RESEARCH REVIEW JOURNALS
Volume-02
Issue-08
August-2017

ISSN: 2455-3085 (Online)
RESEARCH REVIEW International Journal of Multidisciplinary
www.rrjournals.com

Investment decisions and stock Market volatility

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ARTICLE DETAILS

Article History
Received: 26 July 2017
Accepted: 17 August 2017
Published Online: 20 August 2017

Keywords
stock market volatility
India
factors having impact on volatility

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ABSTRACT

Financial market volatility can have a wide repercussion on the economy as a whole. There is clear evidence of the important link between financial market uncertainty and public confidence. Policy makers therefore rely on market estimates of volatility as a barometer of the vulnerability of financial markets. Volatility estimation and forecasting have become a compulsory risk-management exercise for economies and many financial institutions around the world. Understanding volatility is therefore central to risk management in an economy. In this paper, volatility in the Indian stock market has been analyzed. Purpose is to study the stock market for volatility and to find the reasons of volatility with its links to investment behavior of individual investors. To achieve objectives of the study the long-time series data on BSE-30 Index and the daily changes in BSE-30 Index from 1st January 2000 to 1st December 2012 were obtained. Results showed that according to investors the factor of technical analysis is the most important in causing turbulences in the stock market .The second most important factor identified by investors is the family recommendation among investors that result in overall volatile behavior of the market. According to investors manipulations by the big companies also play a major role in causing stock market volatility.

INTRODUCTION

Stock market volatility in an emerging economy affects investor's sentiment towards investment in stock market. Financial markets helps in flowing savings from savers to investors efficiently and by doing so play an important role in the economic growth and development. Developing economies are facing many problems in their financial markets and with many other factors, high volatility in the prices which also considered as high risk or uncertainty is a major factor for erosion of capital from the markets. Due to this investors run away from the markets.

Research in behavioral finance is relatively new. According to behavioral finance investor market behavior derives from psychological principals of decision making to explain why people buy or sell stocks. Behavioral finance focuses upon how investors interpret and act on information to make investment decisions. In addition, behavioral finance places an emphasis upon investor behavior leading to various market anomalies.

Behavioral finance is defined by Shefrin (1999) as "a rapidly growing area that deals with the influence of psychology on the behavior of financial practitioners". Behavioral finance research is developing rapidly and now beginning to answer such questions as : why, when all the evidence shows investors cannot beat the market on any systematic basis, they still resolutely do, how can we explain the stock market "bubbles" ,why is the volume of trading in financial markets so excessive and why is the stock market so volatile, why do investment analysts have so much difficulty in identifying under and over-valued stocks, why do stock prices appear to under react to bad news, why do acquisitions on average turn out to be unsuccessful, why do corporate managers find it so difficult to terminate loss making projects, why do must boards believe their companies are undervalued by the stock market, why should new issues exhibit short-run stock market out-performance and then long run under performance.

LITERATURE REVIEW

Measuring stock market volatility in an emerging economy through ARCH MODEL AND GARCH MODEL with an explanation from behavioral finance **(Hayat M Awan, Khuram bhukari, Aftab khakwani, Bushra Guffran)** in their study found that the factor of political situation is the most important in causing turbulences in the stock market volatility that is also confined by the interviews with the brokers who identified it as the most important factor causing stock market volatility. The second most important factor identified by investors is the herd behavior among investors that result in the under and over pricing of stocks and the overall market show a volatile behavior. According to investors manipulations by big investors also causes the volatility. Findings suggest that out of four broad behavioral dimensions of individual investors, the dimension of involvement, risk attitude and over confidence are significantly associated with factors causing stock market volatility.

Measuring stock market volatility in emerging economy, **(Rajni Mala and Mahendra Reddy)** study reveals that a wide range of factors may be relevant in explaining stock market volatility. Such factors include goods prices, money supply, real activity, exchange rate, oil prices , trade factor and regional stock market indices. Moreover when the stock returns were regressed against interest rate, the ARCH term and interest rate variable is significant thus indicating the role of interest rates on the volatility of stock market returns. Over the period of study the interest rates have increased at Fiji islands and this has impacted the stock market volatility.

