

MUTUAL FUNDS IN INDIA: INVESTOR BEHAVIOR

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In this paper it has been analyzed as what are the factors based on which investors select mutual funds for investment. Behavior of investor is most volatile in nature as investors not always rational during investment. In this paper investor behavior is being analyzed on the basis of demographic, technical and marketing factors of mutual funds. The factors which are being analyzed are demographic factors, theme of the fund, name of fund house, past performance of fund house, name of fund manager, investment style of fund manager, credit rating by agencies, standard of services of fund house, broker's advice, visibility of fund, tax benefit, portfolio of fund, minimum investment, scheme expense ratio, lock in period of fund.

Key words: Mutual Fund, Investment Behavior, Factor Analysis, Principal Component Analysis

Introduction

Mutual fund is a retail product designed to target small investors who does not like to risk their earnings but wishes to take benefits of stock market investing. The investors are unique and are a highly heterogeneous group. So, a general product for all investors may not give a good response. In financial markets, behavior of the investors plays a vital role. Investors influence the price of the securities and the volumes traded. This behavior of the investors is influenced by perception. Humans generally relate perception to action. We have evidence for the influence of this effect also among Indian mutual fund investors. There is as such no model available to know the exact financial avenues for the investment. No model can explain exactly the influence of perception, beliefs on expectations and decision making. The reality is so complex that trying to fit an individual investor's beliefs into a model is impossible. But, to a certain extent, we can borrow concepts from social psychology where behavioral patterns, rational or irrational, are developed and empirically tested. On the same lines, certain models to test the financial behavior, to the extent of the availability of the explanatory variables.

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Limitations

The study is based on a survey through a questionnaire covering different groups of investors of a 95 respondents only.

Data on Variables

Primary research is being conducted for the collection of data using a questionnaire. Convenient sampling method is used for collection of responses. Investors were asked about their occupation, age, gender, income, their knowledge about mutual fund investments, marketing services provided by the fund houses.

Literature Review

Verma, 2008, 'Wealth Management and Behavioral Finance: The Effect of Demographics and Personality on Investment Choice Among Indian Investors,'—Study was conducted to investigate the effect of demographic profile and personality type of the investor on investment choice. Sample size of 500 was used for the study. Study was focused on does demographic variables and investor personality effect investment choice and what is the order of investment preference of Indian investor for each of the variables and their combinations. The study provided the evidence that the investment choice was affected by the demographic variables such as gender, age, income, education, occupation as well as various personality types.

Paul Tarak, 2012, 'A study on level of expectation of mutual fund investors & impact of demographic profile on period of investment in mutual fund'—The paper discussed about the level of expectation of mutual fund investors in respect of return and its relationship with the age, gender, educational qualification and income of investor.

Athma Prashanta, Kumar Raj, 2012, 'Mutual Funds in India: An analysis of investors perceptions'—the paper discussed about mutual fund investor satisfaction and its relation to demographic factors of investor and disclosures practices by companies. The paper has compared eight fund houses on the basis of investor's satisfaction level.

Hira *et al* 2009, 'Determinants of retirement planning behaviour and differences by age,'—To investigate the determinants of retirement planning behaviour of investors of different age group. A national survey of 911 individuals from households with incomes of \$75000 or greater was conducted in the US. The significance of socio-demographic variables, the ability to recover from loss, behavioural tendencies and perceived or

actual personal control were investigated.

Moschis and Burkhalter, 2007, 'Making Ends Meet: How will the elderly manage their finances and post retirement expenses?'- To study the differences for preferences and motives for financial services and financing of post-retirement expenses and analyzed segments of mature consumers. Survey was conducted on 20,000 US citizens of the age 55 or above. The responses of older Americans were different as their lifestyle characteristics. Americans attached different levels of importance to the institutions they rely on for advice regarding financial management.

Research Methodology

Statistical analysis is being done on the data collected from primary research. Factor Analyses is being done by using SPSS statistical tool.

Analysis

Analysis is performed based on factor analysis. Factor analysis is a multivariate statistical technique used to summarize the information contained in a large number of variables into a smaller number of factors.

