Aversion and Representativeness.

Table 5.6: ANOVA results of Behavioral Biases vs Financial Literacy

S.No	Bias	F value	p-value
1	Mental Accounting	4.933	0.008
2	Anchoring	3.144	0.044
3	Gambler's fallacy	4.339	0.014
4	Availability	3.329	0.037
5	Loss Aversion	4.902	0.008
6	Regret Aversion	1.547	0.214
7	Representativeness	1.540	0.216
8	Overconfidence	8.036	0.000

5.3.1 Mental Accounting bias

The respondents in the low financial literacy level had the highest mean of 16.34 and the respondents in the high financial literacy level had the lowest mean of 14.96 (based on the descriptives in Table 5.7).

Table 5.7: Descriptives of Mental Accounting bias

Descriptives	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Low Financial Literacy Level	108	16.3433	3.24196	.31196	15.7249	16.9617
Average Financial Literacy Level	177	15.3923	3.49284	.26254	14.8742	15.9105
High Financial Literacy Level	151	14.9680	3.70329	.30137	14.3726	15.5635
Total	436	15.4810	3.53972	.16952	15.1478	15.8141

5.3.2 Anchoring bias

The respondents in the average financial literacy level had the highest mean of 17.19 and the respondents in the low financial literacy level had the lowest mean of 16.24 (based on the descriptives in Table 5.8).

Table 5.8: Descriptives of Anchoring bias

Descriptives	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Low Financial Literacy Level	108	16.2467	3.72621	.35855	15.5359	16.9575
Average Financial Literacy Level	177	17.1957	3.39965	.25553	16.6914	17.7000
High Financial Literacy Level	151	16.2850	4.24537	.34548	15.6024	16.9677
Total	436	16.6452	3.80974	.18245	16.2866	17.0038

5.3.3 Gambler's Fallacy bias

The respondents in the low financial literacy level had the lowest mean of 15.14 and the respondents in the high financial literacy level had the highest mean of 16.08 (based on the descriptives in Table 5.9). Based on the Tukey Post hoc test in Table 5.10, the mean of the gambler's fallacy bias in the low financial literacy level was significantly less than the means of the gambler's fallacy biases in all other literacy levels. Thus, the respondents with low financial literacy were less likely to exhibit the gambler's fallacy bias when compared to the other literacy groups.

Table 5.9: Descriptives of Gambler's Fallacy bias

Descriptives	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Low Financial Literacy Level	108	15.1438	2.89655	.27872	14.5913	15.6963
Average Financial Literacy Level	177	15.9824	2.58797	.19452	15.5985	16.3663
High Financial Literacy Level	151	16.0854	2.76790	.22525	15.6403	16.5304
Total	436	15.8103	2.75027	.13171	15.5514	16.0692

Table 5.10: Gambler's Fallacy Tukey Post hoc test

(I) Financial Literacy	(J) Financial Literacy	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Low Financial Literacy Level	Average Financial Literacy Level	-.83857*	.33327	.033	-1.6223	-.0548
	High Financial Literacy Level	-.94155*	.34397	.018	-1.7505	-.1326

5.3.4 Availability bias

The respondents in the average financial literacy level had the highest mean of 15.61 and the respondents in the high financial literacy level had the lowest mean of 14.77 (based on the descriptives in Table 5.11).

Table 5.11: Descriptives of Availability bias

Descriptives	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Low Financial Literacy Level	108	15.1909	2.89581	.27865	14.6385	15.7432
Average Financial Literacy Level	177	15.6062	2.74655	.20644	15.1988	16.0137
High Financial Literacy Level	150	14.7710	3.12636	.25527	14.2666	15.2754
Total	435	15.2151	2.93478	.14071	14.9385	15.4916

5.3.5 Loss Aversion bias

The respondents in the average financial literacy level had the highest mean of 17.11 and the respondents in the high financial literacy level had the lowest mean of 15.86 (based on the descriptives in Table 5.12).