The role of investor sentiments on Mexican stock market returns and volatility **(Daniel Huerta)** concludes that Mexican manufacturing houses confidence index, a proxy for sentiment has a positive and significant effect on the excess returns for the Mexican market. Specifically, they found that the hold more dominates the price pressure effect for this important Latin-American market. Also asymmetric impact of sentiments on conditional volatility of Mexican stock returns. That is negative changes in sentiment have greater impact than positive sentiments on conditional variance of these returns.

Investor sentiment in the stock market (Malcolm Baker and Jeffrey Burgler) in particular, stocks of low capitalization, younger, unprofitable, high volatility, non-dividend paying, growth companies or stocks of firms in financial distress are likely to be disproportionately sensitive to broad waves of investor sentiment. The two approaches of bottom-up and top-down are used to investor sentiment. The advantage of top-down approach is its potential to encompass bubbles, crashes , and more everyday pattern in stock prices in a simple, intuitive and comprehensive way. The advantage of the bottom-up model is in providing micro foundations for the variation in investor sentiment that the top –down approach takes as exogenous.

Stock returns volatility patterns in India **(Amita Batra)** through the empirical analysis in the paper reveals that the period around the BOP crisis and the subsequent initiation of economic reforms in India is the most volatile period in stock market. Sudden shifts in stock return volatility in India are more likely to be a consequence of major policy changes and any further incremental policy changes may have only a benign influence on stock return volatility. Stock return volatility in India seems to be influenced more by domestic political and economic events rather than by global events. The analysis in the paper also reveals that stock market cycles in India have not intensified after financial liberalization. A generalized reduction in stock market instability is observed in the post reform period in India.

Inefficient stock market generated by adverse information **(Dr. Nishad Rashid Sabri)**, the study found out the causes of stock market crisis reside in first, the noise trading and overreaction of stock traders. Second the increasing linkage among the international stock markets and third, the effect of the option markets. Forth, some of the present institutional features of the stock market structure. The paper suggests reforms to curb the possible causes of stock market instability. The reforms to regulations concerning bearer share certificate, outside stock trading, controlling of high price fluctuations, price quotations, and stock dealing methods and cash settlement systems. In addition, the paper discussed the holding own share's model as a new financial instrument to support the stock market price in case of market crises.

Volatility in Indian stock market **(Piyush Chauhan and Vasant Shukla)** examined the hot issue of volatility in the Indian stock markets. Though no fundamental factors emerge for the existence of such high volatility, other perceptual factors have led to this mad rush for stock leading to volatility. The market regulators have been trying their best to curb these speculative uprising but have not been able to keep it in control. The bubbles cannot be curbed by imposing circuit breakers or margins but by allowing free trade. A more analytical media reporting which highlights better risk management coupled with investor learning will surely lead to more stable market.

The influence of stock specific factors on investors' sentiment **(E. Bennet, M. Selvam and Eva Esther Shalin Ebenezer)** analysed the influence of stock specific factors on investors' sentiment. The investors' attitude towards investing is influenced by rumors, intuition, herd behavior among investors and media coverage of the stock. The research proved that investor's expectation of stock price rising for the next 12 months is influenced by expected events surrounding the stock, the book value and recommendation of the financial community and price cut off rules.

Stock market volatility: an international comparison **(Bekaert and Harvey 2009)** reveals firstly, developed and emerging markets show distinct pattern in return and volatility behavior. Both daily returns and standard deviation are higher for emerging markets over developed markets. This findings is in conformity with the observations made by Bekaert and Harvey (1995).Second, asymmetry pattern as shown by skewness and kurtosis have been different for developed and emerging markets. At the same time asymmetries estimates by skewness and kurtosis has been less for Indian indexes.

Investor attitude and behavior towards inherent risk and potential returns in financial products **(Shyan rong chou, Gow liang huang and Hui lin hsu 2010)** attempted to establish a model by which to measure attitudes and behavior towards investment risks. A sample of Taiwanese investors are surveyed to determine their past investment experience as an anchor, and to record their responses when exposed to economic signals. Empirical studies found no difference by gender to investor propensity to take risk, nor in cognitive perception of such. However, higher and lower perception of risks was indicated by investors according to their personal investment experience. Investors with little experience in stocks and structured notes were found to have significantly heightened perception of risk.

