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## AN EMPIRICAL STUDY OF FACTORS GOVERNING BEHAVIOUR OF INDIVIDUAL INVESTOR IN EQUITY MARKET IN INDIA

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### ABSTRACT:

The study is an Empirical study of Factor governing the behaviour of the individual investor in the equity market in India. The factor of study is accounting factors, subjective factors, neutral factors, advocate recommendation and personal financial needs. The convenience sampling technique used for selection of sample. The primary data have been collected through structured closed-ended Questionnaire. The size of the sample was calculated on the basis of population size, the variance of sample and budgetary constraints. A sample size of 1000 was arrived based on the Morgan table of sample size. Out of the 5000 questionnaires forwarded only 1020 questionnaires were retained thus giving a response rate of merely 20%. Out of these 1020 responses, only 996 responses were tenable and could be included in the final data analysis. The collected data have been analyzed by making the use of KMO Bartlett's Test, Factor analysis. The mean score for Accounting Factors is 13.2902 which are highest amongst all the groups. By observing the average scores it can be seen that the accounting factor is rated as the most important factor having the highest influence on investor decision to invest in a particular stock. Further the recommendation factor has secured the second-highest score of 8.52 which is second highest amongst all factors.

**Keywords:** Stock Market, Individual Investors, Behavioural Finance, Equity Market.

### INTRODUCTION:

Today the field of investment is even more dynamic than it was only a decade ago. World event rapidly events that alter the values of specific assets the individual has so many assets to choose from, and the amount of information available to the investors is staggering and continually growing. The key to a successful financial plan is to keep apart a larger amount of savings and invest it intelligently, by using a longer period of time. The turnover rate in investments should exceed the inflation rate and cover taxes as well as allow you to earn an amount that compensates the risks taken. Savings accounts, money at low-interest rates and market accounts do not contribute significantly to future rate accumulation. While the highest rate come from stocks, bonds and other types of investments in assets such as real estate. Nevertheless, these investments are not totally safe from risks, so one should try to understand what kind of risks are related to them before taking action. The lack of understanding as to how stocks work makes the myopic point of view of investing in the stock market ( buying when the tendency to increase or selling when it tends to decrease) perpetuate (Kabra, Mishra, & Dash, 2010).

With the decreased government intervention in the pension system and welfare in general and the increased responsibility of individuals to fend themselves the pattern of

investments and selection of assets may have crucial determinant on future of a present generation. Further, a plethora of factors which are listed below also makes it crucial to understand the various facets of individual behaviour.

Behavioural finance attempts to explain and increase understanding of the reasoning patterns of investors, including the emotional processes involved and the degree to which they influence the decision-making process. Essentially, behavioural finance attempts to explain the what, why, and how of finance and investing, from a human perspective. For instance, behavioural finance studies financial markets as well as providing explanations to many stock market anomalies (such as the January effect), speculative market bubbles (the recent retail Internet stock craze of 1999), and crashes (crash of 1929 and 1987). There has been considerable debate over the real definition and validity of behavioural finance since the field itself is still developing and refining itself. This evolutionary process continues to occur because many scholars have such a diverse and wide range of academic and professional specialities.

#### **LITERATURE REVIEW:**

The risk factor could be one of the crucial determinants of individual investor behaviour and portfolio allocation. Further, the construct of risk aversion may be the function of various socio-demographic attributes. Moreover Cohn et al. provide tentative evidence that as risk-aversion decreases investor wealth increases. (R. A. Cohn, 1975). Riley and Chow find that risk-aversion decreases with increase in age, wealth, income and education. (Riley & K. V. Chow, 1992). The future is uncertain, and you must determine how much risk you are willing to bear since the higher return is associated with accepting more risk. (Lobes, 1987). LeBaron, Farrelly and Gula counter that individuals' risk-aversion is largely a function of visceral rather than rational considerations(D. LeBaron & Gula., 1992).

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#### **RESEARCH METHODOLOGY:**

Exploratory research design has been proposed as the present study is an extension of previous studies conducted in the field. Which are the factors governing the investor behaviour in equity and relative importance of these factors in the investment decision. The initial questionnaire contained five broad factors. The factor of study is accounting factors, subjective factors, neutral factors, advocate recommendation and personal financial needs. The primary data have been collected through structured closed-ended Questionnaire. The convenience sampling technique used for selection of sample. The size of the sample was calculated on the basis of population size, a variance of sample and budgetary constraints. A sample size of 1000 was arrived based on the Morgan table of sample size. Out of the

5000 questionnaires forwarded only 1020 questionnaires were retained thus giving a response rate of merely 20%. Out of these 1020 responses, only 996 responses were tenable and could be included in the final data analysis. The collected data have been analyzed by making the use of KMO Bartlett's Test, Factor analysis.