In the survey, certain variables have high correlation with each other as shown in table 1 like variable Expense Ratio shows the correlation of 0.919, 0.904 and 0.803 with Portfolio, Lock in Period and Theme. The variable Age and Marital Status have high correlation of 0.803. This shows that more the age of investor more his/her chances to be married. Perception about mutual fund of investors has high correlation with Option Scheme they choose for their investment, Visibility of fund, Expense ratio, Portfolio of fund, Lock in period of scheme, Theme of scheme and Broker's advice. Option of scheme has high correlation with Broker's advice, Visibility of fund, Expense ratio and Lock in period of scheme. Lock in period is also goes hand in hand with Theme of fund and Broker's advice. Theme of the fund and Broker's advice are also correlated with correlation of 0.733. Portfolio of the fund has strong association with Lock in period of scheme, Theme of the fund and with the Broker's advice. Visibility of fund has significant correlation with Expense ratio, Portfolio of fund, Lock in period of fund, Theme of the fund and with Broker's advice. Investment style of fund manager depends upon the fund manger itself, it is quite obvious from the survey analysis as it is strongly associated with each other. Investment style is also associated with the portfolio of fund and theme of the fund. So, all the correlated variables will summarize as one factor.

Table 1

Gender	1.000	0.249	0.295	0.036	0.143	0.272	0.023	0.175	0.053	-0.067	0.110	0.126	0.001	0.080	0.110	0.126	0.001	0.080	0.110	0.081
Marital	0.249	1.000	0.803	-0.131	0.119	0.268	0.268	0.209	-0.228	-0.186	0.082	0.261	0.157	0.083	0.113	0.119	0.000	0.083	0.113	0.081
Age	0.295	0.803	1.000	-0.138	0.008	0.315	0.217	0.262	0.125	0.199	0.111	0.310	0.171	0.133	0.111	0.310	0.171	0.133	0.111	0.081
Qualification	0.036	0.131	-0.138	1.000	0.234	0.142	0.132	0.104	0.053	0.142	0.012	0.021	0.160	0.075	0.075	0.160	0.075	0.075	0.075	0.081
Occupation	0.143	0.119	0.008	0.234	1.000	0.135	0.113	0.132	0.024	0.052	0.107	0.107	0.108	0.173	0.108	0.107	0.108	0.173	0.108	0.081
Income	0.272	0.323	0.315	0.142	0.135	1.000	0.597	0.206	0.299	0.007	0.228	0.228	0.228	0.061	0.061	0.228	0.061	0.061	0.061	0.081
Saving	0.023	0.268	0.237	0.104	0.022	0.005	0.206	1.000	0.271	1.000	0.271	0.282	0.271	0.098	0.098	0.271	0.098	0.098	0.098	0.081
Investment	0.175	0.209	0.262	0.104	0.022	0.005	0.206	1.000	0.271	1.000	0.271	0.282	0.271	0.098	0.098	0.271	0.098	0.098	0.098	0.081
Satisfaction	0.053	-0.228	0.125	0.053	0.024	0.106	0.090	0.007	0.282	0.049	1.000	0.221	0.220	0.132	0.132	0.220	0.132	0.132	0.132	0.081
Perception	-0.067	-0.186	0.199	0.122	0.052	0.090	0.007	0.282	0.049	1.000	0.221	0.220	0.132	0.132	0.132	0.220	0.132	0.132	0.132	0.081
Perspective	0.110	0.082	0.111	0.107	0.107	0.090	0.007	0.282	0.049	1.000	0.221	0.220	0.132	0.132	0.132	0.220	0.132	0.132	0.132	0.081
Option	0.126	0.261	0.310	0.021	0.130	0.117	0.131	0.213	0.262	0.220	0.726	1.000	0.009	0.669	0.393	0.015	0.293	0.356	0.396	0.428
Promotion	0.001	0.157	0.171	0.160	0.108	0.176	0.086	0.069	0.153	0.192	0.786	0.669	0.135	1.000	0.448	0.080	0.019	0.051	0.114	0.232
Visibility	0.080	0.083	0.133	0.075	0.076	0.173	0.088	0.069	0.153	0.192	0.786	0.669	0.135	1.000	0.448	0.080	0.019	0.051	0.114	0.232
Tax	0.110	0.018	0.11	0.077	0.025	0.106	0.061	0.039	0.037	0.102	0.329	0.393	0.223	0.448	1.000	0.111	0.019	0.051	0.114	0.232
Mininvestment	0.081	0.000	0.096	0.097	0.044	0.110	0.222	0.074	0.159	0.096	0.014	0.015	0.076	0.080	0.111	1.000	0.168	0.235	0.257	0.231
Fundhouse	0.047	-0.200	0.195	0.148	0.034	0.054	0.013	0.161	0.116	0.026	0.233	0.293	0.039	0.253	0.019	0.168	0.235	0.235	0.257	0.231
Pastperformance	0.008	0.099	0.026	0.162	0.018	0.061	0.004	0.126	0.089	0.159	0.272	0.356	0.144	0.356	0.051	0.331	1.000	0.324	0.152	0.152