Investment strategies in Indian stock market: a survey **(Dr.Vanita tripathi 2008)** examines the perceptions, preferences and investment strategies in Indian stock market on the basis of a survey among 93 investment analysts, fund manager and active equity investors based at delhi and Mumbai during May-October 2007. Survey findings reveal that investors use both fundamental as well as technical analysis while investing in Indian stock market. Most of the respondents strongly agree that various company fundamentals (such as size , book to market equity, price earning ratio etc) significantly influence stock prices. Five most widely used investment strategies in Indian equity market are size based strategies, momentum strategies, following FII's investment behavior, buying stocks on the basis of 30 days moving average and buying stocks on the basis of relative strength index.

OBJECTIVE

Purpose is to study the stock market for volatility and to find the reasons of volatility with its links to investment behavior of individual investors. Clearly stated objectives of the study are,

1. To identify the presence of stock market volatility.
2. To identify the factors causing stock market volatility.
3. To find out the important factors affecting investor's investment decisions.

Answering to these questions is where the role of behavioral finance comes in as the modern finance theories fail to explain the phenomenon.

RESEARCH METHODOLOGY

Secondary and primary data were used for both quantitative and qualitative analysis. The paper examined the presence of volatility at the Bombay Stock Exchange (BSE). To achieve objectives of the study the long-time series data on BSE-30 Index and the daily changes in BSE-30 Index from 1st January 2000 to 1st December 2016 were obtained. The data source for the indices is the website of BSE.

PRIMARY DATA

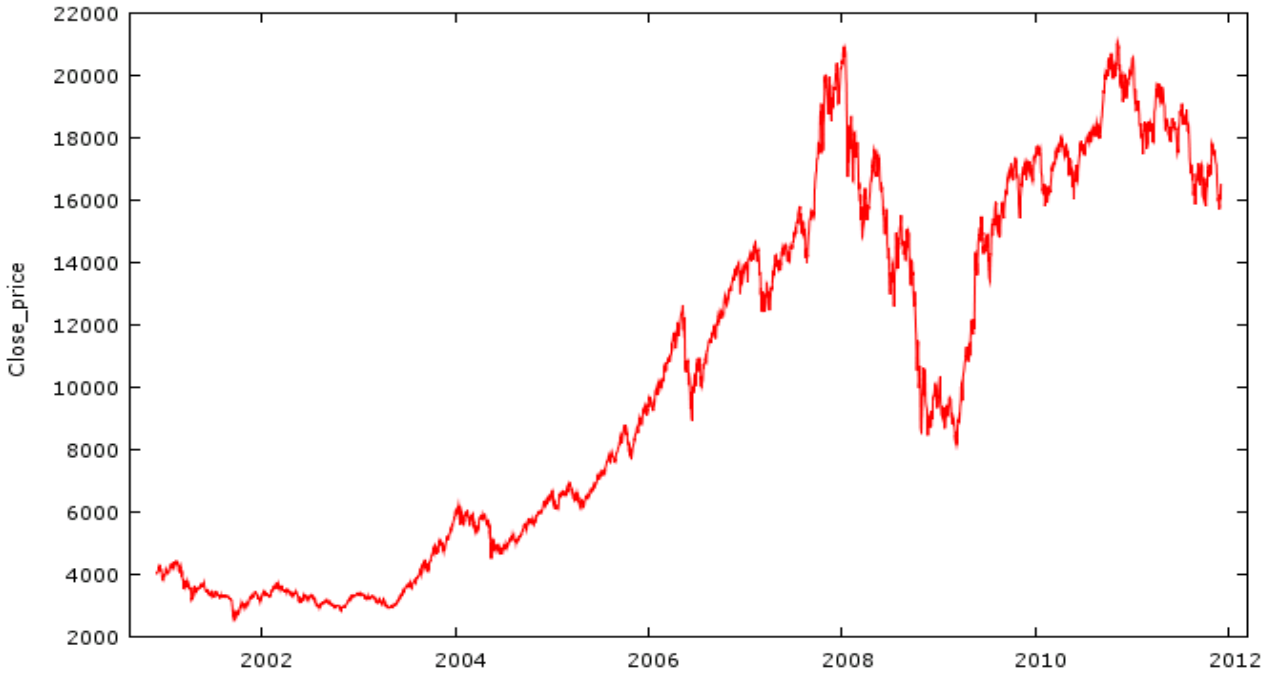
Primary data was collected by obtaining direct responses from 108 individual investors of stock market. First recurring themes and factors that may cause volatility were identified through preliminary interviews with the investors and literature reviews. After identifying recurring themes research instruments was developed and administered at individual investor selected using convenience sampling technique from two cities: Baroda and Gandhidham. Responses obtained from individual investors based on structured questionnaire were analyzed quantitatively. Different statistical tools e.g. Time series plot, ACF test, descriptive statistics, factor analysis of variance were used to obtain the results of the study. The software packages used are SPSS 15.0, Gretl and spreadsheet.

