

**AN EMPIRICAL STUDY ON THE ANALYSIS OF RISK AND RETURN WITH
BEHAVIORAL FINANCE ON THE BASIS OF PSYCHOLOGICAL
DECISION-MAKING IN EQUITY MARKET INVESTMENTS**

Dr. Rekha D M

Assistant Professor, Department of Commerce, Christ University, Bengaluru, Karnataka

Dr. J Prashanth

Assistant Professor, Mechanical Engineering, Bengaluru, Karnataka

*Corresponding authors | Received: 25/07/2024 | Accepted: 20/08/2024 | Published: 08/09/2024

Abstract

The credit of rapid growth of Indian stock market is owed to Liberalization, privatization and globalization included with the increasing global demand and supply. This indeed has demanded a huge amount of capital for establishing new business ventures to cater for the demands of this wide market. The equity market plays a pivotal role in pumping funds that are required for these operations. The growth parameters inclusive of GDP, National income and per capita income are greatly influenced by the contributions of Equity Market. Moving further it also has an upper hand of control on long term capital growth and inflation control for healthy financial market performance. However, the effective functioning of financial market and equity market is entirely governed by the investment decisions made by the investors. It is a commonly observed phenomenon that, the Investors reactions are generally carried away by socio-economic, cultural and psychological incidents that may arise in the society. The consequences of these reactions can be witnessed as the investor's investment decisions in the equity market. If any impact on these fore said factors occur, an impact on the economy of the country is also experienced. As there exists a direct or indirect relationship between the investments made and the occurrence of any event. The dearth of studies in this context of understanding investor's approach and their strategies in decision making, compels an investigation to study the investor's behavior and their actions of decision taken with respect to the nature of investments. The current investigations spreads light on assessing the investor's behavioral factors that influence predominantly on the investment decisions and its corresponding impact on the equity market. In this investigations necessary data for assessing the behavior was gathered by 1100 individual investors across Bengaluru through a well-structured questionnaire. An appropriate statistical analyses were implemented for better factual insights of the research study. The findings of these analyses demonstrates that the behavioral factors such as the heuristic, prospect and market factors influences investment decisions of the investors. The study demonstrates the role of behavioral finance in influencing the investment decision making and its impact on equity market. Further on the basis of research findings, the study provides a set of suggestions to the investors.

Keywords—Equity Market, Investor Investors' psychological factors, social-economic factors,

Introduction

Behavioral finance concepts relate to human emotions that includes fear, greed, ambition, anxiety, panic, vanity, envy and happiness. These emotions have a greater influence on the investors investment mentality and the influence of these emotions in investment decision making process of investors is being examined (Birau, 2011). Behavioral finance theories analyze the impact of psychological factors of investors investments in financial market. The traditional theories describe investors as being rational but the analysis of risk and returns portrays an image of inefficient market analysis. Thus Behavioral finance give the impression

as an effective alternative to classical finance (Birau, 2012). Owing to the motivations behind investor's investment decision making, the failure of the traditional models and anomalies of financial market has upshot to dependency on behavioral finance models. The efficient market hypothesis assumes that the capital market is informationally efficient and the volatility cannot be predicted anyways. On the other hand, Behavioral finance provides technical and logical opinions based on the psychological and emotional factors of investors investment decisions. It also deals with the irrational components of investors investment decisions as well.

This investigation presents an analysis of the behavioral factors of investors in Bengaluru. It attempts to provide an insight on the influences of psychological factors on investors investment decisions and its consecutive impact on the Indian equity market. Equity market facilitates an opportunity for the investors to make profit out of the investment made. The returns enjoyed by the investor from equity market are usually high in comparison with all other investment avenues available. But the returns from equity market follow a trend influenced by various factors and thus it does not follow the same trend always. The upswings and downswings owing due to varying demand and supply factors are commonly witnessed leading to capital erosion in equity market. But still these risk and return games are assumed to part and parcel of investment activity as it is easier for investors to enter and exit the stock market.

The expectations and beliefs of investors takes a major part in influencing their investment decisions. Hence the analysis of these beliefs and expectations helps one to understand the decisions of investors impacting the equity markets. The theory of behavioral finance analyzes cognitive factors that include following complexity, reactive to market, expectations at high, fear of risk involved and confidence and overconfidence natures of the market performances. As such it will impact the investors to understand rational and irrational way of thinking in terms of investment. Studies conducted by Birau (2012) explains that certain investor's psychological factors influence their judgments and can force them to make errors during their perception of information and formation of beliefs.