Fundmanager	0.118	0.029	0.044	0.261	0.013	0.253	0.077	0.098	0.125	0.058	0.428	0.428	0.571	0.571	0.101	0.331	1.000	0.324	0.152	0.152
Style	0.176	0.004	0.062	0.154	0.074	0.205	0.009	0.007	0.024	0.056	0.067	0.01	0.153	0.056	0.078	0.272	0.290	0.369	0.145	0.043
Creditrating	0.159	0.185	0.074	0.205	0.230	0.152	0.009	0.007	0.024	0.056	0.067	0.01	0.153	0.056	0.078	0.272	0.290	0.369	0.145	0.043
Service	0.026	0.006	0.081	0.072	0.007	0.109	0.014	0.245	0.007	0.299	0.739	0.669	0.239	0.846	0.382	0.261	0.330	0.672	0.728	0.728
Expense	0.084	0.007	0.083	0.096	0.060	0.071	0.06	0.063	0.121	0.142	0.095	0.091	0.253	0.754	0.248	0.036	0.242	0.283	0.734	0.822
Portfolio	0.147	0.014	0.031	0.101	0.089	0.071	0.107	0.107	0.098	0.699	0.591	0.253	0.754	0.248	0.036	0.242	0.283	0.734	0.822	0.822
Lockin	0.092	0.004	0.075	-0.154	0.044	0.323	0.162	0.102	0.171	0.095	0.728	0.612	0.266	0.817	0.352	0.159	0.209	0.332	0.667	0.739
Theme	0.218	0.019	0.053	-0.155	0.023	0.158	0.041	0.066	0.247	0.041	0.694	0.54	0.272	0.817	0.352	0.159	0.209	0.332	0.667	0.739
Broker	0.068	0.187	0.193	-0.039	0.125	0.104	0.149	0.052	0.307	0.194	0.800	0.77	0.019	0.836	0.394	0.033	0.267	0.391	0.424	0.469

As per table 2, KMO is 0.773, and the significance level is 0.000. Hence, we can interpret it as greater than 0.5 so we can proceed with the data analysis.

According to The Bartlett's Test of Sphericity there is a significant relationship between variables.

Table 2: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.773
Bartlett's Test of Sphericity	Approx. Chi-Square	1252.001
	df	351
	Sig.	.000

The anti image matrix in table 3 says that except for the factors Gender, Occupation, Savings, Satisfaction and Minimum Investment, all the other factors show a diagonal correlation (correlation with themselves) greater than 0.5, which further indicates to us that we can go ahead with factor analysis.

Table 3

Anti-Image Matrices

Anti-Image	Gender	Marital	Age	Income	Occupation	Education	Religion	Political	Sexual	Health	Travel	Home	Auto	Invest	Retire	Spouse	Children	Parents	Friends	Neighbors	Community	Society	World	Universe	
Anti-Image C	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	
Gender	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	
Marital	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Age	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Income	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Occupation	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Education	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Religion	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Political	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Sexual	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Health	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Travel	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Home	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Auto	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Invest	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Retire	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Spouse	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Children	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Parents	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Friends	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Neighbors	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Community	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Society	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
World	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Universe	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02

Source: Author's calculations based on data from the 2010 Census.