Table 5.12: Descriptives of Loss Aversion bias

Descriptives	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Low Financial Literacy Level	108	16.2425	3.06622	.29505	15.6576	16.8274
Average Financial Literacy Level	177	17.1111	3.66463	.27545	16.5675	17.6548
High Financial Literacy Level	151	15.8629	4.12081	.33535	15.2003	16.5255
Total	436	16.4637	3.72957	.17861	16.1126	16.8147

5.3.6 Overconfidence bias

The respondents in the low financial literacy level had the lowest mean of 15.81 and the respondents in the high financial literacy level had the highest mean of 17.77 (based on the descriptives in Table 5.13). Based on the Tukey Post hoc test in Table 5.14, the mean of the overconfidence bias in the low financial literacy level was significantly less than the means of the overconfidence biases in all other literacy levels. Thus, the respondents with low financial literacy were less likely to exhibit the overconfidence bias when compared to the other literacy groups.

Table 5.13: Descriptives of Overconfidence bias

Descriptives	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Low Financial Literacy Level	108	15.8154	3.57589	.34409	15.1332	16.4975
Average Financial Literacy Level	177	17.0447	3.69841	.27799	16.4961	17.5934
High Financial Literacy Level	151	17.7760	4.29430	.34947	17.0854	18.4665
Total	436	16.9935	3.94926	.18914	16.6217	17.3652

Table 5.14: Overconfidence – Tukey Post hoc test

(I) Financial Literacy	(J) Financial Literacy	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Low Financial Literacy Level	Average Financial Literacy Level	-1.22938*	.47460	.027	-2.3455	-.1132
	High Financial Literacy Level	-1.96059*	.48984	.000	-3.1126	-.8086

5.4 Descriptives of High Financial Literacy Level Respondents

The respondents with high financial literacy level were studied in depth in order to understand their characteristics. Table 5.15 showed the mean and standard deviation of the demographics and financials of the respondents with high financial literacy level.

Table 5.15: Descriptives of High Financial Literacy Level Respondents

Descriptive Statistics	Mean	Std. Deviation
Gender of the respondent	1.20	.400
Age Categories	1.97	.761
Highest education completed	2.83	1.003
Occupation of the respondent	3.10	1.882
Annual Income	2.24	.781
Length of experience in the stock market	2.90	1.432
Risk level of the respondent	3.24	1.220

5.4.1 Influence of Gender on Behavioral Biases of High Financial Literacy Level Investors

Using Independent sample t-test, the influence of gender on the behavioral biases of the high financial literacy level respondents were analysed. The results in Table 5.16 showed that among all the biases, anchoring and overconfidence were significant. The female respondents with high financial literacy level had the highest mean with respect to anchoring bias and hence the female investors were more likely to exhibit anchoring bias. The male respondents with high financial literacy level had the highest mean with respect to overconfidence bias and hence the male investors were more likely to exhibit overconfidence bias.

Table 5.16: Influence of Gender on Behavioral Biases of High Financial Literacy Level Investors

S.No	Bias	t value	p-value for one tail test	Highest Mean	Lowest Mean
1	Mental Accounting	-1.610	0.055	Female	Male
2	Anchoring	-1.795	0.0375	Female	Male
3	Gambler's fallacy	-0.631	0.2645	Female	Male
4	Availability	-1.498	0.068	Female	Male
5	Loss Aversion	-1.197	0.1165	Female	Male
6	Regret Aversion	-0.048	0.4805	Female	Male
7	Representativeness	-1.649	0.0505	Female	Male
8	Overconfidence	1.832	0.0345	Male	Female

5.4.2 Influence of Age on Behavioral Biases of High Financial Literacy Level Investors

Using ANOVA, the influence of age on the behavioral biases of the high financial literacy level respondents were analysed. The results in Table 5.17 showed that among all the biases, only mental accounting was significant. The senior respondents with high financial literacy level had the highest mean with respect to mental accounting bias and hence the senior investors were more likely to exhibit mental accounting bias.

Table 5.17: Influence of Age on Behavioral Biases of High Financial Literacy Level Investors

S.No	Bias	F value	p-value	Highest Mean	Lowest Mean
1	Mental Accounting	3.189	0.044	Senior Investors	Middle aged Investors
2	Anchoring	3.016	0.052	Senior Investors	Young Investors
3	Gambler's fallacy	2.054	0.132	Senior Investors	Middle aged Investors
4	Availability	1.558	0.214	Senior Investors	Middle aged Investors
5	Loss Aversion	1.433	0.242	Senior Investors	Middle aged Investors
6	Regret Aversion	2.637	0.075	Senior Investors	Young Investors
7	Representativeness	0.309	0.734	Senior Investors	Middle aged Investors
8	Overconfidence	1.070	0.346	Middle aged Investors	Young Investors

