# Impact of Behavioral Biases on Investors Decision Making

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## *Abstract:*

*Extreme volatility has plagued financial markets worldwide since the 2008 Global Crisis. Investors' sentiment has been one of the key determinants of market movements. In this context, studying the role played by emotions like fear, greed and anticipation which shape investment decisions seem important. Behavioral finance is an evolving field that studies how psychological factors affect decision making under uncertainty. This research paper seeks to find the influence of certain identified behavioral biases: overconfidence, representativeness, herding, anchoring, cognitive dissonance, regret aversion, gamblers' fallacy, mental accounting, hindsight bias, loss averseness, risk tolerance, irrational thinking on the decision- making process of individual investors in the Indian stock market.*

*Recent studies on the behavior of individual investors' have shown that investors do not act in a rational manner. Several behavioral factors influence their investment decisions of investors. For the study purpose, 300 investors from Jalgaon district belong from different strata are considered. Questionnaire based on bias which affect on investment decision is prepared; it also establish relationship between behavioral bias and accuracy of investment decision and action taken by investors when decision seem to be wrong due to behavior anomalies.*

***Keywords:*** *Behavioral bias, investors' decision, accuracy of decision, risk tolerance.*

## I. Introduction:

Much of the economic and financial theories presume that individuals act rationally in the process of decision making, by taking into account all available information. But there is evidence to show repeated patterns of irrationality in the way humans arrive at decisions, choices of stock affected by fear, greed, overconfidence, loss aversion nature of investors. Behavioral finance, a study of the market that draws on psychology, throws light on why people buy or sell stocks and why sometimes do not buy or sell at all. The fact that even the most prominent and well-educated investors were affected by the collapse of the speculative bubble in the 2008 subprime crisis proved that something was fundamentally missing in the traditional models of rational market behavior.

In this study, the aim is to establish the existence of such fundamental issues, driven by various psychological biases in the investment decision-making process.

According to Shefrin (2001), 'Behavioral finance is the study of how psychology affects financial decision making and financial markets.'

This study intended to act as an eye opener first to the individual investor in explaining to him the pertinent issues and misperceptions about the stock market which is primarily influenced by our psychological thinking which ends up in more pain than gain. Different theories were developed in stock market which affects investors' decision making process. Basically these developments are classified into three broad categories, viz. traditional finance theories, modern finance theories and the latest addition is the behavioral finance theories. In this paper an attempt has been made to throw some light in the development of the behavioral finance in spite of the presence of other theories and will also discuss a few behavioral finance principles and their influence in the investment decision making process. Traditional finance theories do not pay attention on role of behavioral bias in investment decision. It is necessary to study reason of volatility, loss of investors and what affect rationality of investors; extent to which behavioral bias affect on investors' decision and what is remedy to overcome that bias.

## Behavioral Finance: Overview

Behavioral finance is a relatively new field that seeks to combine behavioral and cognitive psychological theory with conventional economic and finance to provide explanations for why people make irrational financial decisions. Behavioral finance is very popular in stock market across the world for investment decisions.

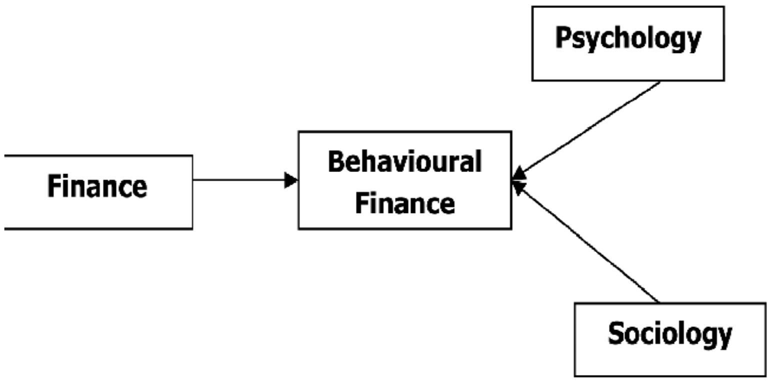


Figure 1.1 Factors affecting Investors' Decision

Dr.Manmohan Singh, Hon'ble Ex-Prime Minister of India, says, "Stock market's behavior in India has often had no relation with the fundamental strength of the economy. It is often in response to the sentiments that are shared in the market" (Bhatta, 2010).

