Chapter 7

BEHAVIOURAL BIAS AND INVESTMENT PERFORMANCE AMONG EQUITY MUTUAL FUND INVESTORS

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7.1 Introduction

People invest in various asset classes in order to maximise their returns. Mutual fund returns are calculated by comparing the appreciation in the value of investments over time to the initial investment. A mutual fund's Net Asset Value (NAV) represents the fund's market value per share. The performance of a particular scheme of a mutual fund is denoted by its NAV. Mutual fund returns are computed as the difference between the NAV on the date of sale and the NAV on the date of purchase and converted into percentages by multiplying by 100. Any dividend or interest earned by the fund during the holding period is also added to the capital appreciation at the time of computing returns. An increase in the NAV of funds is reflected in their capital appreciation over time. The performance of the return on the mutual fund investment is termed "investment performance."

The influence of behavioural bias on the investment decisions of investors is studied in the previous chapter. In the present chapter, the researcher investigates the impact of behavioural bias on investment performance. For this, the respondents are asked to assess their own investment performance. The rate of return is assessed by demanding the respondents to compare their current rate of return to both the expected rate of return and the average rate of return. Investors'

satisfaction level is also considered as a criterion to measure investment performance.

The investment performance is considered good if the rate of return of the equity mutual funds is higher than the investors' expected rate of return. If the rate of return is less than the expected rate, the investment performance is considered as poor, resulting in the investors being unhappy. To examine the investment performance of investors, a five-point Likert scale is developed and the respondents are asked to rate the statements ranging from strongly agree (5) to strongly disagree (1). Table 7.1 presents the statements used to analyse investment performance, showing the respective means and standard deviations obtained.

Table 7.1

Statements of Investment Performance

Statement code	Statements	Mean	Standard Deviation
IP1	The rate of return on my recent investment meets my expectations.	2.07	1.45
IP2	My rate of return is equal to or higher than the average rate of return in the market.	2.03	1.31
IP3	I feel satisfied with my investment decisions over the last year.	2.61	1.29
IP	Overall Investment Performance	6.72	3.91

Source: Survey Data

The mean score of overall investment performance is 6.72 (SD 3.91) out of 15, which indicates that investors' satisfaction level regarding the investment performance of mutual funds is 45%. The statement "I feel satisfied with my investment decisions over the last year"has the highest mean score of 2.61 (SD 1.29), which implies that more than 52% of investors are satisfied with their investment decisions made in the previous year. The statement "my rate of return is equal to or higher than the average rate of return in the market" has the lowest mean score of 2.03 (SD 1.31). This indicates that only 40% of the investors receive more than average return in the market. From the results presented in table 7.1, it

can be inferred that most of the investors are not very satisfied with their equity mutual fund investment.

7.2 Influence of Socio-Economic Factors on Investment Performance

The socio-economic variables like gender, age, educational qualification, occupation, marital status, annual income and experience in mutual fund investment are used for analysing investors' performance towards their investment in equity mutual funds. The results of descriptive and inferential statistics of the socio-economic variables with regard to investment performance are presented below.

7.2.1 Gender-wise Analysis of Investment Performance

In order to analyse the investment performance between male and female investors, the researcher has classified the data according to gender. To find out whether significant difference exists between male and female investors, 't' test is applied. Levene's test is used to check the homogeneity of variances.

Table 7.2

Gender-wise Analysis of Investment Performance

Gender	N	Mean	SD	t value	Max Score	*p*-value	Remarks
Male	281	5.99	3.49				
Female	109	8.60	4.31	-5.629**	15	.000	Equal variances not assumed
Total	**390**	**6.72**	**3.91**				

Source: Survey Data

** Statistically significant at 1% significant level

From the table 7.2, it is clear that there is significant difference between male and female investors with regard to investment performance as the p-value is significant at 1% level. The mean score of investment performance among male investors is 5.99 (SD 3.49), while the mean score of investment performance among female investors is 8.60 (SD 4.31). This implies that female investors have better performed than their male counterparts while making equity mutual fund investment.

7.2.2 Age-wise Analysis of Investment Performance

The investment performance of mutual funds may vary across individuals according to the age group they belong to. In order to know the mean score of investment performance of investors among different age categories, descriptive analysis has been done. Then ANOVA is applied to check whether there is significant difference among age category of investors with respect to investment performance. Table 7.3 presents the age-wise test of homogeneity of variances of investment performance among investors.

Table 7.3

Age-wise Test of Homogeneity of Variances of Investment Performance

Variable	Levens's Statistic	*p*-value
Investment Performance	5.909[**]	0.001

Source: Survey Data

**, * Statistically significant at 5% and 1% significant level

Since the p-value of the test is less than 0.05, the assumption of equal variance is rejected. Hence, instead of ANOVA, Welch's F value is considered in the study. The results are presented in table 7.4.