5.4.3 Influence of Annual Income on Behavioral Biases of High Financial Literacy Level Investors

Using ANOVA, the influence of annual income on the behavioral biases of the high financial literacy level respondents were analysed. The results in Table 5.18 showed that among all the biases, mental accounting, loss aversion and overconfidence were significant. The middle income respondents with high financial literacy level had the highest mean with respect to mental accounting bias and hence the middle income investors were more likely to exhibit mental accounting bias. Based on the Tukey Post hoc test in Table 5.19, the mean of the mental accounting bias in the high income group was significantly less than the means of the mental accounting biases in all other income levels. Thus, the respondents with high annual income were less likely to exhibit the mental accounting bias when compared to the other income groups.

The middle income respondents with high financial literacy level had the highest mean with respect to loss aversion bias and hence the middle income investors were more likely to exhibit loss aversion bias. The high income respondents with high financial literacy level had the highest mean with respect to overconfidence bias and hence the high income investors were more likely to exhibit overconfidence bias. Based on the Tukey Post hoc test in Table 5.20, the mean of the overconfidence bias in the high income group was significantly higher than the means of the overconfidence biases in all other income levels. Thus, the respondents with high annual income were more likely to exhibit the overconfidence bias when compared to the other income groups.

Table 5.18: Influence of Annual Income on Behavioral Biases of High Financial Literacy Level Investors

S.No	Bias	F value	p-value	Highest Mean	Lowest Mean
1	Mental Accounting	8.912	0.000	Middle Income Group	High Income Group
2	Anchoring	2.419	0.093	Middle Income Group	High Income Group
3	Gambler's fallacy	0.106	0.899	Middle Income Group	High Income Group
4	Availability	3.032	0.051	Middle Income Group	High Income Group
5	Loss Aversion	3.318	0.039	Middle Income Group	High Income Group
6	Regret Aversion	0.338	0.713	Middle Income Group	Low Income Group
7	Representativeness	0.202	0.817	Middle Income Group	High Income Group
8	Overconfidence	10.846	0.000	High Income Group	Low Income Group

Table 5.19: Mental Accounting – Tukey Post hoc test

(I) Annual Income	(J) Annual Income	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
High Income Group	Low Income Group	-2.17314*	.75506	.013	-3.9608	-.3855
	Middle Income Group	-2.56732*	.65245	.000	-4.1120	-1.0226

Table 5.20: Overconfidence - Tukey Post hoc test

(I) Annual Income	(J) Annual Income	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
High Income Group	Low Income Group	3.79311*	.86552	.000	1.7440	5.8423
	Middle Income Group	2.30907*	.74790	.007	.5384	4.0797

I. MANAGERIAL IMPLICATIONS

It is the duty of the wealth managers and financial advisors to educate their clients, i.e the investors about the mistakes they are likely to make in their investment decisions. Each investor has a different financial literacy level and it is important to guide the investors accordingly. This study would help the financial advisors guide the investors to be cautious of the biases they are likely to exhibit, based on their financial literacy level. As this study finds that investors with different literacy levels are more likely to exhibit certain biases and less likely to exhibit certain biases, financial advisors could advise based on the findings of this study.

II. CONCLUSION

This study has brought to light some important findings about the financial literacy of secondary equity investors and their proneness to exhibit the behavioral biases. High financial literacy was exhibited by the male investors, middle age groups, divorced investors, professional investors, business investors, high income groups, highly experienced investors, highly risk tolerant investors and investors who earn higher actual return. The sample studied was characterised by a majority of the highly financially literate investors in the male category, in the middle age category and in the high income category. The means of the financial literacy were different when the investors were divided based on the behavioral biases exhibited, except for regret aversion and representativeness. With respect to the biases: mental accounting, availability and loss aversion, the highly financially literate investors were less prone to exhibit these biases. On the other hand, with respect to the biases: anchoring, gambler's fallacy and overconfidence, the highly financially literate investors were more prone to exhibit these biases. Among the highly financially literate investors, the female investors were more likely to exhibit the anchoring bias, the male investors were more likely to exhibit the overconfidence bias, the senior investors were more likely to exhibit the mental accounting bias and the investors with high annual income were less likely to exhibit the mental accounting bias and more likely to exhibit the overconfidence bias when compared to the other income groups. Thus this study has analysed the various relationships between the financial literacy of the investor and the behavioral biases he/she is likely to exhibit.

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