Behavioral finance is an evolving field that studies how psychological factors affect investment decision. Most of the investors especially retail make decisions based on emotions not on logic. The objective of the study is to analyze behavioral finance factors which influence investment decision of the investor's in Indian stock market. The following are some factors which influence investors' investment decision.

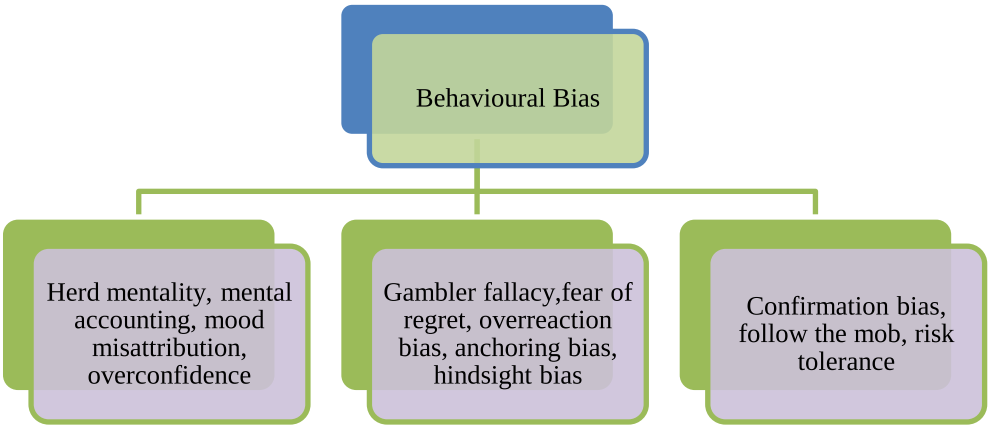


Figure 1.2 behavioral bias which affect investors' decision

Economists, sociologists and psychologists have all attempted to explain investor behaviour in various ways. Economists' enquiries into investor behaviour have focused largely on the "rationality" or "irrationality" of investor decision-making processes. Sociologists explain investor behaviour by focusing on investors social environments. Psychologists explain investor behaviour by focusing on behavioural bias. Shefrin (2000) defines Behavioural finance as 'a rapidly growing area that deals with the influence of psychology on the behaviour of financial practitioners'. Following are behavioural biases and their respective consequences on stock market.

Table 1.1 Biases, Effects on Investor, and Consequences

| NAME OF BIAS | KEY EFFECTS ON INVESTOR | CONSEQUENCE |
|---|---|---|
| **Overconfidence** | Too many trades, too much risk, failure to diversify | Pay too much brokerage and taxes, chance of high losses |
| **Representativeness** | Tendency to associate new event to a known event and make investments based on it | Purchasing overpriced stocks |
| **Herding** | Lack of individuality in decision making | Bubbles, and bubble bursts |
| **Anchoring** | Tendency to consider logically irrelevant price level as important in the process of decision making | Missed investment opportunities, or bad entry timing into the market |
| **Cognitive Dissonance** | Ignore new information that contradicts known beliefs and decisions | Reduced ability to make rational and fair investment decisions |
| **Regret Aversion** | Selling winners too soon, holding losers too long | Reduced returns |
| **Gamblers' Fallacy** | Taking too much risk after a lucky win | Chance of high losses |
| **Mental Accounting** | Low or no diversification | Irrational and negative effects on returns |
| **Hindsight** | The tendency to feel that a past event was obvious when it really was not, at onset | Incorrect oversimplification of decision making |

(Source: Subash, Master Thesis, 2012, p.27)

## II. Statement of the Problem

Behavioral finance discipline has come to an existence as a result of the shortcomings researched out of the efficient market theory. This development has highlighted different anomalies of securities market behavior which are overlooked by the traditional finance theories. But it is to be noted that both efficient market theory and behavioral finance are related to investor behavior and investors' decisions. These disciplines have never tried to show the ways of raising finance in financial market. Rather we can say that if the biases put forwarded by the behavioral finance are given due consideration by the investors while making investment decisions then their decisions would be more efficient and this in turn will build their confidence about investment. This efficiency in investment decisions would also reduce the bubbles and crisis situations in financial market which discourage the new investors to come out and invest. So if such situations are controlled, which is possible by following the behavioral finance principles would definitely bring more investors to the securities market and help to raise finance in the financial market.