Once it has been determined that factor analysis can be done to the data available, an appropriate method has to be selected. We have selected the Principal Component Analysis which considers the total variance in the data.

Generally values below 0.6 of extraction communalities indicate to the variables that do not fit well with the factor solution, and thus should be excluded from the analysis. Here

Gender, Qualification, Investment, Promotion and Fund house have communalities less than 0.6, rest all other variables have communality well above 0.6.

Table 4

Component	Total Variance Explained					
	Initial Eigenvalues		Extraction Sums of Squared Loadings		Rotation Sums of Squared Loadings	
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.099	29.997	29.997	8.099	29.997	29.997
2	2.750	10.186	40.182	2.750	10.186	40.182
3	2.130	7.890	48.073	2.130	7.890	48.073
4	1.864	6.904	54.977	1.864	6.904	54.977
5	1.498	5.548	60.525	1.498	5.548	60.525
6	1.376	5.098	65.623	1.376	5.098	65.623
7	1.255	4.648	70.271	1.255	4.648	70.271
8	1.115	4.129	74.400	1.115	4.129	74.400
9	.957	3.543	77.942			
10	.795	2.945	80.888			
11	.755	2.798	83.686			
12	.717	2.654	86.340			
13	.630	2.334	88.674			
14	.549	2.032	90.706			
15	.480	1.778	92.484			
16	.367	1.360	93.845			
17	.341	1.262	95.106			
18	.232	.860	95.966			
19	.224	.829	96.795			
20	.193	.716	97.511			
21	.169	.628	98.138			
22	.147	.543	98.681			
23	.118	.439	99.120			
24	.081	.300	99.420			
25	.074	.275	99.695			
26	.047	.173	99.868			
27	.036	.132	100.000			

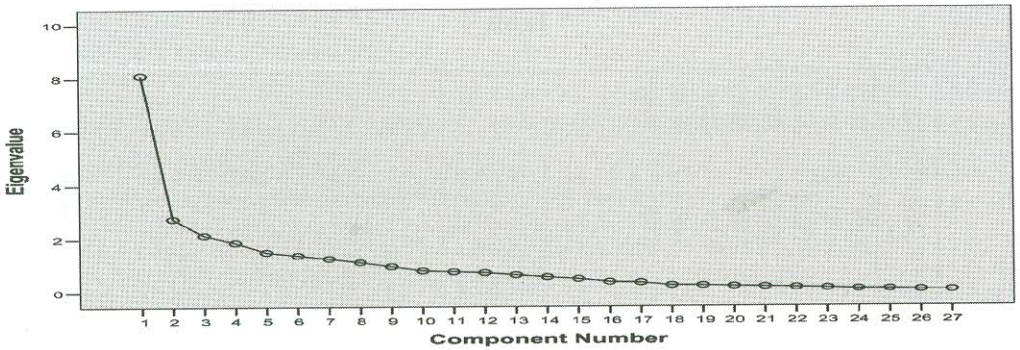
Extraction Method: Principal Component Analysis.

Eigen values Analysis in table 4 says

The first factor explains 29.997% of total variance. It is to be mentioned that the first few factors explain relatively large amount of variance whereas subsequent factors explain only small amount of variance.

Figure 1

Scree Plot



SPSS then extracts all factors with Eigen values greater than 1, which leaves us with 8 factors.

The *Eigen values* associated with these factors are displayed in the Total Variance Explained table.

So, by looking at the first panel, we have eight factors which has Eigen Value greater than 1, the cumulative variance explained by them is **74.400%**.

Component Matrix

Table 5 reports the factor loadings for each variable on the unrotated components or factors. Each number represents the correlation between the item and the unrotated factor. For example **0.884** shows correlation between the variable visibility and the first factor.