DATA ANALYSIS AND INTERPRETATION

Only those investors who have invested in stock market have been surveyed. The survey showed that investor's motive of investing in stocks being growth with 36.11% followed by 29.63 % investors saying they invest to generate income from stocks. It was found that, maximum investors of 44.44 % are having investment horizon of 3-5years followed by 24.1% with time horizon of 6-10 years. With maximum investors with investment horizon less than 3 years may include speculators which give rise to volatility in the market and causing turbulence. Also with increasing volatility the investment horizon is reduced by investors.

Investors with 48.15% were willing to take some amount of risk while investing in stock markets followed by 26.85% who awere not willing to take risks with their money. It clearly indicates that due to presence of volatility in Indian stock market, long term investors were finding it risky to put all their money into stocks.

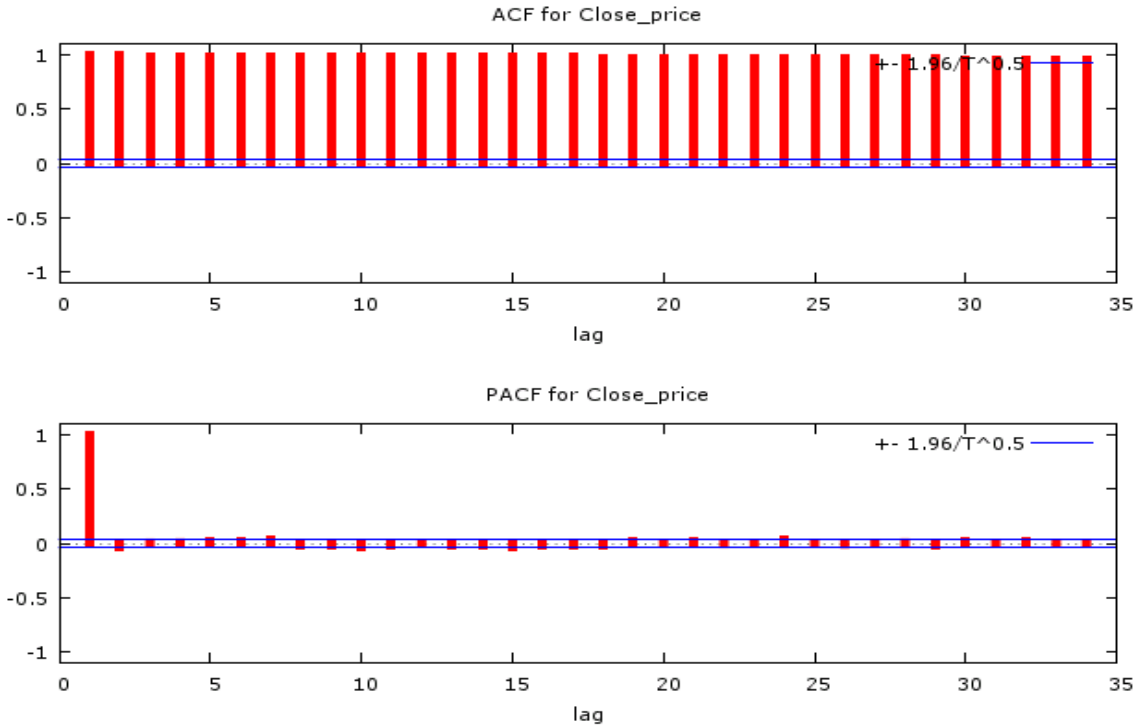
First, preliminary analysis was conducted i.e. graphical analysis of the market data to check if some signs of hetroskedacity was present in the data series or not. The daily closing prices of the SENSEX were used as the source data to arrive at the monthly data. Days when there was no trading are omitted and the price change was calculated from the last day the market was open. The huge unevenness in the observations revealed in the graph.