## III. Research Question:

Behavioral finance argues that financial decision-making is influenced by individual and market psychology. Behavioral finance addresses the following issues and questions:

- What causes stock market bubbles?
- Why is the stock market so volatile?
- Why are under and overvalued stocks difficult to identify?
- Why do stocks prices appear to under react to bad news?
- Why do most boards of directors often believe their companies are undervalued by the stock market?

## IV. Objectives & Hypothesis of the Study:

- To study the concept of behavioral bias and impact on stock market.
- To check impact of behavioral bias on investment decisions.
- To study accuracy of investment decision in relation with behavioral bias

The following are the hypothesis of the study:
H0: All behavioral biases equally influence investors at time of taking investment decisions.
H0: There is no difference in the action taken if the investment decision goes wrong

## V. Uniqueness and originality of study

This research is one of the first of its kind in Indian settings, though similar studies have been conducted in western countries. The implication of this study for Indian investment marketplace is that given the plethora of investment products available and also the huge social, cultural, linguistic, demographic, geographic and psychographic diversity in a country like India, authors proposes in-depth assessment of the psychographic traits / characteristics of the target Investors and to the best of the author's knowledge and information, such a study has never been conducted in Jalgaon district.

## VI. Literature Review:-

Behavioural finance is a branch of finance that studies how the behaviour of agents in the financial market are influenced by psychological factors, and, the resulting influence on decisions made while buying or selling of stock, thus affecting the price. This science aims to explain the reasons why it's reasonable to believe that markets are inefficient.

Barber and Odean (1999), They highlight two common mistakes that investors make: (i) excessive trading and (ii) the tendency to disproportionately hold on to losing investments while selling winners. They argue that these systematic biases have their origins in human psychology. The tendency for human beings to be overconfident causes the first bias in investors, and the human desire to avoid regret prompts the second bias.

Rakesh (2013) focuses on how stock & share prices are affected by gambler's fallacy. The research paper also reveals the degree to which gambler's fallacy exists and it has vital impact on decision of investors in India. The study is limited to only the Bombay Stock Exchange's investors. The researcher has found out that mindset of investors, assumption about continuation or not continuation of trend, friend's advices, estimating the probability of certain events happening like up or down in market prices; this attribute of behavior pattern that forced investors to make biased decisions which ultimately result into volatile stock market.

Dhole (2014) in her paper she studied impact of behavioral finance factors like herding, mental accounting, gambling, overconfidence, cognitive conflict, fear of regret, gambler myth, hindsight etc. on portfolio decision which include safety, periodic return, liquidity, marketability, ease of purchase, tax benefit , mortgage of medical professionals. She also analyze different investment pattern preferred by doctors with respect to risk and return.

Jain (2012) in his paper focuses on investors' preference towards traditional trading and online trading as small retail investors affected by introduction of demat system in the stock market. The study also focus on 'confidence', 'herd instincts', 'expectations' of investors. He studies the relationship of heuristic driven biases along with investor level awareness and speculative attitude. The author also focuses on various factors affecting investment decision.

Anli (2013) in his paper throws light on various behavioral key biases and traits that can help an individual take sound financial decisions and in turn make him a better trader/investor. The author finds hindsight bias, loss aversion, endowment effect, mental accounting, disposition effect, and anchoring that impact on the decision making process.

Chaudhary (2013), in his paper goes deep into the subject of behavioral finance. With the help of various theories- festinger theory of cognitive dissonance, financial cognitive dissonance, regret theory, prospect theory, the author successfully examines the intended behaviour of investors and the consequences that come out of their decisions due to behaviour anomalies. The author also suggests strategies to investors in stock, bond and mutual fund to overcome psychological roadblocks.

Dominitz & Manski (2005) The paper throws light on how the behavioural aspects affect expectations of the trader due to which he acts irrationally ultimately resulting into stock market anomalies.

Barberis & Thaler (2003, Chap-18, pp. 1053-1128) in the *Handbook of the Economics of Finance*, the chapter "Survey of Behavioural Finance", focus on two factor that are psychology states the kinds of deviations from full rationality we might expect to see and limits to arbitrage; which argue that it can be difficult for a rational trader to undo dislocation of less rational traders. The chapter extends the discussion to the behavioural finance application, to the aggregate stock market, to average returns, to corporate finance and individual trading behaviour.