The variable with highest loading is grouped under one factor. But in some cases the factor loadings of one variable may be high in two factors making interpretation difficult. So we go for rotation and get rotated component matrix. To confirm the highest loadings under one factor only we make the rotated component matrix.

Through rotation the interpretation becomes easier. The table gives the rotated component matrix with only the highest loadings under each factor.

Table 5

	Component							
	1	2	3	4	5	6	7	8
Perception	0.837							
Option	-0.763							
Visibility	0.884							
Pastperformance	0.432							
Fundmgr	0.748							
Style	0.785							
Expense	0.925							
Portfolio	0.906							
Lockinpd	0.911							
Theme	0.879							
Broker	0.830							
Age		-0.786						
Gender		-0.472						
Marital		0.823						
Investment		-0.541						
Credit rating			0.671					
Promotion			0.459					
Qualification			-0.451					
Income				0.715				
Saving				0.556				
Perspective				0.427				
Minimum investment					0.525			
Fundhouse						-0.371		
Service						0.497		
Tax							-0.453	
Occupation							0.51	
Satisfaction							0.456	

This table (called the Pattern Matrix for oblique rotations) reports the factor loadings for each variable on the components or factors after rotation.

Table 6

	Component							
	1	2	3	4	5	6	7	8
Perception	0.823							
Option	-0.702							
Visibility	0.866							
Fundmgr	0.747							
Style	0.833							
Expense	0.93							
Portfolio	0.938							
Lockinpd	0.916							
Theme	0.909							
Broker	0.784							
Age		0.886						
Marital		-0.827						
Gender			0.368					
Pastperformance			0.668					
Creditrating			0.73					
Promotion			0.416					
Mininvestment			0.499					
Fundhouse			0.335					
Income				0.838				
Saving				0.734				
Perspective					0.803			
Service					0.622			
Investment						0.504		
Satisfaction						0.830		
Qualification							0.595	
Occupation							0.821	
Tax								0.796

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 8 iterations.

Factor Classification

After analyzing rotated component matrix table we find which variables fall into which factors. I here by using factor analysis we have effectively combined 27 variables into 8 factors. These factors are as given in table 7. These new factors can be used further for analyzing the various factors that affects consumer behavior of while making an investment.

Table 7

	F1	F2	F3	F4	F5	F6	F7	F8	
Perception	0.82								SPECIFIC
	3								
Option	-								
	0.70								
	2								
Visibility	0.86								
	6								
Fundmgr	0.74								
	7								
Style	0.83								
	3								
Expense	0.93								
Portfolio	0.93								
	8								
Lockinpd	0.91								
	6								
Theme	0.90								
	9								
Broker	0.78								
	4								
Age		0.88							DEMO
		6							
Marital		-							
		0.82							

Gender			0.368						BRAND
Pastperformance			0.668						
Creditrating			0.73						
Promotion			0.416						
Mininvestment			0.499						
Fundhouse			0.335						
Income				0.838					FUTURE
Saving				0.734					
Perspective					0.803				QUALITY
Service					0.622				
Investment						0.504			REVENUE
Satisfaction						0.830			
Qualification							0.595		PROFESSION
Occupation							0.821		
Tax								0.796	Tax

From Factor analysis it is evident that factor 1 explained around 24 percent variance, which includes perception of investor, option of scheme, visibility of fund, fund manager, style of investment of fund manager, expense ratio of scheme, portfolio of fund, lock in period of scheme, theme of fund and broker's advice. Demographic factors like age and marital status of investor also has the impact over the investment behavior of the investor.

Conclusion

From Factor analysis of survey it is evident that factor 1 explained around 24 percent variance, which includes perception of investor, option of scheme, visibility of fund, fund manager, style of investment of fund manager, expense ratio of scheme, portfolio of fund, lock in period of scheme, theme of fund and broker's advice. Hence it is the fund specific factors which affect most to the investment behavior than any other factors. Also the visibility of fund is an important aspect while selection of fund hence proper marketing also plays an important role in investment. Demographic factors like age and marital status of investor also have major impact over the investment behavior of the investor.

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