1-FIGURE

ACF TEST:

Augmented Dickey-Fuller test for d_Close_price
including one lag of (1-L)d_Close_price
sample size 2741
unit-root null hypothesis: a = 1 test with constant (GLS) model: (1-L)y = b0 + (a-1)*y(-1) + ... + e
1st-order autocorrelation coeff. for e: -0.000
estimated value of (a - 1): -0.933728
test statistic: tau = -35.9355 asymptotic p-value 2.861e-020



2-FIGURE

For ADF test, the important thing is the t(=tau) statistic of the SENSEX variable. The null hypothesis is which is to say that p=1, or unit root. Now for the project data, the 1%, 5% and 10 % critical statistics as computed by Mackinnon are -3.5073,-2.8951 and -2.5844 respectively. Since the computed value is35.9355 which in absolute terms is smaller than the critical values ,we do not reject null hypothesis that is the SENSEX data exhibits a unit root which is another way of saying the data series is nonstationary. On the basis of correlogram too we can conclude that the data is non-stationary.

FACTOR ANALYSIS

After, identifying the presence of volatility in the data series, the next was to identify which are those factors that have major impact on investors' decisions. In all 22 variables have been identified for this survey through literature and interaction with investors. Now to identify which are those variables which impact the investors' decisions, researcher used factor analysis for the study. Factor analysis is a useful method of reducing data complexity by reducing the number of variables being studied.

RELIABILITY TEST

According to Pivot,Diener, Colvin and sandvik (1991) (The impact of stock market volatility on investor's investment decisions)has good internal consistency with a cronbarch 's alpha coefficient reported of 0.7 in the current study the cronbach' s alpha cefficient was (0.789).

KMO AND BARLETT'S TEST

The KMO measure of 0.654 which is above 0.5 can be considered as reliable factors.

The first step in interpreting output is to look at the factors extracted, their Eigen values and the cumulative percentage of variance. From the TABLE-2, 8 factors account for 67.19% of the total variance. There are 8 factors which have an Eigen value of 1 or more.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.432	20.146	20.146	4.432	20.146	20.146
2	1.943	8.833	28.979	1.943	8.833	28.979
3	1.853	8.424	37.403	1.853	8.424	37.403
4	1.642	7.465	44.868	1.642	7.465	44.868
5	1.366	6.207	51.076	1.366	6.207	51.076
6	1.321	6.004	57.080	1.321	6.004	57.080
7	1.160	5.274	62.354	1.160	5.274	62.354
8	1.066	4.844	67.198	1.066	4.844	67.198
9	.941	4.278	71.476			