### **OBJECTIVE OF THE RESEARCH**

1. To understand the relative influence of factors influencing retail investor decision regarding the selection of particular stock for trade or investment.
2. To understand and segment individual investors on the basis of differences observed on the relative importance of factors governing individual investor decisions in equity markets.

### **DATA ANALYSIS AND INTERPRETATION:**

Individual investors participate in the stock market by purchasing and selling different stocks and it is very important to identify various economic and behavioural motivations that affect their purchasing decisions. Based on the previous studies of (Nagy and Obenberger, 1994, Anna A. Merikas, Greece Andreas G. Merikas, George S. Vozikis, DevPrasad ) who proposed that the variables that govern the investment behaviour of the investors in the equity market. The initial questionnaire contained five broad factors. The accounting factors, subjective factors, neutral factors, advocate recommendation and personal financial needs).

Investment behaviour = f (accounting factors, subjective factors, neutral factors, advocate recommendation, personal financial needs).

The investor does not take the decision in isolation. The factors that he considers are

#### ***Accounting Factors***

1. Financial performance of Company
2. Expected Corporate Earnings
3. Affordability of Share Price (Price to Earnings Ratio)
4. Expected Corporate Dividend (Cash dividend, Bonus Share, Buyback of Shares)
5. Recent Price Movements of Firm's Stock

#### ***Subjective/ Personal***

1. Feelings for Firm's Products and Services
2. Gut Feeling on Economy
3. Past Performance of Investor's Stock Portfolio

#### ***Neutral Information***

1. Coverage in Electronic (Internet) Media
2. Coverage in Print Media-Press
3. Current Economic Indicators
4. FII Movement in Stock Market

#### ***Recommendation***

1. Brokerage House Recommendation
2. Family Member Opinions
3. Friend or Co-worker Recommendation
4. Stock Broker Recommendation

**Personal Financial Needs**

1. Diversification Needs
2. Liquidity of Fund
3. Tax Consequences
4. Minimizing Risk

A factor analysis was conducted on the aforesaid 33 questions. The method for factor analysis used is principal component analysis and rotation used was direct oblmin as it was perceived that the factors might have correlations. Further cases were excluded listwise and the initial solution was obtained. The method for extracting the number of factors was based on Eigenvalues and factors were extracted who's Eigen score was greater than 1.

The correlation matrix, test for adequacy of sample, observations regarding singularity and multi co linearity were done and it is observed that

- No singularity is observed which means that no single variable is perfectly correlated to others and hence none of them is omitted.
- The coefficient of the determinant is quite higher than the expected value of 0.00001 and hence it can be safely concluded that the problem of multi-co linearity does not exist

**Sample adequacy**

The KMO can be calculated for individual and multiple variables and represents the ratio of the squared correlation between variables to the squared partial correlation between variables. The KMO statistic varies between 0 and 1.

A value of 0 indicates that the sum of partial correlations is large relative to the sum of correlations, indicating diffusion in the pattern of correlations (hence, factor analysis is likely to be inappropriate). A value close to 1 indicates that patterns of correlations are relatively compact and so factor analysis should yield distinct and reliable factors. Kaiser (1974) recommends accepting

Values greater than 0.5 as barely acceptable (values below this should lead you to either collect more data or rethink which variables to include). Furthermore, values between 0.5 and 0.7 are mediocre, values between 0.7 and 0.8 are good, values between 0.8 and 0.9 are great and values above 0.9 are superb (Hutcheson & Sofroniou, 1999).

**Table 1: KMO and Bartlett's Test statistics for sample adequacy**

KMO and Bartlett's Test			
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.			.690
Bartlett's Test of Sphericity	Approx. Chi-Square		1670.991
	df		496
	Sig.		.000

**Correlations between variables**

If the variables in our correlation matrix did not correlate at all, then our correlation matrix would be an identity matrix (i.e. the off-diagonal components are zero).