Farrelly (1980) in his paper studies the behavioral science approach to financial research. He explains the circular process of decision-making, when financial and investment decision-making is seen as a circular process in which the last step is linked to the first step.

Gunay, Gokhan, Demirel and Engin (2011) study the interaction of financial behavioral factors with gender and savings. They find that gender has interaction with five of the financial behavior factors, *viz.* overreaction, herding, cognitive bias, irrational thinking, and overconfidence. The level of individual savings has an interaction with four of the financial behavior factors, *viz.* overreaction, herding, cognitive bias, and irrational thinking.

Cavalheiro, Vieira, Cerreta & Pereira (2012)**,** explore the investor mood and its influence on behavior risk tolerance. The level of risk tolerance of an individual has a direct influence in consumption and ultimately on choice of assets. They reveal that the less tolerant individuals look for safer options for their investments. The authors explain the positive correlation between investor's mood and prices of equity and bill; they opine that with higher asset prices are associated to better mood.

Ritter (2003) focus on two aspects of behavioral finance: (i) cognitive psychology (i.e. how people think) and (ii) the limits to arbitrage (i.e., when markets will be inefficient). In his article he rejects the traditional assumptions of expected utility maximization of rational investors in efficient markets. The article further highlights many empirical patterns like stock market bubbles in Japan, Taiwan and the US.

Statman (2009) focuses on behavioural finance which highlight the point though investors are rational and intelligent, yet emotion attacks to their brain, as a result, sometimes they take wrong decisions about investment Successful professional traders are also subject to emotion and they minimize their losses by 'sell disciplines'. The author also cautions that individual investors should never enter a race against faster runners by trading frequently on every little bit of news or rumours; avoid noise trading; do not chase last year's investment winners. He also focuses on prospect theory, developed by Daniel Kahneman and Amos Tversky and mental accounting, hindsight error.

Phung (2002), in his article state that emotion and psychology influence investor's decisions, resulting in their unpredictable or irrational behavior.

Shiller (2002) identifies unexplainable anomalies in the market coupled with excessive volatile return reaching all time high or low, which result into investors loses. He also focuses speculative market, how bubble is created and its burst due to behavioral bias.

Hilbert (2012) describes individual and retail investors are influenced by behavioral biases such as overconfidence, herding, and reinforcement bias compared to institutional Investors. Retail investors make trading decisions based on psychological phenomena rather based on rational issues. Paper analyzed that retail and individual traders are buying in advance of price increases and selling in advance of price decreases

Blume and Friend (1978) in book *Changing Role of Individual Investors* carried out study on implications of behavioral finance and find that basic measures of risk undertaken by individual investors are price and earning volatility.

Statman (1999) in his paper **"**Behavioral Finance: Past Battles and Future Engagements**"** focuses on 'market efficiency' in the United States. He states that market efficiency is at the centre of the battle of standard finance *versus* behavioral finance *versus* investment professionals. Behavioral finance has shown that value-expressive characteristics matter in both investor choices and asset prices. He develops a behavioral asset-pricing model that includes value-expressive as well as utilitarian characteristics.

Epstein and Garfield (1992) *The Psychology of Smart Investing Meeting the 6 Mental Challenges*, the book written by a board-certified psychiatrist and the founder of Chicago's best-known brokerage firm, focus on personality types of investors in United States. They were among the first researchers to divide investors into different personality types and explore the relationship between personality and investment returns. They find that when a stock fits an investor's personality, the investor could gain benefits. The book includes common psychological traps as loneliness, poor self-esteem, depression, wishful thinking and self destructiveness, addiction to playing the markets, revenge and internal conflicts. They carried out study for typical investor *versus* 'market guru' or famous investors.

Lihara, Yoshio, Kato and Tokunaga (2001) find that 'herding behaviour' influences investors' decision.

Yu-Je, Gao-Liang, Kae-Shuan , Ching-Yaw and Fong-Ping (n.d.) discusses how investment behavior and decision factors affect performances of the Taiwan stock market. Investment behavior and decision factors are significantly correlated to investment performance or the profitability level.

Dr. Sahni, D. (July-August). Paper focuses on loss averseness of investors and anchoring bias. The finding of the paper shows that investors are risk lovers when confronted with losses and risk averse in gains. The Indian investors are found to be loss averse, i.e., there is difference in investors' behavior in case of losses and gains. The paper also reveal investors' perception about market trend is influenced by the past performance of a stock market on three consecutive days, which shows that the anchoring theory is relevant in case of Indian investors behaviour in stock market.