Barberis and Thaler (2003) proposed two building blocks, such as limits to arbitrage, that emphasizes the difficulties of rational traders to undo the dislocations caused by less rational traders and psychology, which signposts the kinds of deviations from full rationality. Sewell (2007) defined behavioral finance as “the study of the psychological influences on financial practitioners' behavior and its subsequent effect on markets”. Behavioral finance

blends cognitive and behavioral theories with conventional economics and finance for understanding the decisions taken by the investors (Ackert and Deaves, 2009).

The behavioral finance encompasses the paradigm of wide range visions, that attempts to forecast the financial markets based on emotional and psychological implications. It specifies the features, such as action and interpretation based on the data, collected by the individuals for organized investing decisions. Furthermore, it highlights the fact that the rationality can go wrong in defining and treating some of the economic factors. Hence, behavioural finance is the psychological decision process that can recognize and predict financial markets (Talagi, 2004).

The significance of the behavioral finance paradigm was detailed by Thaler (1999). The author assumes that the market experiences two types of investors, such as rational investors, who strictly follow economics text books and perform according to the directions of the text books and quasi-rational investors, who attempt to take strong investment decisions but ended up in making predictable mistakes. Investors vary with respect to the factors, such as financial context, socio-economic background, age, sex, religion, level of education, traditions, marital status, ethnicity, etc. These investors create their expectations and beliefs with respect to their socio-economic backgrounds, that in turn will play a dominant role in their investment decisions. The behavioral finance paradigm which emphasizes on analyzing this cognitive psychology of investors suggest that the investment decision-making process can be analyzed using the following variables, including conservatism, overreaction, overconfidence, preconceived ideas, herding complex, representativeness, excessive optimism, irrationality and the impact of media channels.

Review of Literature

Gervais. S, et. al. (2003) explains that the overconfidence of investors during investments creates an impact on the economy and investors risk and return expectations. The study adopted the empirical research through a well administered questionnaire to gather required data from individual investors from various sectors. The findings revealed that the investors' mentally and their decision making process are interrelated this in turn has an impact on economy and stock market performances.

Sivaramakrishnan (2016) studied the influence of attitudinal factors, such as financial literacy, on an individual's investment decisions. The study adopted a mixed research approach, which included both qualitative and quantitative analyses. A well-structured questionnaire was used to conduct a survey and gather data from 506 retail investors

distributed widely across different parts of India. The findings revealed that financial literacy significantly influenced the investors' intentions. However, the results indicated a negative impact of three attitudinal factors, namely, hassles encountered, risk avoidance, and perceptions of regulators.

Shusha and Touny (2016) examined the impact of four attitudinal determinants, namely, investors' mood, hasty decisions, accuracy of decisions, and over confidence in investment decisions. The data were collected from 400 randomly selected investors of the Egyptian stock exchange, out of which around 255 responded well. The study analyzed if the impact varied with the respondents' demographics. The findings revealed that attitudinal factors, such as accuracy of decisions, hasty decisions, and investors' mood, significantly influenced the investors' decisions. At the same time, it was apparent that the impact created by such attitudinal factors was subjected to the investors' demographic characteristics.

Praba (2016) analyzed the influence of socio-demographic characteristics of retail investors on their financial risk tolerance. The study was conducted among a sample of 405 respondents, that included employees working in banks, non-banking financial companies, insurance companies, Mutual Fund companies, educational institutions, and IT or IT enabled services companies. Various factors, such as geography, occupation, economic status, ease of access, age, gender, etc., were considered by the study. A thirteen-point questionnaire was distributed among the sample population. It was found that factors, such as income, age, and gender, significantly influenced the risk tolerance of investors.

Sarwar and Afaf (2016) investigated the differences between the impacts of psychological and economic factors on the decision-making of individual investors. A well-structured questionnaire and a convenient sampling was used to gather data from a total number of 254 respondents. The statistical tool of factor analysis was applied to find out the major contributing components of psychological and economic factors. The findings revealed that psychological factors showed 61.671% variance and the economic factor indicated 56.697% variance. The psychological factors significantly influenced individual investors' decision-making as compared to that of economic factors. Thus, psychological factors must be assessed in lieu of socio-economic factors for their influence on investment decisions.