*Bartlett's test.*

If the population correlation matrix resembles an identity matrix then it means that every variable correlates very badly with all other variables (i.e. all correlation coefficients are close to zero). If it *were* an identity matrix then it would mean that all variables are perfectly independent from one another (all correlation coefficients are zero). Given that we are looking for clusters of variables that measure similar things, it should be obvious why this scenario is problematic: if no variables correlate then there are no clusters to find. Bartlett's test tells us whether our correlation matrix is significantly different from an identity matrix. Therefore, if it is significant then it means that the correlations between variables are (overall) significantly different from zero. So, if Bartlett's test is significant then it is good news. However, as with any significance test it depends on sample sizes and in factor analysis we typically use very large samples. Therefore, although a non-significant Bartlett's test is certainly a cause for concern; a significant test does not necessarily mean that correlations are big enough to make the analysis meaningful. If you do identify any variables, that seem to have very low correlations with lots of other variables, then exclude them from the factor analysis.

From the above table it can be observed that Bartley's test is significant which further highlights the fact that the variable are correlated and certainly the matrix is not identity matrix.

### ***Anti image Correlation Matrix***

Differences between the matrix based on the model and the matrix based on the observed data indicate the residuals of the model (i.e. differences). SPSS produces these residuals in the lower table of the reproduced matrix and we want relatively few of these values to be greater than .05

The *Anti-image* option produces an anti-image matrix of covariance's and correlations. These matrices contain measures of sampling adequacy for each variable along the diagonal and the negatives of the partial correlation/covariance on the off-diagonals. The diagonal elements, like the KMO measure, should all be greater than 0.5 at a bare minimum if the sample is adequate for a given pair of variables. If any pair of variables has a value less than this, consider dropping one of them from the analysis. The off-diagonal elements should all be very small (close to zero) in a good model.

After observing the model it is found that following three variables have values less than 0.5, they are

1. Tax consequences
2. Stock Broker recommendation
3. Recent price movement of particular stock

Hence these three variables which might explain the same thing are removed and then a factor analysis is conducted further.

After eliminating the above 3 variables factor analysis was redone and following results were produced.

The correlation matrix, test for adequacy of sample, observations regarding singularity and multi co linearity were done and it is observed that

- No singularity is observed which means that no single variable is perfectly correlated to other and hence none of them is omitted.

- The coefficient of determinant is quite higher than expected value of 0.00001 and hence it can be safely concluded that the problem of multi-co linearity does not exist.

**Table 2: KMO and Bartlett's Test statistics for sample adequacy**

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.690
Bartlett's Test of Sphericity	Approx. Chi-Square	1670.991
	df	496
	Sig.	.000

After observing the table it can be concluded that the KMO value is 0.7 which is good and more over the Bartlett's test of sphericity is significant.

*Anti-image Correlation matrix*

After observing the model it is found that following three variables have values less than 0.5, they are

1. Perceived Business ethics
2. Condition of financial statement
3. Reputation of firm

Hence these three variables which might explain the same thing are removed and then a factor analysis is conducted further.

After eliminating the above 3 variables factor analysis was redone and following results were produced.

**Table 3: KMO and Bartlett's Test statistics for sample adequacy**

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.813
Bartlett's Test of Sphericity	Approx. Chi-Square	3601.633
	df	325
	Sig.	.000

After observing the reproduced KMO test it is seen that the value of KMO has increased to 0.813 which is excellent.

Further from the anti-image correlation matrix, all the diagonal elements are having values greater than 0.5

To decide how many factors to extract look at the table labeled **Communalities** and the column labeled *Extraction*. If these values are all 0.7 or above and you have less than 30 variables then the SPSS default option for extracting factors is fine (Kaiser's criterion of retaining factors with Eigen values greater than 1). Likewise, if your sample size exceeds 250 and the Average of the communalities is 0.6 or greater than the default option is fine. Alternatively, with 200 or more participants the scree plot can be used.