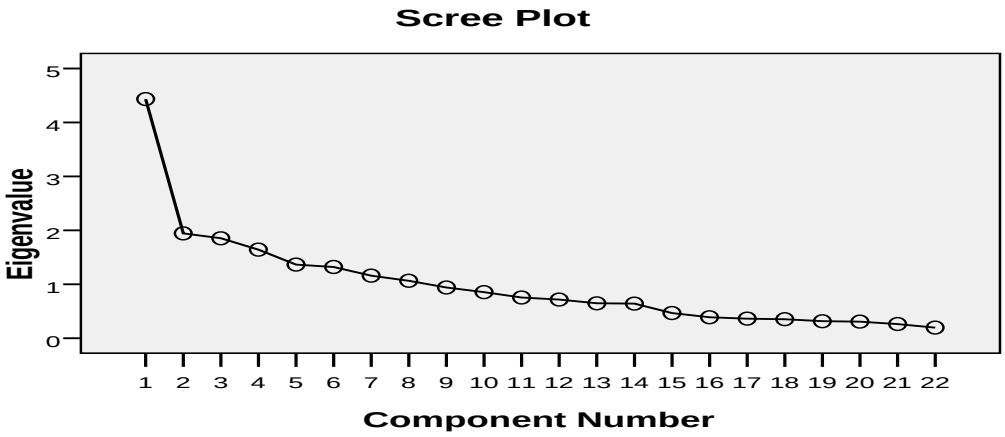
10	.855	3.886	75.361			
11	.756	3.435	78.796			
12	.717	3.258	82.054			
13	.649	2.948	85.002			
14	.643	2.921	87.922			
15	.467	2.123	90.045			
16	.389	1.770	91.816			
17	.363	1.651	93.466			
18	.352	1.602	95.068			
19	.316	1.438	96.507			
20	.308	1.401	97.907			
21	.263	1.197	99.104			
22	.197	.896	100.000			

Extraction Method: Principal Component Analysis.

Table 1

From the above table, it can be interpreted that cumulative extracted value of 67.198 % that comes down to 8 factors out of 22. Thus for our analysis only 8 factors are relevant.

From the below screen plot, the factors with Eigen values more than (1) are 8 components which is depicted below.



3- FIGURE

COMMUNALITIES:

	Initial	Extraction
feelings for product	1.000	.767
Intuition	1.000	.726
firm's reputation	1.000	.625
well known company	1.000	.621
gut feeling	1.000	.713
fundamental analysis	1.000	.708
technical analysis	1.000	.762
FII's	1.000	.541
company fraud	1.000	.645
dividend declaration	1.000	.676
good news of company	1.000	.686
friend recommendation	1.000	.771
family recommendation	1.000	.738
broker advice	1.000	.557
reduced investment horizon	1.000	.521
economic indicators	1.000	.687

international market movements	1.000	.579
stock price movements	1.000	.658
new political party	1.000	.661
developments in stock index	1.000	.667
diversify my portfolio	1.000	.714
minimize risk level	1.000	.759

TABLE 2

Here the table explains the importance of each factor of the surveyed. The thumb rule is that if the component value is more than 0.5 then it is important. Here "reduced investment horizon is having least importance. Hence this component is not considered in determining the impact of stock market volatility on investor decision

ROTATED COMPONENT MATRIX:

	Component							
	1	2	3	4	5	6	7	8
feelings for product	-.045	.080	-.185	-.132	.801	-.096	.224	.082
Intuition	.081	.009	.227	.154	.792	.125	-.019	.007
firm's reputation	.351	-.049	.422	.400	.300	.260	.065	-.013
well known company	.380	.367	.321	.359	.114	-.038	-.232	.204
gut feeling	-.016	.748	.148	.028	.032	.359	.001	-.010
fundamental analysis	.067	.253	.019	.090	-.031	.768	.173	-.107
technical analysis	.089	-.021	.067	.055	.064	.845	-.081	.148
FII's	-.042	.277	-.094	.662	.098	.058	.009	-.050
company fraud	.182	.126	.059	.730	-.115	.067	.186	.081
dividend declaration	.579	-.209	.032	.325	.193	.037	.388	.029
good news of company	.747	.177	.120	-.049	-.127	.032	.242	-.057
friend recommendation	.374	.245	.171	-.388	-.237	-.089	.345	.457
family recommendation	-.103	-.040	-.063	-.122	.202	-.048	-.092	.810
broker advice	.083	.155	-.069	.250	-.082	.133	.116	.649
reduced investment horizon	.046	-.079	.241	.322	.320	.061	.447	.212
economic indicators	.089	.191	.077	.104	.125	.061	.778	-.019
international market movements	-.008	.655	.015	.297	-.018	.051	.200	.140
stock price movements	.432	.648	.111	.141	.051	-.121	.037	.019
new political party	.353	.364	-.568	.028	.065	.201	-.042	.186
developments in stock index	.648	.081	.047	.103	.110	.272	-.374	.030
diversify my portfolio	.253	.183	.757	.035	-.159	.122	.032	-.046
minimize risk level	.060	.176	.811	-.063	.211	.053	.121	-1.46E-005

TABLE 3

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 32 iterations.
In each 8 component, variables with factor loading nearer to 1 will comprise the part of that component. And those variables will be the factors impacting the investor's decisions.