Patel and Modi (2017) investigated the impact of demographic factors, such as age, gender, education, income, marital status, and family members, on the investors' preference. The study adopted a descriptive research design. Convenience sampling technique was used to gather primary data from a population of 100 investors in south Gujarat. A well-structured

questionnaire was utilized to collect the data. The result illustrated that demographic factors, including age, gender, and income, had a substantial effect on the investors' decision-making. However, it was found that the mere influence of these factors might not prompt investors to invest in a particular stock.

Stella (2018) investigated the influence of demographic factors including gender, age, income, education, occupation, and savings on the elements of investors' decisions. A sample population of 220 respondents from the city of Chennai, Tamil Nadu, was selected by using convenient sampling. Statistical tools, such as interval estimation, Chi-square test, and correlation analysis, were performed to test the hypotheses. It was observed that demographic factors like gender, age, marital status, annual income, educational qualification, etc. significantly influenced only certain elements of investment-related decision-making.

Kengatharan, 2014; Luondnad Ha, 2011; Sochi, (2017) have highlighted that the analysis of these factors help in to understanding the investors' ability to deal with the irrational components that affect their investment decisions, without disturbing their preferences and individual requirements. In this background, the upcoming sections will review studies that examined the influence of various behavioral factors on the investors' decision-making.

Javed and Marghoob (2017) undertook a study to investigate the effect of Behavioral elements, such as overconfidence, prospect factors, market factors, and anchoring, on the investment decisions of individual traders and institutional portfolio managers, who were trading in the Pakistani stock market. The required data were gathered from 50 equity managers of institutions and banks that had invested in various stock exchanges. A well-set questionnaire was used to collect the data and statistical tools, such as descriptive statistics, regression analysis, correlation analysis, and reliability analysis, were used for analyzing the data. The findings revealed that heuristic factors, such as overconfidence and anchoring, played a significant role in the investment decision-making.

Kanojia et. al (2018) conducted a study to investigate the influence of behavioral biases, including overconfidence, representative bias, herd behavior, cultural bias, cognitive dissonance, disposition effect, and mood on the investment decisions of people residing in Delhi. It was found that heuristic factors, such as representative bias and overconfidence, influenced the investors' decision-making to a great extent.

Dickenson et. al (2018) attempted to establish the link between risk tolerance, investor personality, and behavioral finance. The study also investigated the effect of these behavioral finance factors in determining the investors' decision-making process. The study adopted a

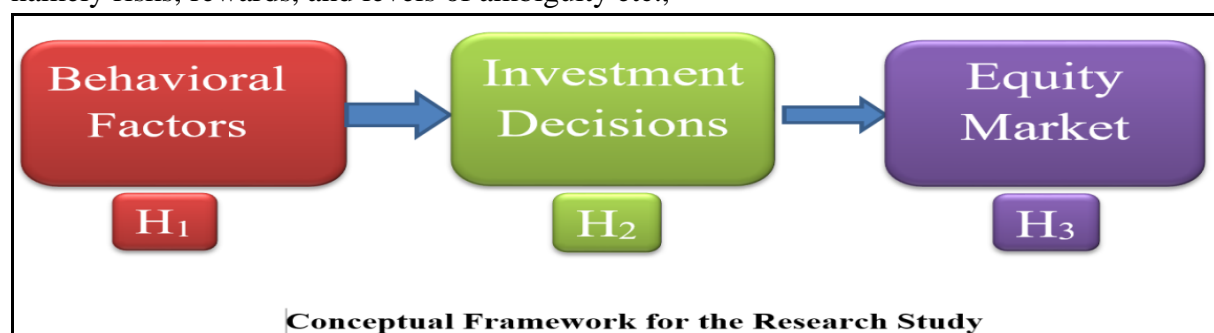
random sampling method to select participants, who invested in companies registered with the South African stock exchange. An online questionnaire was administered to a sample size of 1171 participants. The findings revealed that investors with low risk tolerance were inclined towards loss aversion and mental accounting biases. Such investors always showed the tendencies of holding badly performing stocks for a longer time and aggravated their risks. The medium risk tolerant investors showed risk aversion qualities as they selected their investments after scrutinizing the wrong financial decisions made by them earlier. Furthermore, the study pointed out that investors with high-risk tolerance were often inclined towards self-controlled biases.

Quasim et al. (2019) studied the influence of herding behavior and overconfidence on the investors' decision-making. The required data were gathered through questionnaires distributed among 150 investors, who were active in the Pakistan stock market. The study managed to get 100 completed questionnaires. The ordinary least square (OLS) method was used to analyze the association among investors' decision-making and herding behavior and overconfidence biases. The findings indicated that investors' decisions were significantly influenced by herding behavior.