From the communalities table

**Table 4: Table of communalities**

Communalities		
	Initial	Extraction
Affordability of Share Price-12a	1.000	.799
Attractiveness of Non-Stock (Equity) Investments like real estate etc.]-12b	1.000	.819
Brokerage House Recommendation-12c	1.000	.674
Competing Financial Needs-12d	1.000	.730
Coverage in Electronic (Internet) Media-12e	1.000	.681
Coverage in Financial Press-12f	1.000	.642
Coverage in General Press-12g	1.000	.828
Current Economic Indicators like GDP, money supply, interest rates etc.-12h	1.000	.795
Data in Reports & Prospectus-12i	1.000	.704
Investing across different companies in shares-12j	1.000	.729
Environmental Record of the company (as per annual report of the co.)-12k	1.000	.702
Listing in multiple stock exchanges-12l	1.000	.655
Expected Corporate Earnings-12m	1.000	.628
Expected Corporate Dividend (Cash dividend, Bonus Share, Buyback of Shares)-12n	1.000	.850
Expected Stock Market Performance-12o	1.000	.746
Opinion of Family Member-12p	1.000	.765
Feelings for Firm's Products and Services (e.g. Tata group co.'s product as trusted product)]-12q	1.000	.813
Position of the Firm in Industry-12r	1.000	.827
Recommendation of Friend / Co-worker-12s	1.000	.811
Gut Feeling on Economy-12t	1.000	.818
Institutional Holdings in the company-12u	1.000	.796
International Operations of the Firm-12v	1.000	.751
Domestic Operations of the Firm-12w	1.000	.771
Minimizing Risk of Investment-12x	1.000	.739

Past Performance of the Stock Portfolio-12y	1.000	.778
Long Term Performance of Stock-12z	1.000	.718
Extraction Method: Principal Component Analysis.		

From the communalities table it can be observed that the average value of above listed 26 communalities is 0.75 and hence default method of factor extraction which is Kaiser Criteria of choosing Eigen values above 1 is preferred.

**Table 5: Factor Loading of Factors influencing investor behavior**

	1(accounting)	2(personal)	3(neutral)	4(recommendation)	5(subjective)	6(macro)
Affordability of Share Price-12a	.817	.079	-.100	-.132	.186	-.250
Attractiveness of Non-Stock (Equity) Investments like real estate etc.-12b	.070	-.685	-.385	-.155	.250	-.373
Brokerage House Recommendation-12c	.650	-.182	-.166	-.681	.344	-.248
Competing Financial Needs-12d	.381	-.533	-.305	-.099	.126	-.116
Financial Performance of company	.690	-0.106	-.225	-.042	-.056	-.325
Coverage in Electronic (Internet) Media-12e	.383	-.066	-.632	-.162	.126	.256
Coverage in Financial Press-12f	.208	.249	-.545	.110	.186	.314
Coverage in General Press-12g	.350	.286	.504	-.072	.287	.431
Current Economic Indicators like GDP, money supply, interest rates etc.-12h	.450	.435	.283	.152	.498	.549
Data in Reports & Prospectus-12i	.449	.132	.644	.032	.158	.200
Investing across different companies in shares-12j	.348	.661	.596	.321	.224	-.293
Environmental Record of the company (as per annual report of the co.)-12k	.569	-.260	.269	.310	-.095	-.297
Listing in multiple stock exchanges-12l	.306	-.401	.110	.247	-.034	-.579
Expected Corporate Earnings-12m	.594	-.444	-.097	-.206	-.111	-.112
Expected Corporate Dividend (Cash dividend, Bonus Share, Buyback of Shares)-12n	.636	-.168	-.059	-.247	.128	.083
Expected Stock Market Performance-12o	.603	.136	-.059	-.546	-.121	-.091



Opinion of Family Member-12p	.374	.283	-.157	-.070	-.422	.112
Feelings for Firm's Products and Services (e.g. Tata group co.'s product as trusted product)]-12q	.341	.389	-.303	-.013	-.485	.015
Position of the Firm in Industry-12r	.555	.501	-.376	.217	-.036	-.187
Recommendation of Friend / Co-worker-12s	.274	.114	-.329	.442	-.343	.036
Gut Feeling on Economy-12t	.340	-.258	-.236	.462	-.570	.148
Institutional Holdings in the company-12u	.552	-.536	-.122	.253	.044	.338
International Operations of the Firm-12v	.622	-.490	.107	-.013	-.085	.232
Domestic Operations of the Firm-12w	.548	-.355	.345	-.266	-.265	.184
Minimizing Risk of Investment-12x	.339	.447	.423	-.265	-.276	-.029
Past Performance of the Stock Portfolio-12y	.508	.247	.349	-.087	-.284	-.079
Long Term Performance of Stock-12z	.053	.338	.355	.167	-.103	-.113
<b>% variance</b>	<b>35.52</b>	<b>10.25</b>	<b>9.61</b>	<b>5.72</b>	<b>5.08</b>	<b>4.67</b>
<b>Eigen values</b>	<b>9.325</b>	<b>2.666</b>	<b>2.497</b>	<b>1.489</b>	<b>1.320</b>	<b>1.215</b>