Table 7.4

Age-wise Analysis of Investment Performance

Age (Years)	N	Mean	SD	Max Score	F Value/ Welch F	*p*-value	Remarks
Below 25	16	5.75	3.36				
26 – 40	290	6.86	3.99				
41 – 60	70	6.04	3.41	15	1.930	0.143	Welch
Above 60	14	8.29	4.53				
Total	**390**	**6.72**	**3.91**				

Source: Survey Data

Since the *p*-value of the test is more than 0.05, significant difference does not exist among different age category of investors with regard to investment performance.

7.2.3 Education-wise Analysis of Investment Performance

Investment performance may be different for investors having different educational qualifications. Descriptive analysis has been done to know the mean score of different education levels with regard to investment performance. Further, to test the significant difference among education levels, ANOVA is applied.

Table 7.5 presents the education -wise test of homogeneity of variances of investment performance among investors.

Table 7.5

Education-wise Test of Homogeneity of Variances of Investment Performance

Variable	Levens's Statistic	*p*-value
Investment Performance	3.472[**]	.008

Source: Survey Data

** Statistically significant at 1% significant level

Since the p-value of the test is less than 0.05, the assumption of equal variance is rejected. Hence, instead of ANOVA, Welch's F value is considered in the study. The results are presented in table 7.6.

Table 7.6

Education-wise Analysis of Investment Performance

Education Level	N	Mean	SD	Max Score	F Value/ Welch F	*p*-value	Remarks
Higher Secondary and Below	24	5.79	4.37				
Graduate	118	6.51	4.04				
Post Graduate	155	6.28	3.52	15	3.114[*]	.019	Welch
Professional	66	7.79	3.83				
Vocational/Technical	27	8.41	4.50				
Total	**390**	**6.72**	**3.91**				

Source: Survey Data

* Statistically significant at 5% significant level

Since the p-value is less than .05, there exists significant difference among different education levels of investors. While analysing the mean score, it is understood that investors who have technical qualifications possess the highest

mean score of 8.41 (SD 4.5). Investors belonging to 'higher secondary & below' category possess the lowest mean score of 5.79 (4.37). This indicates that technically qualified investors have best investment performance, whereas, low qualified investors have weak performance.

7.2.4 Occupation-wise Analysis of Investment Performance

In order to examine the variability of investment performance among investors belonging to different occupations, descriptive analysis has been done. Levene's test is used to check the homogeneity of variances. Further, ANOVA is carried out to test the significant difference among investors' occupation with regard to investment performance.

The results of occupation wise test of homogeneity of variance of investment performance among investors are depicted in table 7.7.

Table 7.7

Occupation-wise Test of Homogeneity of Variances of

Investment Performance

Variable	Levens's Statistic	*p*-value
Investment Performance	.901	.463

Source: Survey Data

Since the p-value of the test is more than 0.05, the assumption of equal variance is not rejected. Hence, the value of ANOVA is considered in the study. The results are presented in table 7.8.

Table 7.8

Occupation-wise Analysis of Investment Performance

Occupation	N	Mean	SD	Max Score	F Value/ Welch F	*p*-value	Remarks
Employed	263	6.50	3.87				
Professional	70	7.11	3.96				
Businessman	10	6.30	3.09	15	.834	.504	ANOVA
Retired	19	7.63	4.44				
Others	28	7.32	4.13				
Total	**390**	**6.72**	**3.91**				

Source: Survey Data

The results indicate that there is no significant difference among investors' occupation with regard to investment performance as the p value of the ANOVA is more than .05.

7.2.5 Marital Status-wise Analysis of Investment Performance

Descriptive analysis has been done to know the mean score of investment performance among married and unmarried investors. In order to explore the significant difference between married and unmarried investors, 't' test has been applied. The results are presented in table 7.9.

Table 7.9

Marital Status-wise Analysis of Investment Performance

Marital Status	N	Mean	SD	t value	Max Score	*p*-value	Remarks
Married	270	6.92	3.95				
Unmarried	120	6.27	3.79	1.531	15	.127	Equal variances assumed
Total	**390**	**6.72**	**3.91**				

Source: Survey Data

Since, the p value of the t-test is greater than 0.05, there is no significant difference between married and unmarried investors. Hence, it can be concluded that investment performance is not significantly different between married and unmarried investors.

7.2.6 Income-wise Analysis of Investment Performance

Investment performance may vary across investors with the annual income they have. In order to know the mean score of investment performance of investors among different income groups, descriptive analysis has been done. Then ANOVA is applied to check whether there is significant difference among annual income category of investors with respect to investment performance. Test of homogeneity of variances of investment performance among investors have been done and the results are presented in table 7.10.

Table 7.10

Income-wise Test of Homogeneity of Variances of Investment Performance

Variable	Levens's Statistic	*p*-value
Investment Performance	4.947[**]	.002

Source: Survey Data

** Statistically significant at 1% significant level

Since the p-value of the Levene's test is less than 0.05, the assumption of equal variance is rejected. Hence, instead of ANOVA, Welch's F value is considered in the study. The results are presented in table 7.11.