Sarwar et. al (2016) highlighted the larger influence of psychological factors when compared with socio-economic factors and questioned the applicability of socio-economic factors in assessing the investors' decisions. The above-mentioned drawbacks aided the present study to exclude both attitudinal and socio-economic factors.

Statman (2020) points out that investors in the financial market need to be identified as normal investors instead of irrational ones. From this stage, behavioral finance has gradually moved to its second generation to lead the analysis of volatility existence in the market.

Srivastava. et. al (2019). These researches proved that the significance of neural activities that exist in financial decision making. Through various experiments the decisional functions are associated with the corresponding brain areas which are identified in the financial setting, namely risks, rewards, and levels of ambiguity etc.,



Hypotheses for the Research Study

1. H1a: Heuristic factors of investor behavior significantly impacts the investment decisions.
2. H1b: Prospect factors of investor behavior significantly impacts the investment decisions.
3. H1c: Market factors of investor behavior significantly impacts the investment decision.
4. H2: The investment decisions of investors significantly impacts the equity market.

Statement of the problem

A larger part of the Indian economy is entirely dependent upon the industries and these industries depend largely for its capital requirements on organized equity markets. This shows there is a direct correlation between the stock market and the development of industries which is the priority sector of Indian economy. The positive trend in stock market shows some growth and the negative trend shows the downfall of the economy.

Usually, the investors are very sensitive to these internal and external factors. The decisions they take is often based on this complex information involving multiple factors like socio-cultural, socio-economic, and psychological factors. This toggling nature of investors affects the performance of the equity market which have a reflection on the economy. This creates inquisitiveness among researchers to identify different behavioral factors that influence investors in their investment. Therefore, an attempt has been made in this research to know the investor's irrational behavior towards their investments and its impact on the equity market and the economy.

Objectives of the Study

- To study the behavioral factors influencing investment decision of the investors,
- To study the impact of investment decision on the performance of the equity market and
- To develop and test a theoretical framework model and suggest measures to make wise investment decisions by accounting for behavioral biases.

Scope of the Study

The research study is inclusive of financial system from Indian context. The functioning of financial market and financial institutions are the major concentration for this study. The effective functioning of these two depends on the investments and the nature of investments made by the investors. Further this necessitates the exploration of the investor's behavior and their investment decisions in respective investments which motivates the researchers to concentrate on the study of the impact of behavioral factors of the investors on their investment decisions.

Research Methodology

The present research study was carried out by identifying the research problem which was followed by an extensive literature review to know the vast application of the concepts and contexts. Based on the extensive literature review and the pre-existing investment decisions on behavioral theories, a conceptual framework was propounded and hypotheses

were formulated for the research study. Further a structured questionnaire was instrumented for collection of data. This in turn was validated by reliability and validity checking conducted through a pilot study. Based on the sample size required the data were gathered for analysis with the usage of appropriate statistical tools and techniques.

A) Sampling

The investigation proceeded with data collection using simple random sampling technique (investors from Bengaluru). To know the exact sample size, the statistical formula was applied. In the current investigation, Cochran's formula for finite population was implemented taking the data from statistical information about the investors in stock market. The following formula was employed.

$$n = \frac{\left(\frac{Z^2 p(1-p)}{e^2}\right)}{1 + \frac{Z^2 p(1-p)}{e^2 N}}$$

where n = sample size;

Z = z-score (1.96 for 95% confidence interval);

p = % picking a choice (0.5); and

e = margin of error (0.04 in the present case).

Bengaluru is a metropolitan area with a population of 13,608,000 in 2023. There is a 3.15% increase from the previous year population (2022). As per SEBI out of the total population in the economy only 5% of the entire population invest in stock market. Out of a population of 13,608,000, only 4,57,600 individuals are investors in stock market. To calculate the sample size of the population, Cochran's formula is employed and the sample size turned out to be 1100.

B) Data Analysis

Frequency analysis, Descriptive statistics, ANOVA and T-test, Chi-squared statistics, Correlation analysis, Linear regression, CFA and SEM: Confirmatory factor analysis (CFA) Structural Equation Modeling (SEM) were performed for accurate outcomes.

C) Data Collection

a. Primary Data

A structured questionnaire was used to collect the primary data from the respondents of the present study with careful administration.

b. Secondary Data

Studies available on topics through relevant books, articles, journals, online sources to the

present study's objectives were reviewed to gather the secondary data.