Yosra Mefteh Rekik and Younes Boujelbene (2013), Authors find out that behavioral bias like herding attitude, representativeness, anchoring, loss aversion, and mental accounting all influence the Tunisian investors' decision making processes but there is an absence of overconfidence bias in the Tunisian stock market. Tunisian investors seem to be under confident, hesitant and very sensitive to others' reactions and opinions. This study provides that people at certain age, are less subject to psychological biases as they become more experienced.

De Bondt et al., (1985) the article gave evidence to support the hypothesis that cognitive bias (investor's over- reaction) for a long series of bad news could produce predictable mispricing of stocks traded on the NYSE.

Economou, Kostakis and Philippas (2010) examined herd behavior in extreme market conditions using daily data from the Greek, Italian, Portuguese and Spanish stock markets for the years 1998- 2008 i.e. the existence of asymmetric herding behavior associated with market returns, trading volume, and return volatility. Along with this, they also investigated the presence of herd behavior during the global financial crisis of 2008

Engin Demirel et al., (2011), studied gender interacts with five financial behavioral factors i.e. Overreaction, herding, cognitive bias, irrational thinking, overconfidence. The level of individual savings interacts with only four of the financial behavioral factors viz; overreaction, herding, cognitive bias, and irrational thinking.

Nagy and Obenberger (1994) examined factors influencing investor behavior. Their findings suggested that herd behaviour and peer pressure play vital role in decision making process.

Statman (1988) observed that people trade for both cognitive and emotional reasons. They trade because they think they have information, when in reality they make nothing but noise and trade only because trading brings them joy and pride. Trading brings pride when decisions made are profitable, but it brings regrets when results are losses. Investors try to avoid the pain of regret by avoiding realization of losses, employing investment advisors as scapegoats and avoiding stocks of companies with low reputations.

According to Kent et al. (2001), the most common behaviour that observe among investors while making investment decision are: (a)Investors often do not participate in all asset and security categories, (b)Individual investors exhibit loss-averse behaviour, (c) Investors use past performance as an indicator of future performance in stock purchase decisions, that show hindsight bias (d)Investors trade too aggressively, (e) Investors behave on status quo, (f) Investors do not always form efficient portfolios, (g) Investors behave parallel to each other, it exhibit follow the mob mentality and (h) Investors are influenced by historical high or low trading stocks, it show cognitive bias among investors.

Chandra (2011) use univariate and multivariate analysis and found five major factors that affect the investment behaviour of individual investor in stock market namely prudence and precautions attitude, conservatism, under confidence, informational asymmetry and financial addition .

Ajmi (2008) used a questionnaire to know determinants of risk tolerance of individual investors and collected responses from 1500 respondents. He concluded that the men are less risk averse than women, less educated investors are less likely to take risk and age factor is also important in risk tolerance and also investors are more risk tolerance than the less wealthy investors.

## VII. Methodology of the Study:

The study adopts the descriptive and cross sectional research design. Area sampling under random method was used while selecting 300 investors from the 15 talukas of the districts. 20 investors from each taluka place considered for study. Further stratified random sampling method was also used for investors from different talukas. Investors belong to different strata, *viz.* professional, businessman, students, housewives and others in service and they were again stratified on the basis of different strata: *viz*. different age groups, genders, income levels. Authors of the study used Likert scale as the measure to collect data through questionnaire. For testing the hypotheses Friedman test is used.

## VIII. Results and Discussion:

The paper studies whether investors in Jalgaon district affect by behavioral bias or they are rational investors. Level of significance is (0.05) for Friedman ranking test.

**Whether investors' sentiments affect the investment decision and the stock market.**

The respondents were offered the following 12 behavioural biases. They were further asked to rank each behavioural bias in order of its influence in decision making process.

Table 1.2 Test of significance for behavioral bias

| **Test Statistics[a]** | |
|---|---|
| N | 246 |
| Chi-Square | 974.334 |
| df | 11 |
| Asymp. Sig. | .000 |

a. Friedman Test

Table 1 show test of significance for impact of different behavioral bias on investors' decision. Since the p-value (0.000) is less than the level of significance, the null hypothesis is rejected. Hence, it is concluded that all behavioral biases have different influence on investors while taking investment decision.