Table 7.11

Income-wise Analysis of Investment Performance

Annual Income (Rs.)	N	Mean	SD	Max Score	F Value/ Welch F	*p*-value	Remarks
Less than 5,00,000	190	6.78	4.01				
5,00,000 - 10,00,000	151	6.88	3.93				
10,00,000- 15,00,000	19	5.68	2.81	15	1.117	.349	Welch
More than 15,00,000	30	6.17	3.79				
Total	**390**	**6.72**	**3.91**				

Source: Survey Data

The results indicate that investment performance has no significant difference among the annual income categories of investors as the p-value is more than 0.05.

7.2.7 Investment Experience-wise Analysis of Investment Performance

Investment performance may vary across investors according to the experience they have in mutual fund investment. In order to know the mean score of investment experience, descriptive analysis has been done. Then ANOVA is applied to check whether there is significant difference among investors' experience in mutual funds investment with respect to investment experience. Table 7.12 presents the results of Levene's test of homogeneity of variances.

Table 7.12

Investment Experience-wise Test of Homogeneity of Variances of

Investment Performance

Variable	Levens's Statistic	*p*-value
Investment Performance	2.353	.072

Source: Survey Data

* Statistically significant at 5% significant level

Since the p-value of the Levene's test is more than 0.05, the assumption of equal variance is not rejected. Hence, ANOVA can be used to examine the significance of difference among investors' experience in mutual funds investment with regard to investment performance. The results of ANOVA are presented in table 7.13.

Table 7.13

Investment Experience-wise Analysis of Investment Performance

Investment Experience (Years)	N	Mean	SD	Max Score	F Value	*p*-value	Remarks
Less than 1	82	7.27	3.87				
1-3	128	6.85	4.01				
3-5	46	6.07	3.44	15	1.178	.318	ANOVA
Above 5	134	6.49	3.98				
Total	**390**	**6.72**	**3.91**				

Source: Survey Data

* Statistically significant at 5% significant level

Table 7.14 indicates that the p value of the test is more than 0.05. This makes it evident that significant difference does not exist among the investors' experience regarding mutual fund investment with regard to investment performance.

7.3 Influence of Behavioural Bias on Investment Performance

One of the important objectives of the study is to analyse the impact of behavioural bias on investment performance. Multiple regression analysis has been done for analysing the same.

7.3.1 Influence of Behavioural Bias on Investment Performance

From the existing literature, it is evident that behavioural bias has a negative impact on investment performance. In this section, the impact of various factors of behavioural bias on investment performance is tested using multiple regression analysis. Here, investment performance is the dependent variable and the factors of behavioural bias are the independent variables.The results are presented in table 7.14.

Table 7.14

Multiple Regression Analysis showing Influence of Behavioural Bias on Investment Performance

Variable	Co-efficient	Standard error	t-statistic	Prob.
Intercept	17.219	.987	17.450**	.000
Belief Perseverance Bias	-.102	.043	-2.395*	.017
Information Processing Bias	.079	.044	1.791	.074
Emotional Bias	-.161	.029	-5.490**	.000
F-statistic	43.477**			
Prob (F-statistic)	.000			
R-squared	.253			
Adjusted R^2	.247			

Source: Survey Data

**, * Statistically significant at 1% and 5% significant level

Table 7.14 indicates that belief perseverance bias and emotional bias are significant at the 5% significant level with a negative co-efficient. This implies that belief perseverance bias and emotional bias exert a negative influence on the investment performance of equity mutual fund investors. Information processing bias is not significant as the p-value is greater than 0.05. Hence, it can be concluded that investors who are affected by belief perseverance bias and emotional bias have experienced weak investment performance, while the information processing bias does not affect the investment performance of investors.

The overall significance of the estimated model given by the F statistic is 43.477 and the p-value is less than 0.05. It means that all of the independent

variables taken together are significant in explaining the dependent variable. R^2 of the model is 0.253, which means that all the independent variables (belief perseverance bias, information processing bias and emotional bias) taken together explain 25.3% of the total variation of the dependent variable (investment performance). The adjusted R^2 of the model is 24.7%.

7.4 Conclusion

The present chapter reveals that the investment performance of equity mutual fund investors in Kerala is low. The investors' satisfaction level regarding the investment performance of mutual funds is 45%.

In gender-wise analysis, there exists significant difference between male and female investors with regard to investment performance. The results indicate that female investors have performed better than their male counterparts while making mutual fund investment.

In the case of age-wise analysis, significant difference does not exist among different age categories of investors with regard to investment performance.

In the education level, there is significant difference among different education levels of investors. According to the findings, technically qualified investors outperform other categories of investors in terms of investment performance.

Analysing the occupation of investors, the results show that there is no significant difference among investors' occupations with regard to investment performance.

In the case of marital status-wise analysis, there is no significant difference between married and unmarried investors with regard to investment performance.

In the case of annual income-wise analysis, significant difference does not exist among different annual income categories of investors with regard to investment performance.

In investment experience-wise analysis, significant difference does not exist among the investors' experiences regarding mutual fund investment with regard to investment performance.

While analysing the influence of behavioural bias on investment performance, the results show that the coefficients of belief perseverance bias and emotional bias are significant at a 5% significant level, and the coefficients are negative. This implies that belief perseverance bias and emotional bias exert a negative influence on the investment performance of equity mutual fund investors.