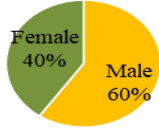
Limitations of the study

- The study is confined to Indian Context only and further the data applicability is limited to Bengaluru city only. Therefore, the outcome is based on the views given by the respondents.
- The study is limited to analysis of behavioral factors influencing investment decisions and its impact on equity market.
- The data is limited convenient availability of investors to render information so the data has its reference time.

Analysis and Interpretation

Table 1 Demographic Profile of Respondents based on gender

Gender	Frequency	Percent
Male	656	60.00
Female	444	40.00
Total	1100	100.0

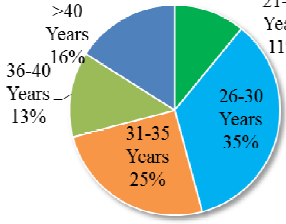


Gender

Source: Field survey

Table 2 Demographic Profile of Respondents based on age

Age (Years)	Frequency	Percent
21-25 Years	120	10.9
26-30 Years	384	34.9
31-35 Years	276	25.1
36-40 Years	144	13.1
>40 Years	176	16.0
Total	1100	100.0

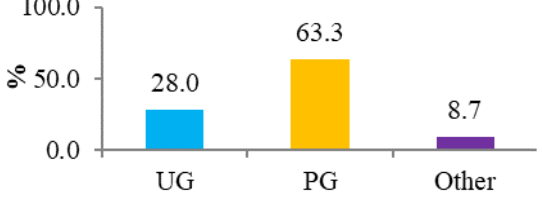


Based on AGE

Source: Field survey

Table 3 Education level of investor respondents

Education	Frequency	Percent
UG	308	28.0
PG	696	63.3
Other	96	8.7
Total	1100	100.0



Education level of investor respondents

Source: Field survey

Table 4 Occupation of investor respondents

Occupation	Frequency	Percent
Govt. Employee	34	6.2
Private Employee	444	80.7
Self-employed	46	8.4
House Wife	4	0.7
Investment Advisor	4	0.7
Other	18	3.3
Total	550	100.0

Occupation of investor respondents

Source: Field survey

Table 5 Experience of Investors

Experience (in years)	Frequency	Percent
< 5	325	59.1
6-10	126	22.9
11-15	69	12.5
16-20	22	4.0
> 20	8	1.5
Total	550	100.0

Experience of Investors

Source: Field survey

Table 6 Challenges involved in investment decision making

Challenges	Frequency	Percent
No challenge	136	12.4
Slight	264	24.0
Moderate	468	42.5
High	188	17.1
Very High	44	4.0
Total	1100	100.0

Challenges involved in investment decision making

Source: Field survey

Table 7 Inclusion of emotions in investment preferences.

Emotions	Frequency	Percent
Never	272	24.7
Sometimes	490	44.5
Often	138	12.5
Very Often	176	16.0
Always	24	2.2
Total	1100	100.0

Inclusion of emotions in investment preferences

Source: Field survey

Table 8 Effect of emotions in investing in financial products

Performance	Frequency	Percent
Never	48	4.4
Sometimes	372	33.8
Often	188	17.1
Very Often	284	25.8
Always	208	18.9
Total	1100	100.0

Effect of emotions in investing in financial products

Source: Field survey

Table 9 Inclusion of Emotional Behaviour in Investing

Emotional Behavior	Frequency	Percent
Never	160	14.5
Sometimes	292	26.5
Often	344	31.3
Very Often	204	18.5
Always	100	9.1
Total	1100	100.0

Inclusion of Emotional Behaviour in Investing

Source: Field survey

From the above statistics we can observe that majority of the female investors follow male and majority of them lie in between the age group of 20-30 followed by 31-36 years which explains that the teens and middle age groups are more involved in investment activity compared to other age groups. In addition to this the study also reveals that most of the investors are post graduates and they are having good number of years of investment experience in equity market. Further their emotions play a major role in decision making as they do face challenges while investing, selecting the financial products and also looking into investment preferences as the investment involves risk associated with the returns on the investment made.

H1a: Heuristic factors of investor behaviour significantly impact the investment decision.

Table 10 Descriptive for the impact of heuristic factors on investment decision

Variables	Mean	Std. Deviation
Investment decisions	4.974	0.179
Overconfidence	4.375	0.171
Availability bias	4.391	0.185
Representativeness	4.707	0.162

Source: Field survey

Table 11 Model Summary for the impact of heuristic factors on investment decision

R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
				R Square Change	F Change	df1	df2	Sig. F Change
0.835	0.69723	0.692	0.313	0.697	22.572	3	546	0.000

Source: Field survey

H1b: Prospect factors of investor behaviour significantly impact the investment decision.