Different behavioral bias get ranking as per their influence on decision making process: follow the mob has the mean rank of 9.45, risk tolerance has the mean rank of 9.43; mental accounting has the mean rank of 8.49; mood misattribution has the mean rank of 7.52; herd mentality has the mean rank of 6.54; confirmation bias has the mean rank of 6.13; overconfidence has the mean rank of 6.09; anchoring bias has the mean rank of 5.75; fear of regret has the mean rank of 5.22; hindsight bias has the mean rank of 5.08; overreaction bias has the mean rank of 4.45; gambler fallacy has the mean rank of 3.83. Hence, the top five behavioral biases that influence decisions of investors are: (a) follow the mob; (b) risk tolerance; (c) mental accounting; (d) mood misattribution; (e) herd mentality.

**Frequency of investment decision proved to be right.**

Table 1.3 Frequency of investment decisions proved to be right**.**

| | | Frequency | Valid Percent |
|---|---|---|---|
| Investment decision proved to be right | 0-10% | 63 | 22.91 |
| | 11-20% | 112 | 40.73 |
| | 21-30% | 54 | 19.64 |
| | 31-40% | 3 | 1.09 |
| | 41-50% | 24 | 8.73 |
| | Above 50% | 19 | 6.91 |
| | Total | 275 | 100.0 |

The above table show the frequency distribution for right investment decisions. It can be seen that 22.91% of the investors' decisions proved right between 0-10%; 40.73% of the investors' decisions proved right between 11-20%; 19.64% of the investors' decisions proved right between 21-30%; 1.09% of the investors' decisions proved right between 31-40%; 8.73% of the investors' decisions proved right between 41-50% and 6.91% of the investors' decisions proved right above 50%. Hence, it is concluded that higher frequency of investors' decisions proved right only 'between 11-20%' which means that greater number of investors lose their money for most of the time due to impact of behavioral biases.

**Action taken by investors if the investment decision goes wrong**

Table 1.4 Test of significance when investment decision proves wrong

| Test Statistics[a] | |
|---|---|
| N | 271 |
| Chi-Square | 188.283 |
| df | 3 |
| Asymp. Sig. | .000 |

a. Friedman test

Since the p-value (0.000) is less than the level of significance, the null hypothesis is rejected. Hence, it is concluded that there is significant differences in the action taken by investors if the investment decision goes wrong. In order to find out where the difference lies, we refer to rank tables.

When investment decision goes wrong, panic investors become more panic their irrational behavior lead decision making process. Investors generally take action which got ranking as: sell off loss-making shares or cover up position has the mean rank of 1.96; purchase new shares at low prices has the mean rank of 2.60; hold on to existing loss making shares in hope of future rise has the mean rank of 2.21 and hedge position has the mean rank of 3.20. Hence, it can be concluded that most common action followed by investors when their investment decision goes wrong is to 'hedge position'. It shows that risk-averse nature of investors.

## IX. Recommendation of the study

1. Indian investors should study strategy of Warren Buffett, Benjamin Graham or Philip Fisher while opt for investment to minimize losses and earn more profit
2. Investors must analyze company on fundamental ground and control behavioural biases at time of investment then invest in company.
3. Investors should aware about their risk tolerance level which help them to manage their portfolio.
4. Investors should hold their profit making stock and sell their loss making stocks to minimize losses and gaining more profit.
5. Investors should 'always' use stop loss before investing in stock. It protects them from huge losses.
6. Investors must adopt strategy "to buy a company not its stock", similarly while investing one should look at companies that have stood the test of time, available at fair price & companies which aggressively create larger market for their product.

## X. Conclusions

From the review of above studies, it can be concluded that there are numerous determinants that influence the individual investor's behavior in stock market. Jalgaon district investors decision affect by follow the mob; risk tolerance; mental accounting; mood misattribution; herd mentality. Panic investors investment turns into great loss due to presence of behavior anomalies, they use to hedge position. Investors should invest in company after careful analysis on fundamental ground and should control bias before investing and invest with right temperament develop patience to hold stock for 10-20 years.

## XI. Future Work:-

a) Research can be carried out with taking into consideration other factors which influence investment decision of investors like economic, environmental, technological, and social.
b) Research can be carried out in the area of importance of fundamental analysis over technical analysis.
c) Research can also be carried out role of behavioral bias with special consideration of bear and bull market phase.

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