FINDINGS/RESULTS

- ✓ In this paper, factors influencing the Indian investor behavior on Indian stock Market were examined. The paper developed a modified questionnaire.
- ✓ Eight factors were found to be the most influencing factors, where more than 69.19 % of total respondents consider these factors as the most affecting factors on their behavior. Now the task was to interpret what these 8 extracted factors represent.

- ✓ Using the rotated factor matrix, variables 10, 11 and 20 which are dividend declaration, good news of the company and developments in stock index have loadings of 0.579, 0.747 and 0.648 on factor 1 respectively. It suggests that factor 1 is a combination of these three variables. In this case, the factor can be named **"company information".**

- ✓ The other similar groupings formed on factor 2 are good feelings about the market, international market movements and stock price movements with loadings of 0.748, 0.655 and 0.648 respectively. This grouping has been named **"market news".**

- ✓ On factor 3 the variables formed are to diversify my portfolio and minimize risk level with factor loadings of 0.757 and 0.811. The groupings has been named **"personal financial needs"**

- ✓ On factor 4, variables formed are company fraud news and FII's with factor loadings of 0.662 and 0.730. It has been grouped under **"neutral information".**

- ✓ On Factor 5, variables formed are feelings for company's product and intuition with loadings of 0.801 and 0.792. the group named is **"self image/firm image coincidence"**

- ✓ On factor 6, variables are fundamental and technical analysis with loadings of 0.768 and 0.845. The group named as **"accounting information"**

- ✓ On factor 7, only one variable has loading nearer to 1 that is economic indicators with 0.778.

- ✓ And lastly on factor 8, variables family recommendation and broker advice with loadings of 0.810 and 0.649 has been derived. The factor has been named **"recommendations".**

- ✓

CONCLUSION

Results showed that according to investors the factor of technical analysis is the most important in causing turbulences in the stock market .The second most important factor identified by investors is the family recommendation among investors that result in overall volatile behavior of the market. According to investors manipulations by the big companies also play a major role in causing stock market volatility. They revealed that change in the earnings of listed companies and media stories also contribute a lot towards decisions .Among all the seven factors causing volatility, identified with the help of secondary research and preliminary interviews, the factor of dividend declaration by the company is given the lowest rank.

APPENDIX:

INVESTORS IN STOCK MARKET

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	YES	108	100.0	100.0	100.0

1-TABLE

FACTORS FOR INVESTING:

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	Frequency	Percent	Valid Percent	Cumulative Percent
Income	32	29.6	29.6	29.6
investment goal	6	5.6	5.6	35.2
Growth	39	36.1	36.1	71.3
Retirement	27	25.0	25.0	96.3
Others	4	3.7	3.7	100.0
Total	108	100.0	100.0	

2-TABLE

INVESTMENT HORIZON:

	Frequency	Percent	Valid Percent	Cumulative Percent
<3 years	24	22.2	22.2	22.2
3-5 years	48	44.4	44.4	66.7
6-10 years	26	24.1	24.1	90.7
>10 years	10	9.3	9.3	100.0
Total	108	100.0	100.0	

3-TABLE

RISK APPETITE :

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no risk	29	26.9	26.9	26.9
	some risk	52	48.1	48.1	75.0
	lot more risk	27	25.0	25.0	100.0
	Total	108	100.0	100.0	

4-TABLE

RELIABILITY STATISTICS

Cronbach's Alpha	N of Items
.789	22

5-TABLE

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.654
Bartlett's Test of Sphericity	Approx. Chi-Square	653.925
	Df	231
	Sig.	.000

TABLE-6