Table 12. Descriptive for the impact of prospect factors on investment decision

Factors	Mean	Std. Deviation
Investment decisions	4.974	0.679
Regret aversion	4.393	0.909
Loss aversion	4.535	1.025
Mental accounting	4.646	0.831

Source: Field survey

Table 13 Model Summary for the impact of prospect factors on investment decision

R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
				R Square Change	F Change	df1	df2	Sig. F Change
0.866	0.75	0.013	0.402	0.117	30.412	3	546	0.000

Source: Field survey

H1c: Market factors of investor behaviour significantly impact the investment decision.

Table 14 Descriptive statistics for the impact of market factors on investment decision

Variables	Mean	Std. Deviation
Investment decisions	4.974	0.679
Past trends	4.777	0.799
Market Information	4.633	0.882

Source: Field survey

Table 15 Model summary for the impact of market factors on investment decision

R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
				R Square Change	F Change	df1	df2	Sig. F Change
0.851	0.724	0.200	0.207	0.003	69.832	2	947	0.000

Source: Field survey

H2: The investment decisions of investors significantly impact the equity market.

Table 16 Descriptive statistics for the impact of investment decision on investment pattern of investors while investing in equity market.

Constructs	Mean	Std. Deviation
Pattern of Investment	4.495	0.703
Investment decisions	4.974	0.679

Source: Field survey

Table 17. Model summary for the impact of investment decision on investment pattern of investors while investing in equity market.

R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
				R Square Change	F Change	df1	df2	Sig. F Change
0.880	0.7744	0.029	0.317	0.230	103.884	1	978	0.000

Source: Field survey

Interpretation

From the above analysis it is clear that the behavioural factors have influenced the investment decisions of investors and further their investment decisions is having an impact on performance of equity market. The responses from the respondents clearly states that they are prone to the risk and return aspects which are associated with the investment avenues. And moving ahead and the investment decisions is based on the behavioral tendency of investors and the above regression analysis shows that the relationship between the investment decision, behavioral factors and performance of equity market are correlated and one is having an impact on the other.

Findings

The descriptive statistics for the current study describes all the constructs influencing the decision of investors to invest in different avenues and their views on the overall investment performance. The highest mean of investment decision was related to regularly reviewing and comparing their investment performance followed by allocating more funds for the long-term this is one of psychological thought process of investors the most important factor influencing their perceptions about the investment decisions.

Investment decision, equity market performance of the investment portfolios are affected by various factors. It was found from the analysis that the respondents' behavioral factors, which include heuristic, prospect, and market factors, positively influence their investment decision.

Conclusion

From the analysis and the research study conducted, it is proved that the influence of behavioral factors of investors shows positive correlation with investment decisions. The research study also focuses on investment patterns of retails investors which has been proved that there is an association between induced investment decision and investment performance in equity market. The Respondents felt it is a challenging task for making investment decision and they are of opinion that emotional behavior plays a major role.

The investors who assume high risks for higher profit in equity market opt for long term securities which are prospect factors of behavior. Similarly, investors also closely monitor the stock market and the reports available to them. From the above findings it is proved that the influence of behavioral factors of investors shows positive correlation with investment decisions. The investment portfolio performance is based on the investment decisions and investment pattern of investors where the research explores 75 % of the investment

performance is based by the investment patterns of investors. This shows there is a positive relationship between the behavioral factors of investors, one investment decision and its performance on equity market.

Suggestions

Regular evaluation of pros and cons and review of investment performance is essential to have better outcome. A close observation of the existing market trend should be done to decide on the investment avenue. The investors, being the primary customers of the equity market, must have a systematic and robust contemplation to avoid any negative effect on their financial status and harmony. Investors who are willing to take risks can invest in derivatives which might yield higher returns. For getting safe and higher returns in the long-term, the investors should invest in mutual funds and follow the SIP mode of mutual fund investment. Mutual funds should be preferred for financial investments property purchase, travel and wedding.

For a balanced investment, more than one type of avenue should be considered. Before taking higher risks and for balanced investment, advice of market experts can also be sought to yield better performance. Long-term sustainability of an investment should be measured based on rate of return (RoR), while the actual value of an investment should be measured based on capital gain. Therefore these aspects should also be considered for investment and associated strategies in the equity market.

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