From the above table and observing the component matrix score it can be observed that

- ✓ 6 principal component have been extracted
- ✓ The component along with their Eigen scores and variance has been explained.
- ✓ It can be seen that component 1 explains 35% of variance.
- ✓ All the 6 components explain 75% of total variance and there is still 25% of variance which remains unexplained.
- ✓ The components based on theoretical background and available factor loadings can be classified as follows

**Factor1: Accounting Factors**

1. Affordability of Share Price:
2. Record of the company (as per annual report of the co.):
3. Expected Corporate Earnings-
4. Financial Performance of Company
5. Expected Corporate Dividend (Cash dividend, Bonus Share, Buyback of Shares)-1
6. Expected Stock Market Performance
7. Position of the Firm in Industry
8. Institutional Holdings in the company
9. International Operations of the Firm
10. Domestic Operations of the Firm

From the above list it can be concluded that the most important set of factor that explains 35% of the observed variance are related to accounting factors. These factors reveal the overall financial health of the company and are listed among all other factors as the most important factor for investing in particular stock.

Further the factor score case wise are stored as a variable and analysis of variance (ANNOVA) is done to inquire whether the scores vary accordingly to demographic attributes including age, gender, occupation, income, years of investment. Moreover the within group variance and between group variance is also noted to signify the variance if any.

**Factor 2: Personal Factors**

*Attractiveness of Non-Stock (Equity) Investments like real estate etc.*

*Competitive Financial Needs.*

*Investing across share of different company.*

*Minimizing Risk of Investment.*

From the list of the above factors it can be easily seen that all these variables pertain to the personal domain of the investor which primarily consist of risk tolerance, risk perception and financial needs of an individual. These types of investors may have limited principal to invest and may wish to invest in stocks depending upon how much capital shall be at disposal.

**Factor 3: Neutral or Information Factor**

This factor pertains to news or press coverage about a particular stock and also regarding the information regarding government policies. The variables that are included in this factor are as follows

*Coverage in Electronic (Internet) Media-*

*Coverage in Financial Press-*

*Coverage in General Press-*

*Data in Reports & Prospectus-*

From the list of the above factors it can be seen that most of these variables pertain to the information domain. The investors perceive this set of variables which influence their decision to invest in a particular stock. The variables include information regarding particular stock or government policies that may affect a particular stock.

**Factor 4: Recommendations**

Many a times the choice of a particular stock or investment in equity is influenced by the recommendations of broker or brokerage house. The factor score revealed that such variables that influence an investor decision to invest in particular stock are

*Brokerage House Recommendation-12c*

*Recommendation of Friend / Co-worker-12s*

**Factor 5: Perception or subjective**

As literature suggests equity market is influenced by emotions and feeling which may sometimes not reflect the true picture or else are affected by news and rumors. Further the perception of individual investor regarding the particular stock or in general about the market may affect his or her choice of investment. The factor which include them are as follows.

### *Opinion of Family Member*

*Feelings for Firm's Products and Services (e.g. Tata group co.'s product as trusted product*

### *Gut Feeling on Economy*

Although it should be highlighted that these variables are fairly subjective and relative importance of these variables may further differ amongst various individuals.

### **Factor6: Macroeconomic Factors**

The factor loading table apart from the above specified 5 set of factors produces an additional factor which is not specified in earlier literature and is coined as macroeconomic factor although its factor loading is fairly less as compared to other factors and also explains lesser degree of variation as compared to other factors.

It includes

*Current Economic Indicators like GDP, money supply, interest rates etc.*

*Listing in multiple stock exchanges.*

### **KEY FINDING AND OBSERVATION**

The mean score for Accounting Factors is 13.2902 which are highest amongst all the groups. By observing the average scores it can be seen that the accounting factor is rated as most important factor having highest influence on investor decision to invest in a particular stock. Further the recommendation factor has secured the second highest score of 8.52 which is second highest amongst all factors. The personal factor has got the least score suggesting that the less relative influence of it on investor behavior to trade or invest in particular stock. Moreover the positive value of skewness suggests that the lower values are highly concentrated and higher scores are frequented by less number of observations. Further the lower positive values of skewness in accounting and subjective factor suggest lower deviation as compared to other variables. The negative value of kurtosis implies that the distribution is light tailed which implies that number of observations are observed near the mean.

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